

Name: _____

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CHAPTER
1

Whole Numbers

Worksheet 1 Numbers to 10,000,000

Write the value represented by the ○s.

Example

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
↓	↓	↓	↓	↓	↓
5 hundred	8 ten	4 thousands	2 hundreds	9 tens	7 ones
_____	_____	_____	_____	_____	_____
thousands	thousands	_____	_____	_____	_____

1.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
↓	↓	↓	↓	↓	↓
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

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Write each number in standard form.

Example

two hundred seventy-five thousand, three hundred eighty-one

275,381 ← **standard form**

2. thirty-two thousand, four hundred ninety-one _____
3. eight hundred thirteen thousand _____
4. three hundred sixty thousand, three hundred forty-eight _____
5. six hundred four thousand, nine hundred nine _____

Write each number in word form.

Example

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
6	5	9	1	4	0

six hundred fifty-nine thousand

one hundred forty

The **word form** of the number is six hundred fifty-nine thousand, one hundred forty.

6. 76,830 _____
7. 438,586 _____
8. 890,704 _____

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Worksheet 2 Numbers to 10,000,000

Write the value represented by the ○s.

Example

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
○ ○ ○	○ ○	○ ○ ○ ○ ○ ○	○	○ ○ ○ ○ ○ ○ ○	○ ○ ○	○ ○ ○ ○ ○
↓	↓	↓	↓	↓	↓	↓
<u>3 millions</u>	<u>2 hundred</u>	<u>6 ten</u>	<u>1 thousand</u>	<u>7</u>	<u>3 tens</u>	<u>5 ones</u>
_____	_____ thousands	_____ thousands	_____	_____ hundreds	_____	_____

1.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
○ ○ ○ ○ ○ ○ ○	○	○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○	○ ○	○ ○ ○ ○ ○ ○ ○ ○
↓	↓	↓	↓	↓	↓	↓
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

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Write each number in standard form.

Example

three million, four hundred eighty-nine thousand, five hundred
twenty-six 3,489,526

2. four million, two hundred twenty-one thousand, nine hundred
fourteen _____
3. two million, seven hundred eight thousand, forty-five _____
4. seven million, fifty-eight thousand, four hundred nine _____

Write each number in word form.

Example

2,654,320 two million, six hundred fifty-four thousand,
three hundred twenty

5. 84,495 _____
6. 4,628,315 _____
7. 9,032,160 _____
8. 6,020,078 _____
9. 5,016,804 _____

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Worksheet 3 Place Value

Complete. Use the place-value chart.

Example

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
5	6	3	8	2	4	7

In 5,638,247,

the digit 2 stands for 200.

the digit 6 stands for 600,000.

the digit 5 stands for 5,000,000.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
3	2	7	4	5	1	6

In 3,274,516,

1. the digit 1 stands for _____.
2. the digit 4 stands for _____.
3. the digit 2 stands for _____.
4. the digit 3 stands for _____.

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Write the value of the digit 5 in each number.

	Number	Value of Digit 5
	512,449	500,000
5.	751,008	
6.	5,108,009	

In 512,449, the digit 5 has a value of 500,000.



Complete. Use the place-value chart.

Example

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
8	2	7	0	9	3	1

In 8,270,931,

the digit 3 is in the tens place.

the digit 7 is in the ten thousands place.

the digit 8 is in the millions place.

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
4	2	6	1	9	5	7

In 4,261,957,

7. the digit 1 is in the _____ place.

8. the digit 2 is in the _____ place.

9. the digit 4 is in the _____ place.

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Complete.

Example

In 2,409,318, the digit 2 is in the millions place.

10. In 215,789, the digit _____ is in the thousands place.
11. In 672,381, the digit _____ is in the hundred thousands place.
12. In 8,237,695, the digit _____ is in the millions place.
13. In 4,197,358, the digit _____ is in the ten thousands place.

Complete.

Example

$$4,000,000 + 300,000 + 20,000 + 5,000 + 700 + 90 + 8$$
$$= \underline{4,325,798}$$

14. $40,000 + 5,000 + 100 + 8 =$ _____
15. $60,000 + 3,000 + 5 =$ _____
16. $500,000 + 30,000 + 6,000 + 800 + 2 =$ _____
17. $9,000,000 + 700,000 + 40,000 + 1,000 + 300 + 80 =$ _____
18. $1,000,000 + 500,000 + 8,000 + 800 + 5 =$ _____
19. $8,000,000 + 900,000 + 40,000 + 40 + 9 =$ _____

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Express each number in expanded form. Fill in the blanks.

Example

$$3,742,859 = \underline{3,000,000} + 700,000 + 40,000 + \underline{2,000} + \\ 800 + \underline{50} + 9$$

expanded form
of 3,742,859

20. $23,748 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 700 + \underline{\hspace{2cm}} + 8$

21. $81,059 = \underline{\hspace{2cm}} + 1,000 + 50 + \underline{\hspace{2cm}}$

22. $725,491 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 5,000 + \underline{\hspace{2cm}} + \\ 90 + \underline{\hspace{2cm}}$

23. $5,061,734 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 1,000 + \underline{\hspace{2cm}} + \\ 30 + \underline{\hspace{2cm}}$

24. $8,204,573 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 4,000 + 500 + \\ 70 + \underline{\hspace{2cm}}$

25. $2,680,307 = 2,000,000 + \underline{\hspace{2cm}} + 80,000 + \underline{\hspace{2cm}} + \\ \underline{\hspace{2cm}}$

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Worksheet 4 Comparing Numbers to 10,000,000

Compare the numbers. Then fill in the blanks with *greater than* or *less than*.

1. 31,824 is _____ 32,428.

2. 56,035 is _____ 56,117.

Complete the place-value chart. Then use it to compare the numbers.

Example

2,485,092 and 2,391,406

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	4	8	5	0	9	2
2	3	9	1	4	0	6

2,391,406 is *less than* 2,485,092.

2,391,406 $<$ 2,485,092

Compare the value of each digit from left to right.

$>$ means **greater than**
and $<$ means **less than**.

3. 5,126,432 and 5,102,204

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

5,126,432 is _____ 5,102,204.

5,126,432 \bigcirc 5,102,204

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Compare the values of the digits in the millions place. Then compare the values of the digits in the hundred thousands place if necessary.

Complete.

4. 4,572,369 6,572,936 _____ is greater.

5. 3,400,369 2,907,369 _____ is greater.

6. 5,482,176 5,248,998 _____ is lesser.

7. 6,104,258 6,041,852 _____ is lesser.

Circle the greater number.

8. 285,012 739,246

9. 1,687,198 1,841,007

Circle the greatest number.

10. 1,250,409 1,205,409 502,409

11. 6,458,692 6,548,692 5,684,269

Order the numbers from least to greatest.

12. 2,360,518 2,409,518 788,999

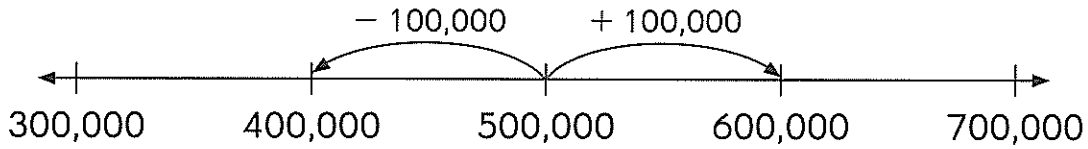
13. 7,569,483 8,000,002 6,787,157

Name: _____

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Complete. Use the number line to help you.

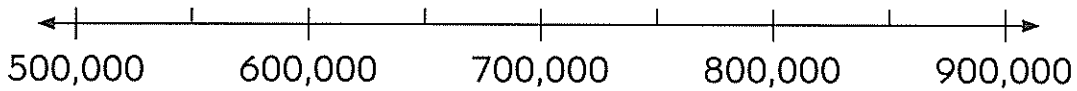
Example



100,000 more than 500,000 is 600,000.

100,000 less than 500,000 is 400,000.

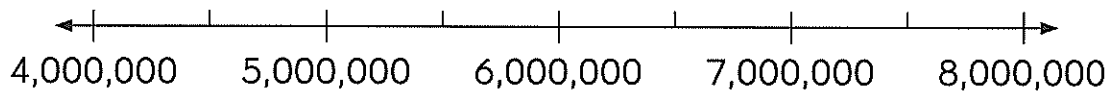
14.



50,000 more than 700,000 is _____.

50,000 less than 700,000 is _____.

15.



500,000 more than 6,000,000 is _____.

500,000 less than 6,000,000 is _____.

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Answer each question.

Example

What is 2,000,000 more than 5,000,000? 7,000,000

What is 2,000,000 less than 5,000,000? 3,000,000

16. What is 500,000 more than 5,000,000? _____

17. What is 500,000 less than 5,000,000? _____

18. What is 1,500,000 more than 8,000,000? _____

19. What is 1,500,000 less than 8,000,000? _____

Add.

Example

$8,300,000 + 1,000,000 = 9,300,000$

20. $2,400,000 + 300,000 =$ _____

21. $6,500,000 + 700,000 =$ _____

22. $7,400,000 + 1,500,000 =$ _____

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Subtract.

Example

$$\begin{array}{r} 3,500,000 \\ - 1,000,000 \\ \hline 2,500,000 \end{array}$$

23.

$$\begin{array}{r} 5,600,000 \\ - 400,000 \\ \hline \end{array}$$

24.

$$\begin{array}{r} 4,700,000 \\ - 800,000 \\ \hline \end{array}$$

25.

$$\begin{array}{r} 9,400,000 \\ - 1,500,000 \\ \hline \end{array}$$

Complete.

26.

$$\begin{array}{r} + \boxed{} \\ 6,200,000 \\ \hline 6,700,000 \end{array}$$

27.

$$\begin{array}{r} + \boxed{} \\ 4,850,000 \\ \hline 5,000,000 \end{array}$$

28.

$$\begin{array}{r} - \boxed{} \\ 9,400,000 \\ \hline 8,800,000 \end{array}$$

29.

$$\begin{array}{r} - \boxed{} \\ 7,520,000 \\ \hline 6,920,000 \end{array}$$

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Find the rule. Then complete each number pattern.

Example

1,105,236 1,405,236 1,705,236 2,005,236 2,305,236

Add 300,000 to 1,105,236 to get 1,405,236.

Add 300,000 to 1,405,236 to get 1,705,236.

The rule is to add 300,000 to find the next number in the pattern.

30. 150,000 160,000 170,000 _____ _____

Rule: _____

31. 7,650,000 7,150,000 6,650,000 _____ _____

Rule: _____

32. 1,200,000 2,300,000 3,400,000 _____ _____

Rule: _____

Complete each number pattern.

33. 42,000 52,000 62,000 _____ _____

34. 50,700 50,600 50,500 _____ _____

35. 545,000 525,000 _____ _____ 465,000

36. 3,609,707 3,509,707 _____ _____ 3,209,707

37. _____ _____ 4,127,304 4,128,404 4,129,504

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Worksheet 5 Rounding and Estimating

Write the digit in the hundreds place.

1. 3,649 _____

2. 8,278 _____

3. 9,501 _____

4. 7,499 _____

Write the digit in the thousands place.

5. 9,643 _____

6. 7,882 _____

7. 8,076 _____

8. 2,007 _____

Round each number to the nearest hundred.

9. 4,586 _____

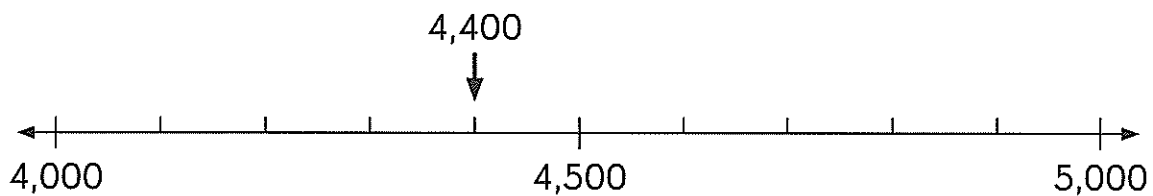
10. 6,245 _____

11. 1,353 _____

12. 7,129 _____

Look at the number line. Then complete the sentences and round each number to the nearest thousand.

Example



4,400 is nearer to 4,000 than to 5,000.

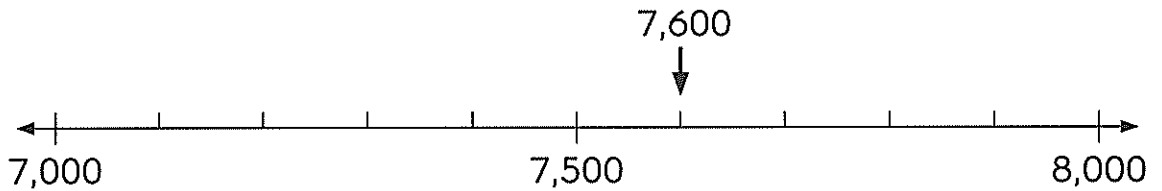
4,400 rounded to the nearest thousand is 4,000.

Name: _____

Date: _____

Look at the number line. Then complete the sentences and round each number to the nearest thousand.

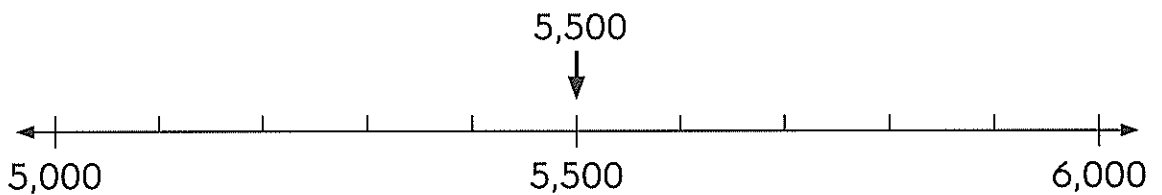
13.



7,600 is nearer to _____ than to _____.

7,600 rounded to the nearest thousand is _____.

14.



5,500 is halfway between _____ and _____.

5,500 rounded to the nearest thousand is _____.

Round each number to the nearest thousand.

15. 7,945 _____

16. 6,498 _____

17. 8,092 _____

18. 9,504 _____

Estimate the sum and difference by rounding to the nearest hundred.

19. $274 + 516$

20. $735 - 581$

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Estimate each sum by rounding to the nearest thousand.

Example

$$2,458 + 4,786$$

$$2,458 \text{ rounds to } \underline{2,000}.$$

$$4,786 \text{ rounds to } \underline{5,000}.$$

$$2,458 + 4,786 \text{ is about } \underline{2,000} + \underline{5,000} = \underline{7,000}.$$

21. $4,862 + 5,309$

$$4,862 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$5,309 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$4,862 + 5,309 \text{ is about } \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

22. $5,364 + 3,289$

$$5,364 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$3,289 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$5,364 + 3,289 \text{ is about } \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

23. $6,881 + 2,708$

$$6,881 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$2,708 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$6,881 + 2,708 \text{ is about } \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

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Estimate each difference by rounding to the nearest thousand.

Example

$$5,819 - 5,259$$

$$5,819 \text{ rounds to } \underline{6,000}.$$

$$5,259 \text{ rounds to } \underline{5,000}.$$

$$5,819 - 5,259 \text{ is about } \underline{6,000} - \underline{5,000} = \underline{1,000}.$$

24. $2,396 - 1,457$

$$2,396 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$1,457 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$2,396 - 1,457 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

25. $7,643 - 1,226$

$$7,643 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$1,226 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$7,643 - 1,226 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

26. $5,892 - 3,607$

$$5,892 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$3,607 \text{ rounds to } \underline{\hspace{2cm}}.$$

$$5,892 - 3,607 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

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Write the leading digit of each number.

27. 7,536 _____

28. 1,094 _____

Estimate the sum and difference using front-end estimation.

29. $387 + 604$

30. $941 - 525$

Use front-end estimation with adjustment to estimate each sum.

Example

$$4,489 + 2,768$$

$$\underline{4,000} + \underline{2,000} = \underline{6,000}$$

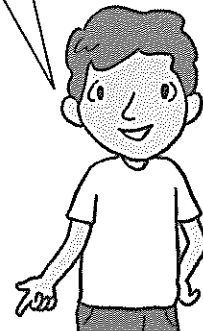
$$489 + 768 \text{ is about } \underline{400} + \underline{700} = \underline{1,100}$$

$$\underline{1,100} \text{ rounded to the nearest thousand is } \underline{1,000}$$

$$\underline{6,000} + \underline{1,000} = \underline{7,000}$$

$$4,489 + 2,768 \text{ is about } \underline{7,000}$$

The leading digit of 4,489 is 4.
The leading digit of 2,768 is 2.



31. $5,528 + 3,476$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$528 + 476 \text{ is about } \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \text{ rounded to the nearest thousand is } \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$5,528 + 3,476 \text{ is about } \underline{\hspace{2cm}}$$

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Use front-end estimation with adjustment to estimate each sum.

32. $7,128 + 2,544$

33. $4,500 + 7,652$

34. $3,252 + 4,481 + 1,530$

_____ + _____ + _____ = _____

$252 + 481 + 530$ is about _____ + _____ + _____

= _____.

_____ rounded to the nearest thousand is _____.

_____ + _____ = _____

$3,252 + 4,481 + 1,530$ is about _____.

35. $7,608 + 2,454 + 8,599$

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Use front-end estimation with adjustment to estimate each difference.

Example

$$5,845 - 2,313$$

$$\underline{5,000} - \underline{2,000} = \underline{3,000}$$

$$845 - 313 \text{ is about } \underline{800} - \underline{300} = \underline{500}.$$

$$\underline{500} \text{ rounded to the nearest thousand is } \underline{1,000}.$$

$$\underline{3,000} + \underline{1,000} = \underline{4,000}$$

$$5,845 - 2,313 \text{ is about } \underline{4,000}.$$

The leading digit of 5,845 is 5.
The leading digit of 2,313 is 2.



36. $9,720 - 4,138$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$720 - 138 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

$$\underline{\hspace{2cm}} \text{ rounded to the nearest thousand is } \underline{\hspace{2cm}}.$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$9,720 - 4,138 \text{ is about } \underline{\hspace{2cm}}.$$

37. $7,947 - 2,350$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$947 - 350 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}.$$

$$\underline{\hspace{2cm}} \text{ rounded to the nearest thousand is } \underline{\hspace{2cm}}.$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$7,947 - 2,350 \text{ is about } \underline{\hspace{2cm}}.$$

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Use front-end estimation with adjustment to estimate each difference.

38. $5,625 - 3,482$

39. $7,420 - 5,033$

40. $9,814 - 4,256$

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Use front-end estimation with adjustment to estimate each difference.

Example

$$8,354 - 6,940$$

$$\underline{8,000} - \underline{6,000} = \underline{2,000}$$

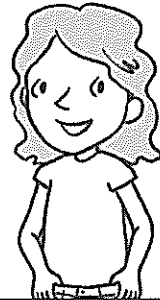
The leading digit of 8,354 is 8.
The leading digit of 6,940 is 6.

$$940 - 354 \text{ is about } \underline{900} - \underline{300} = \underline{600}$$

$$\underline{600} \text{ rounded to the nearest thousand is } \underline{1,000}$$

$$\underline{2,000} - \underline{1,000} = \underline{1,000}$$

$$8,354 - 6,940 \text{ is about } \underline{1,000}$$



41. $9,267 - 3,739$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$739 - 267 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \text{ rounded to the nearest thousand is } \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$9,267 - 3,739 \text{ is about } \underline{\hspace{2cm}}$$

42. $8,327 - 4,682$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$682 - 327 \text{ is about } \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \text{ rounded to the nearest thousand is } \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$8,327 - 4,682 \text{ is about } \underline{\hspace{2cm}}$$

Name: _____

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Use front-end estimation with adjustment to estimate each difference.

43. $6,259 - 3,795$

44. $3,308 - 1,749$

45. $8,427 - 6,973$

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Estimate each product.

Example

$$3,842 \times 5$$

3,842 rounds to 4,000.

$$\underline{4,000} \times 5 = \underline{20,000}$$

3,842 \times 5 is about 20,000.

Round 3,842 to the nearest thousand.



46. $6,239 \times 7$

6,239 rounds to _____.

_____ \times 7 = _____

6,239 \times 7 is about _____.

47. $2,506 \times 8$

2,506 rounds to _____.

_____ \times 8 = _____

2,506 \times 8 is about _____.

48. $3,257 \times 4$

49. $8,753 \times 6$

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Estimate each quotient.

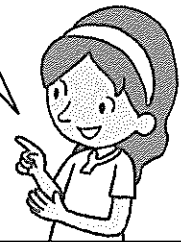
Example

$$4,387 \div 5$$

$$\underline{4,500} \div 5 = \underline{900}$$

$$4,387 \div 5 \text{ is about } \underline{900}$$

The numbers 4,000 and 5 are **compatible numbers**. They are easy to divide. The numbers 4,500 and 5 are also compatible numbers. The numbers 4,387 is nearer to 4,500 than to 4,000. So, choose 4,500.



50. $3,508 \div 9$

$$\underline{\hspace{2cm}} \div 9 = \underline{\hspace{2cm}}$$

$$3,508 \div 9 \text{ is about } \underline{\hspace{2cm}}$$

51. $6,126 \div 7$

$$\underline{\hspace{2cm}} \div 7 = \underline{\hspace{2cm}}$$

$$6,126 \div 7 \text{ is about } \underline{\hspace{2cm}}$$

52. $2,362 \div 4$

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CHAPTER
2

Whole Number Multiplication and Division

Worksheet 1 Using a Calculator

Use your calculator for these exercises.

1. Circle the button you press to turn on your calculator.

Turn

On

On/Off

Enter

2. Enter these digits on your calculator.

1 2 3 4 5 6 7 8

Write the number displayed on your calculator.

3. Circle the button you press to clear the display on your calculator.

Clear

CE

C

4. Enter each number on your calculator.

a. 4,782

b. 678,435

c. 3,917,403

d. 7,008,009

How do the numbers displayed on the calculator differ from the printed numbers?

Name: _____

Date: _____

5. Which sequence of buttons should you press to find the value of $259 + 4,783$? Check (✓) the box next to the correct answer. Then use your calculator to find the sum.

Press this sequence of buttons:

2	5	9	+	4	7	8	3	<input type="checkbox"/>
---	---	---	---	---	---	---	---	--------------------------

2	5	9	+	4	8	7	3	=	<input type="checkbox"/>
---	---	---	---	---	---	---	---	---	--------------------------

C	2	5	9	+	4	7	8	3	=	<input type="checkbox"/>
---	---	---	---	---	---	---	---	---	---	--------------------------

$259 + 4,783 =$ _____

Use your calculator to add or subtract.

6. $5,728 + 6,954 =$ _____
7. $9,824 - 2,387 =$ _____
8. $\$8,389 + \$7,402 = \$$ _____
9. $6,083 \text{ kg} - 4,709 \text{ kg} =$ _____ kg

Check the box next to the correct answer.

10. How do you find the difference between 4,269 and 1,597?

$4,269 + 1,597$

$4,269 - 1,597$

Name: _____

Date: _____

Check the box next to the correct answer.

11. How do you find the sum of 6,677 and 23,567?

$6,677 + 23,567$

$23,567 - 6,677$

Use your calculator to answer these questions.

12. What is the sum of $7,625 + 12,496$? _____

13. What is the difference between 5,697 and 4,283? _____

Fill in the missing buttons. Then press the sequence of buttons to find the product or quotient.

Example

$142 \times 309 = \underline{43,878}$

14. $325 \times 67 =$ _____

15. $1,652 \div 4 =$ _____

Name: _____

Date: _____

Use your calculator to multiply.

16. $2,873 \times 42 =$ _____

17. $1,473 \times 9 =$ _____

18. $428 \times 375 =$ _____

Use your calculator to divide.

19. $8,710 \div 5 =$ _____

20. $8,150 \div 25 =$ _____

21. $220,128 \div 32 =$ _____

Use your calculator to answer these questions.

22. What is the product of 748 and 254? _____

23. What is the quotient of 7,470 divided by 6? _____

Use your calculator to solve these problems.

24. Grandpa donates a total of \$78,645 equally to 5 charities.
How much money does each charity receive?

25. The area of the floor in a rectangular kitchen is 209,196 square centimeters. The area of each square tile is 36 square centimeters.
How many square tiles are needed to tile the kitchen floor?

Name: _____

Date: _____

Worksheet 2 Multiplying by Tens, Hundreds, or Thousands

Complete.

1. $10 =$ _____ ten

2. $80 =$ _____ tens

Multiply.

Example

$$9 \times 10 = \underline{90}$$

3. $5 \times 10 =$ _____

4. $83 \times 10 =$ _____

5. $726 \times 10 =$ _____

6. $1,005 \times 10 =$ _____

Complete.

Example

$$\begin{aligned} 25 \times 50 &= 25 \times \underline{5} \text{ tens} \\ &= (\underline{25} \times \underline{5}) \times 10 \\ &= \underline{125} \times 10 \\ &= \underline{1,250} \end{aligned}$$

7. $17 \times 30 = 17 \times$ _____ tens

$$= (\underline{\quad} \times \underline{\quad}) \times 10$$

$$= \underline{\quad} \times 10$$

$$= \underline{\quad}$$

Name: _____

Date: _____

Complete.

8. $148 \times 60 = 148 \times$ _____ *tens*
 $=$ (_____ \times _____) $\times 10$
 $=$ _____ $\times 10$
 $=$ _____

9. $219 \times 20 = 219 \times$ _____ *tens*
 $=$ (_____ \times _____) $\times 10$
 $=$ _____ $\times 10$
 $=$ _____

10. $3,456 \times 70 = 3,456 \times$ _____ *tens*
 $=$ (_____ \times _____) $\times 10$
 $=$ _____ $\times 10$
 $=$ _____

11. $2,135 \times 60 = 2,135 \times$ _____ *tens*
 $=$ (_____ \times _____) $\times 10$
 $=$ _____ $\times 10$
 $=$ _____

Name: _____

Date: _____

Complete.

12. $100 =$ _____ hundred

13. $500 =$ _____ hundreds

Multiply.

Example

$$7 \times 100 = \underline{700}$$

14. $8 \times 100 =$ _____

15. $74 \times 100 =$ _____

16. $153 \times 100 =$ _____

17. $5,980 \times 100 =$ _____

Complete.

Example

$$\begin{aligned} 16 \times 200 &= 16 \times \underline{2} \text{ hundreds} \\ &= (\underline{16} \times \underline{2}) \times 100 \\ &= \underline{32} \times 100 \\ &= \underline{3,200} \end{aligned}$$

18. $72 \times 300 = 72 \times$ _____ hundreds

$$= (\underline{\quad} \times \underline{\quad}) \times 100$$

$$= \underline{\quad} \times 100$$

$$= \underline{\quad}$$

Name: _____

Date: _____

Complete.

19. $326 \times 700 = 326 \times$ _____ hundreds
 $=$ (_____ \times _____) $\times 100$
 $=$ _____ $\times 100$
 $=$ _____

20. $548 \times 900 = 548 \times$ _____ hundreds
 $=$ (_____ \times _____) $\times 100$
 $=$ _____ $\times 100$
 $=$ _____

21. $1,325 \times 800 = 1,325 \times$ _____ hundreds
 $=$ (_____ \times _____) $\times 100$
 $=$ _____ $\times 100$
 $=$ _____

22. $3,046 \times 600 = 3,046 \times$ _____ hundreds
 $=$ (_____ \times _____) $\times 100$
 $=$ _____ $\times 100$
 $=$ _____

Name: _____

Date: _____

Complete.

23. $1,000 =$ _____ thousand

24. $6,000 =$ _____ thousands

Multiply.

Example

$$5 \times 1,000 = \underline{5,000}$$

25. $4 \times 1,000 =$ _____

26. $28 \times 1,000 =$ _____

27. $205 \times 1,000 =$ _____

28. $3,247 \times 1,000 =$ _____

Complete.

Example

$$\begin{aligned} 25 \times 3,000 &= 25 \times \underline{3} \text{ thousands} \\ &= (\underline{25} \times \underline{3}) \times 1,000 \\ &= \underline{75} \times 1,000 \\ &= \underline{75,000} \end{aligned}$$

29. $69 \times 4,000 = 69 \times$ _____ thousands

$$= (\underline{\hspace{2cm}} \times \underline{\hspace{2cm}}) \times 1,000$$

$$= \underline{\hspace{2cm}} \times 1,000$$

$$= \underline{\hspace{2cm}}$$

Name: _____

Date: _____

Complete.

30. $217 \times 6,000 = 217 \times$ _____ thousands
 $=$ (_____ \times _____) $\times 1,000$
 $=$ _____ $\times 1,000$
 $=$ _____

31. $528 \times 9,000 = 528 \times$ _____ thousands
 $=$ (_____ \times _____) $\times 1,000$
 $=$ _____ $\times 1,000$
 $=$ _____

32. $1,324 \times 7,000 = 1,324 \times$ _____ thousands
 $=$ (_____ \times _____) $\times 1,000$
 $=$ _____ $\times 1,000$
 $=$ _____

33. $2,305 \times 4,000 = 2,305 \times$ _____ thousands
 $=$ (_____ \times _____) $\times 1,000$
 $=$ _____ $\times 1,000$
 $=$ _____

Name: _____

Date: _____

Round to the nearest ten.

34. $56 =$ _____

35. $23 =$ _____

Round to the nearest hundred.

36. $348 =$ _____

37. $750 =$ _____

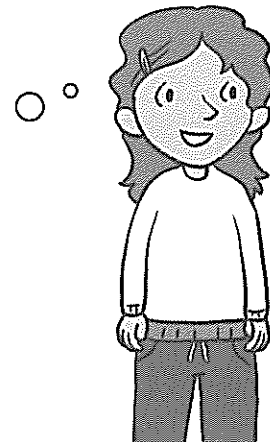
Round the 2-digit number to the nearest ten and the 3-digit number to the nearest hundred. Then multiply to estimate the product.

Example

672×81 is about

$$\underline{700} \times \underline{80} = \underline{56,000}$$

Round 672 to the nearest hundred and 81 to the nearest ten. The number 672 rounds to 700. The number 81 rounds to 80.



38. 87×63 is about _____ \times _____ = _____.

39. 94×247 is about _____ \times _____ = _____.

40. 249×63 is about _____ \times _____ = _____.

41. 364×73 is about _____ \times _____ = _____.

Name: _____

Date: _____

Round to the nearest thousand.

42. $2,705 =$ _____

43. $8,391 =$ _____

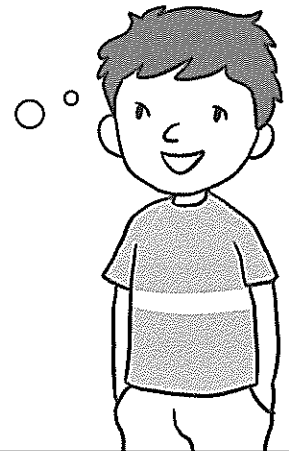
Round the 2-digit number to the nearest ten and the 4-digit number to the nearest thousand. Then multiply to estimate the product.

Example

$1,289 \times 48$ is about

$$\underline{1,000} \times \underline{50} = \underline{50,000}$$

Round 1,289 to the nearest thousand and 48 to the nearest ten. The number 1,289 rounds to 1,000. The number 48 rounds to 50.



44. $5,612 \times 32$ is about _____ \times _____ = _____.

45. $3,409 \times 45$ is about _____ \times _____ = _____.

46. $92 \times 1,485$ is about _____ \times _____ = _____.

47. $79 \times 4,243$ is about _____ \times _____ = _____.

Name: _____

Date: _____

Worksheet 3 Multiplying by Powers of Ten

Complete the sentence with *square* or *cube*.

1. $10 \times 10 \times 10 =$ _____ of 10

2. $10 \times 10 =$ _____ of 10

Complete.

3. 10 squared is the same as $10 \times$ _____.

4. 10 cubed is the same as $10 \times$ _____.

5. 10 squared is the same as 10^{\square} .

6. 10 cubed is the same as 10^{\square} .

Name: _____

Date: _____

Multiply.

7. $213 \times 10^2 = 213 \times (\text{_____} \times \text{_____})$
 $= 213 \times \text{_____}$
 $= \text{_____}$

8. $576 \times 10^3 = 576 \times (\text{_____} \times \text{_____} \times \text{_____})$
 $= 576 \times \text{_____}$
 $= \text{_____}$

9. $794 \times 10^3 =$

10. $1,120 \times 10^2 =$

Name: _____

Date: _____

Worksheet 4 Multiplying by 2-Digit Numbers

Complete.

1. $38 \times 20 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

2. $26 \times 40 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

3. $57 \times 60 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

4. $48 \times 90 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

Complete.

5. $25 \times 30 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

$= \underline{\hspace{2cm}}$ tens

$= \underline{\hspace{2cm}} \times 10$

$= \underline{\hspace{2cm}}$

6. $46 \times 50 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

$= \underline{\hspace{2cm}}$ tens

$= \underline{\hspace{2cm}} \times 10$

$= \underline{\hspace{2cm}}$

7. $38 \times 40 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$ tens

$= \underline{\hspace{2cm}}$ tens

$= \underline{\hspace{2cm}} \times 10$

$= \underline{\hspace{2cm}}$

Name: _____

Date: _____

Multiply by tens.

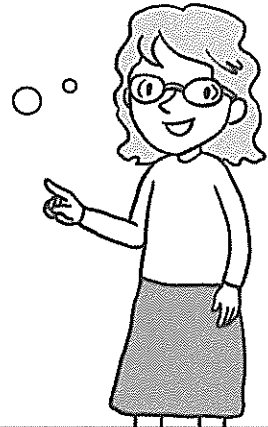
Example

$$23 \times 40 = \underline{920}$$

$$\begin{array}{r} 23 \\ \times 40 \\ \hline 920 \end{array}$$

Do this first:

$$\begin{array}{r} 23 \\ \times 4 \\ \hline 92 \end{array}$$

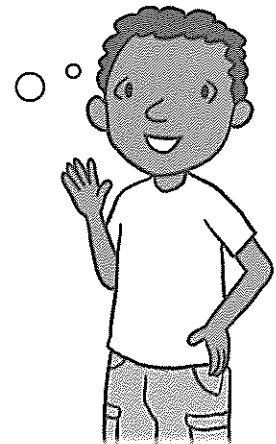


8. $46 \times 30 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 46 \\ \times 30 \\ \hline \end{array}$$

Do this first:

$$\begin{array}{r} 46 \\ \times 3 \\ \hline \end{array}$$



9. $58 \times 60 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 58 \\ \times 60 \\ \hline \end{array}$$

Do this first:

$$\begin{array}{r} 58 \\ \times 6 \\ \hline \end{array}$$



Name: _____

Date: _____

Multiply. Estimate to check your answer.

Example

$$23 \times 29 = \underline{667}$$

$$\begin{array}{r} 23 \\ \times 29 \\ \hline 207 \\ 460 \\ \hline 667 \end{array}$$

← 23×9
← 23×20
← add

Estimate:
23 rounds to 20.
29 rounds to 30.
 $20 \times 30 = 600$



The estimate shows the answer 667 is reasonable.

10. $48 \times 62 = \underline{\hspace{2cm}}$

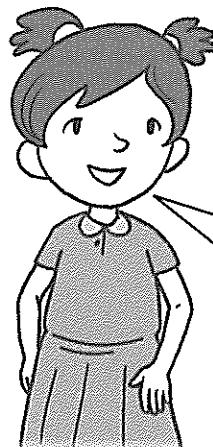
$$\begin{array}{r} 48 \\ \times 62 \\ \hline \square \\ \hline \square \\ \hline \square \end{array}$$

← 48×2
← 48×60
← add

Estimate:
48 rounds to _____.

62 rounds to _____.

_____ \times _____ = _____



The estimate shows the answer _____ is reasonable.

Name: _____

Date: _____

Multiply. Estimate to check your answer.

11. $92 \times 27 =$ _____

$$\begin{array}{r} 92 \\ \times 27 \\ \hline \\ \hline \\ \hline \end{array}$$

Estimate:
 92×27 is about _____ \times _____
= _____.

The estimate shows the answer _____
is reasonable.

12. $52 \times 81 =$ _____

$$\begin{array}{r} 52 \\ \times 81 \\ \hline \\ \hline \\ \hline \end{array}$$

Estimate:
 52×81 is about _____ \times _____
= _____.

The estimate shows the answer _____
is reasonable.

13. $48 \times 27 =$ _____

14. $63 \times 59 =$ _____

Name: _____

Date: _____

Multiply. Estimate to check your answer.

Example

$$138 \times 32 = \underline{4,416}$$

$$\begin{array}{r} 138 \\ \times 32 \\ \hline 276 \\ 4,140 \\ \hline 4,416 \end{array}$$

← 138×2
← 138×30
← add

Estimate:
138 rounds to 100.
32 rounds to 30.
 $100 \times 30 = 3,000$



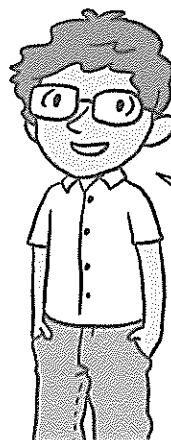
The estimate shows the answer 4,416 is reasonable.

15. $127 \times 53 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 127 \\ \times 53 \\ \hline \square \\ \square \\ \hline \square \end{array}$$

← 127×3
← 127×50
← add

Estimate:
127 rounds to _____.
53 rounds to _____.
_____ \times _____ = _____



The estimate shows the answer _____ is reasonable.

Name: _____

Date: _____

Multiply. Estimate to check your answer.

16. $203 \times 72 =$ _____

$$\begin{array}{r} 203 \\ \times 72 \\ \hline \\ \hline \\ \hline \end{array}$$

Estimate:
 203×72 is about _____ \times _____
= _____.

The estimate shows the answer _____
is reasonable.

17. $458 \times 34 =$ _____

$$\begin{array}{r} 458 \\ \times 34 \\ \hline \\ \hline \\ \hline \end{array}$$

Estimate:
 458×34 is about _____ \times _____
= _____.

The estimate shows the answer _____
is reasonable.

18. $574 \times 26 =$ _____

19. $728 \times 36 =$ _____

Name: _____

Date: _____

Multiply. Estimate to check your answer.

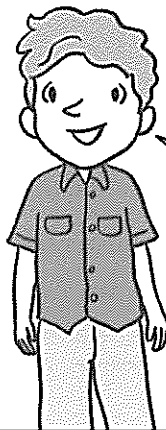
Example

$1,492 \times 22 = \underline{32,824}$

$$\begin{array}{r}
 1,492 \\
 \times 22 \\
 \hline
 2,984 \\
 29,840 \\
 \hline
 32,824
 \end{array}$$

← $1,492 \times 2$
 ← $1,492 \times 20$
 ← add

Estimate:
 1,492 rounds to 1,000.
 22 rounds to 20.
 $1,000 \times 20 = 20,000$



The estimate shows the answer 32,824 is reasonable.

20. $1,825 \times 48 = \underline{\hspace{2cm}}$

$$\begin{array}{r}
 1,825 \\
 \times 48 \\
 \hline
 \boxed{\hspace{2cm}} \\
 \boxed{\hspace{2cm}} \\
 \hline
 \boxed{\hspace{2cm}}
 \end{array}$$

← $1,825 \times 8$
 ← $1,825 \times 40$
 ← add

Estimate:
 1,825 rounds to _____.
 48 rounds to _____.
 _____ \times _____ = _____



The estimate shows the answer _____ is reasonable.

Name: _____

Date: _____

Multiply. Estimate to check your answer.

21. $2,175 \times 62 =$ _____

2, 1 7 5
× 6 2

Estimate:
 $2,175 \times 62$ is about _____ \times _____
= _____.

The estimate shows the answer _____
is reasonable.

22. $4,120 \times 77 =$ _____

4, 1 2 0
× 7 7

Estimate:
 $4,120 \times 77$ is about _____ \times _____
= _____.

The estimate shows the answer _____
is reasonable.

23. $1,608 \times 43 =$ _____

24. $4,637 \times 59 =$ _____

Name: _____

Date: _____

Worksheet 5 Dividing by Tens, Hundreds, or Thousands

Divide.

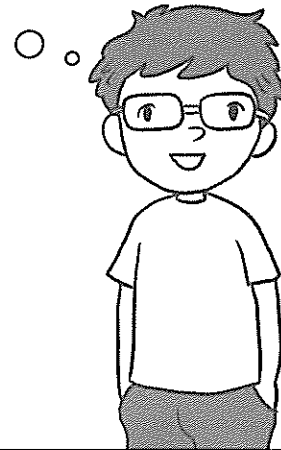
Example

$$80 \div 10 = \underline{8}$$

Think of multiplication.

$$8 \times 10 = 80$$

$$\text{So, } 80 \div 10 = 8.$$

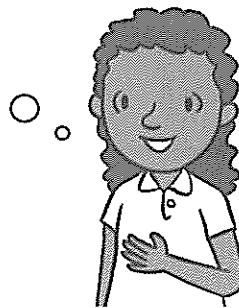


1. $120 \div 10 = \underline{\hspace{2cm}}$

Think of multiplication.

$$\underline{\hspace{2cm}} \times 10 = \underline{\hspace{2cm}}$$

$$\text{So, } \underline{\hspace{2cm}} \div 10 = \underline{\hspace{2cm}}.$$



2. $720 \div 10 = \underline{\hspace{2cm}}$

3. $970 \div 10 = \underline{\hspace{2cm}}$

4. $2,860 \div 10 = \underline{\hspace{2cm}}$

5. $3,790 \div 10 = \underline{\hspace{2cm}}$

Name: _____

Date: _____

Complete.

Example

$$\begin{aligned} 850 \div 50 &= (\underline{850} \div 10) \div 5 \\ &= \underline{85} \div 5 \\ &= \underline{17} \end{aligned}$$

6. $680 \div 40 = (\underline{\hspace{2cm}} \div 10) \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

7. $1,920 \div 60 = (\underline{\hspace{2cm}} \div 10) \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

8. $2,880 \div 80 = (\underline{\hspace{2cm}} \div 10) \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

Divide.

9. $420 \div 70 = \underline{\hspace{2cm}}$

10. $560 \div 80 = \underline{\hspace{2cm}}$

11. $630 \div 90 = \underline{\hspace{2cm}}$

12. $2,160 \div 90 = \underline{\hspace{2cm}}$

13. $2,100 \div 50 = \underline{\hspace{2cm}}$

14. $1,120 \div 40 = \underline{\hspace{2cm}}$

Name: _____

Date: _____

Complete.

Example

$$\begin{aligned} 1,800 \div 200 &= (\underline{1,800} \div 100) \div 2 \\ &= \underline{18} \div 2 \\ &= \underline{9} \end{aligned}$$

15. $5,600 \div 400 = (\underline{\hspace{2cm}} \div 100) \div \underline{\hspace{1cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

16. $8,400 \div 700 = (\underline{\hspace{2cm}} \div 100) \div \underline{\hspace{1cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

17. $27,600 \div 600 = (\underline{\hspace{2cm}} \div 100) \div \underline{\hspace{1cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

Divide.

18. $6,300 \div 700 = \underline{\hspace{2cm}}$ 19. $6,400 \div 800 = \underline{\hspace{2cm}}$

20. $4,800 \div 600 = \underline{\hspace{2cm}}$ 21. $8,100 \div 900 = \underline{\hspace{2cm}}$

22. $44,100 \div 900 = \underline{\hspace{2cm}}$ 23. $37,500 \div 500 = \underline{\hspace{2cm}}$

Name: _____

Date: _____

Complete.

Example

$$\begin{aligned} 21,000 \div 3,000 &= (\underline{21,000} \div 1,000) \div 3 \\ &= \underline{21} \div 3 \\ &= \underline{7} \end{aligned}$$

24. $52,000 \div 4,000 = (\underline{\hspace{2cm}} \div 1,000) \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

25. $91,000 \div 7,000 = (\underline{\hspace{2cm}} \div 1,000) \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

26. $144,000 \div 6,000 = (\underline{\hspace{2cm}} \div 1,000) \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

Divide.

27. $84,000 \div 7,000 = \underline{\hspace{2cm}}$

28. $128,000 \div 8,000 = \underline{\hspace{2cm}}$

29. $138,000 \div 6,000 = \underline{\hspace{2cm}}$

Name: _____

Date: _____

Estimate.

Example

$195 \div 48$ is about

$$\underline{200} \div \underline{50} = \underline{4}$$



48 rounds to 50.
200 is close to 195 and can be divided by 50.

divisor

quotient

$$50 \overline{)200} \quad 4$$

dividend

30. $138 \div 72$

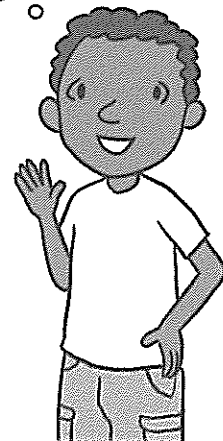
$138 \div 72$ is about

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

72 rounds to _____.

_____ is close to 138 and

can be divided by _____.



Name: _____

Date: _____

Estimate.

31. $314 \div 84$

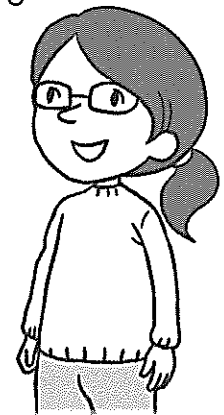
$314 \div 84$ is about

_____ \div _____ = _____.

84 rounds to _____.

_____ is close to 314 and

can be divided by _____.



32. $1,080 \div 58$

33. $4,752 \div 24$

Name: _____

Date: _____

Worksheet 6 Dividing by 2-Digit Numbers

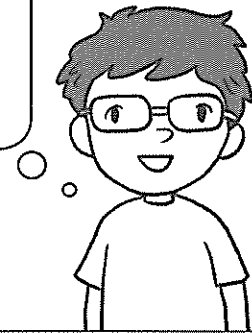
Divide.

Example

$$120 \div 20 = \underline{6}$$

$$\begin{array}{r} 6 \\ 20 \overline{) 120} \\ \underline{120} \\ 0 \end{array}$$

The number 120 can be divided exactly by 20. So I can also use this method:
 $12\cancel{0} \div 2\cancel{0} = 6$



1. $850 \div 50 = \underline{\hspace{2cm}}$

2. $3,150 \div 90 = \underline{\hspace{2cm}}$

3. $1,200 \div 80 = \underline{\hspace{2cm}}$

Name: _____

Date: _____

Divide.

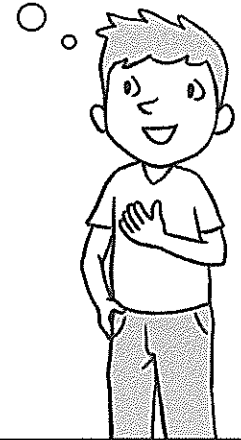
Example

$$240 \div 30 = \underline{8}$$

$$3 \times 8 = 24$$

$$30 \times 8 = 240$$

The answer is 8.



4. $280 \div 40 = \underline{\hspace{2cm}}$

$$4 \times \underline{\hspace{2cm}} = 28$$

$$40 \times \underline{\hspace{2cm}} = 280$$

The answer is .



5. $6,300 \div 70 = \underline{\hspace{2cm}}$

6. $4,500 \div 90 = \underline{\hspace{2cm}}$

Name: _____

Date: _____

Divide.

Example

$$200 \div 30 = \underline{6} \text{ R } \underline{20}$$

$$\begin{array}{r} 6 \\ 30 \overline{) 200} \\ \underline{180} \\ 20 \end{array}$$

remainder

The number 200 cannot be divided exactly by 30. So I cannot cancel the zeros to find the answer. I have to use long division.



7. $290 \div 30 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$

$$\begin{array}{r} \\ 30 \overline{) 290} \\ \underline{00} \\ 90 \\ \underline{00} \\ 90 \\ \underline{00} \\ 90 \\ \underline{00} \\ 90 \\ \underline{00} \\ 90 \end{array}$$

8. $570 \div 70 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$

Name: _____

Date: _____

Divide.*Example*

$$77 \div 22 = \underline{3} \text{ R } \underline{11}$$

$$\begin{array}{r} 3 \\ 22 \overline{) 77} \\ \underline{66} \\ 11 \end{array}$$

Estimate the quotient:
22 rounds to 20.

$$20 \overline{) 77} \rightarrow \begin{array}{r} 3 \\ 22 \overline{) 77} \\ \underline{66} \\ 11 \end{array} \rightarrow 11 \text{ is less than } 22.$$

The estimated quotient is just right.

Example

$$59 \div 18 = \underline{3} \text{ R } \underline{5}$$

$$\begin{array}{r} 3 \\ 18 \overline{) 59} \\ \underline{54} \\ 5 \end{array}$$

Estimate the quotient:
18 rounds to 20.

$$20 \overline{) 59} \rightarrow \begin{array}{r} 2 \\ 18 \overline{) 59} \\ \underline{36} \\ 23 \end{array} \rightarrow 23 \text{ is greater than } 18.$$

The estimated quotient is too small.
Try 3.

Name: _____

Date: _____

Divide.

Example

$$45 \div 12 = \underline{3} \text{ R } \underline{9}$$

$$\begin{array}{r} 3 \\ 12 \overline{) 45} \\ \underline{36} \\ 9 \end{array}$$

Estimate the quotient:
12 rounds to 10.

$$10 \overline{) 45} \Rightarrow 12 \overline{) 45}$$

$48 \rightarrow 48 \text{ is greater than } 45.$

The estimated quotient is too big.
Try 3.

9. $81 \div 35 = \underline{\hspace{2cm}} \text{ R } \underline{\hspace{2cm}}$

$$35 \overline{) 81}$$

Name: _____

Date: _____

Divide.

10. $79 \div 26 =$ _____ R _____

$$26 \overline{)79}$$

11. $92 \div 24 =$ _____ R _____

12. $67 \div 17 =$ _____ R _____

Name: _____

Date: _____

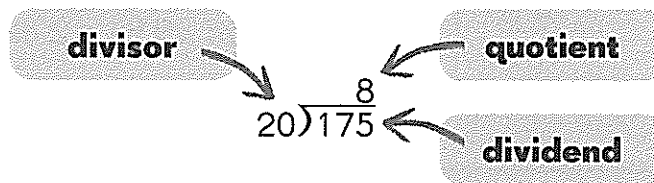
Divide.

Example

$$175 \div 20 = \underline{8} \text{ R } \underline{15}$$



Notice that when we divide a 3-digit number by a 2-digit number, if the first two digits of the dividend are less than the divisor, the quotient will be a 1-digit number.



13. $279 \div 40 = \underline{\quad\quad\quad} \text{ R } \underline{\quad\quad\quad}$

$$40 \overline{)279}$$

14. $351 \div 72 = \underline{\quad\quad\quad} \text{ R } \underline{\quad\quad\quad}$

15. $412 \div 58 = \underline{\quad\quad\quad} \text{ R } \underline{\quad\quad\quad}$

Name: _____

Date: _____

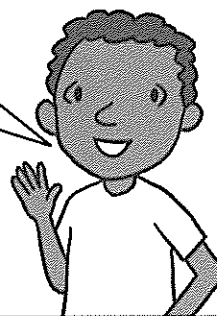
Divide.

Example

$$254 \div 20 = \underline{12} \text{ R } \underline{14}$$

$$\begin{array}{r} 12 \\ 20 \overline{) 254} \\ \underline{20} \\ 54 \\ \underline{40} \\ 14 \end{array}$$

When we divide a 3-digit number by a 2-digit number, if the first two digits of the dividend are greater than the divisor, the quotient will be a 2-digit number. For $254 \div 20$, 25 is greater than 20. So, the quotient will be a 2-digit number.



16. $417 \div 30 = \underline{\quad\quad\quad} \text{ R } \underline{\quad\quad\quad}$

$$30 \overline{) 417}$$

17. $915 \div 42 = \underline{\quad\quad\quad} \text{ R } \underline{\quad\quad\quad}$

18. $758 \div 36 = \underline{\quad\quad\quad} \text{ R } \underline{\quad\quad\quad}$

Name: _____

Date: _____

Divide.

19. $1,259 \div 50 =$ _____ R _____

$$50 \overline{) 1,259}$$

20. $1,386 \div 70 =$ _____ R _____

$$70 \overline{) 1,386}$$

21. $2,485 \div 42 =$ _____ R _____

22. $3,152 \div 54 =$ _____ R _____

Name: _____

Date: _____

Divide.

23. $1,843 \div 15 =$ _____ R _____

$$15 \overline{) 1,843}$$

24. $2,063 \div 18 =$ _____ R _____

$$18 \overline{) 2,063}$$

25. $3,248 \div 21 =$ _____ R _____

26. $3,819 \div 27 =$ _____ R _____

Name: _____

Date: _____

Worksheet 7 Order of Operations

Find the value of each numeric expression.

Example

$$9 + 8 - 4$$

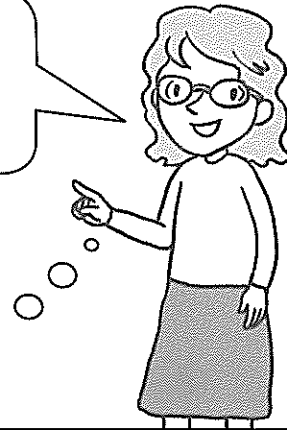
$$= \underline{17} - \underline{4}$$

$$= \underline{13}$$

A **numeric expression** contains only numbers and operation signs.

Work from left to right when there are only addition and subtraction.

Step 1 $9 + 8 = 17$
Step 2 $17 - 4 = 13$



1. $15 + 8 - 12 = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}$
 $= \underline{\hspace{2cm}}$

2. $28 - 13 + 17$

3. $21 - 19 + 16$

Name: _____

Date: _____

Find the value of each numeric expression.

Example

$$15 + 8 - 12 + 7$$

$$= \underline{23} - \underline{12} + \underline{7}$$

$$= \underline{11} + \underline{7}$$

$$= \underline{18}$$

4. $22 + 7 - 15 + 9 = \underline{\hspace{2cm}} - \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $\hspace{10em} = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
 $\hspace{10em} = \underline{\hspace{2cm}}$

5. $18 - 9 + 26 - 14$

6. $64 - 27 + 13 - 28$

Name: _____

Date: _____

Find the value of each numeric expression.

Example

$$8 \times 6 \div 2$$

$$= \underline{48} \div \underline{2}$$

$$= \underline{24}$$

Work from left to right when there are only multiplication and division.

Step 1 $8 \times 6 = 48$

Step 2 $48 \div 2 = 24$



7. $12 \times 9 \div 6 = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$

$$= \underline{\hspace{2cm}}$$

8. $25 \div 5 \times 15$

9. $252 \div 6 \times 18$

10. $14 \times 9 \div 21$

Name: _____

Date: _____

Find the value of each numeric expression.

Example

$$13 + 12 \times 4$$

$$= \underline{13} + \underline{48}$$

$$= \underline{61}$$

Work from left to right.
Carry out multiplication
and division before
addition and subtraction.

Step 1 $12 \times 4 = 48$

Step 2 $13 + 48 = 61$



11. $210 - 120 \div 10$

$$= \underline{\quad\quad\quad} - \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad}$$

12. $174 + 240 \div 3$

$$= \underline{\quad\quad\quad} + \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad}$$

13. $72 \times 6 - 18$

$$= \underline{\quad\quad\quad} - \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad}$$

14. $476 \div 7 - 15$

$$= \underline{\quad\quad\quad} - \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad}$$

15. $124 \times 8 + 59$

$$= \underline{\quad\quad\quad} + \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad}$$

16. $756 \div 9 + 142$

$$= \underline{\quad\quad\quad} + \underline{\quad\quad\quad}$$

$$= \underline{\quad\quad\quad}$$

Name: _____

Date: _____

Find the value of each numeric expression.

17. $24 + 36 \times 3$

18. $176 - 480 \div 8$

19. $212 + 368 \div 4$

20. $472 \div 8 - 26$

21. $108 \times 9 + 137$

22. $826 \div 7 + 247$

Find the value of each numeric expression.

23. $17 \times 2 - 75 \div 5$

24. $28 \times 3 + 72 \div 9$

25. $128 \div 4 - 156 \div 6$

26. $4 \times 79 - 225 \div 5$

27. $217 + 96 \div 8 - 139$

28. $414 + 176 \div 8 \times 3$

Name: _____

Date: _____

Find the value of each numeric expression.

Example

$$\begin{aligned} & 9 \times (12 + 23) \\ &= \underline{\quad 9 \quad} \times \underline{\quad 35 \quad} \\ &= \underline{\quad 315 \quad} \end{aligned}$$

Carry out the operation in the parentheses first.



Step 1 $12 + 23 = 35$
Step 2 $9 \times 35 = 315$

29. $164 + (135 - 78)$

$$\begin{aligned} &= \underline{\quad\quad\quad} + \underline{\quad\quad\quad} \\ &= \underline{\quad\quad\quad} \end{aligned}$$

30. $36 - (150 - 126)$

$$\begin{aligned} &= \underline{\quad\quad\quad} - \underline{\quad\quad\quad} \\ &= \underline{\quad\quad\quad} \end{aligned}$$

31. $408 - (219 + 39)$

$$\begin{aligned} &= \underline{\quad\quad\quad} - \underline{\quad\quad\quad} \\ &= \underline{\quad\quad\quad} \end{aligned}$$

32. $6 \times (124 - 77)$

$$\begin{aligned} &= \underline{\quad\quad\quad} \times \underline{\quad\quad\quad} \\ &= \underline{\quad\quad\quad} \end{aligned}$$

33. $476 \div (3 + 4)$

$$\begin{aligned} &= \underline{\quad\quad\quad} \div \underline{\quad\quad\quad} \\ &= \underline{\quad\quad\quad} \end{aligned}$$

34. $8 \times (273 - 169)$

$$\begin{aligned} &= \underline{\quad\quad\quad} \times \underline{\quad\quad\quad} \\ &= \underline{\quad\quad\quad} \end{aligned}$$

Name: _____

Date: _____

Find the value of each numeric expression.

35. $8 \times (24 + 15)$

36. $100 \div (5 \times 5)$

37. $43 + (37 \times 8)$

38. $324 \div (102 - 96)$

39. $253 + (162 - 59)$

40. $552 \div (5 + 3)$

41. $517 - (309 + 107)$

42. $9 \times (500 - 256)$

Name: _____

Date: _____

Find the value of each numeric expression.

43. $24 + (35 + 77) \div 8$
= _____ + _____ \div _____
= _____ + _____
= _____

Step 1 Carry out the operation in the parentheses.

Step 2 Divide.

Step 3 Add.

44. $12 \times 7 - (145 \div 5)$
= _____ - _____
= _____

Step 1 Carry out the operation in the parentheses.

Step 2 Multiply.

Step 3 Subtract.

45. $4 \times (248 \div 4) + 8$
= _____ \times _____ + _____
= _____ + _____
= _____

46. $483 \div (82 - 75) + 326$
= _____ \div _____ + _____
= _____ + _____
= _____

Find the value of each numeric expression.

47. $99 - 43 + (28 \div 7)$

48. $(59 - 23) - 4 \times 8$



Name: _____

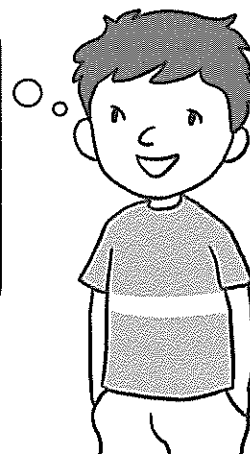
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Find the value of each numeric expression.

Example

$$\begin{aligned} & [28 \times (17 + 35)] \\ &= [\underline{28} \times \underline{52}] \\ &= \underline{1456} \end{aligned}$$

Carry out operations in the innermost grouping first. In this case, you add first because it is in the parentheses. Then you do the outer bracket.



49. $[28 \times (143 - 34)] = [\underline{\hspace{2cm}} \times \underline{\hspace{2cm}}]$
 $= \underline{\hspace{2cm}}$

50. $[(614 - 556) + 89]$

51. $[(713 + 217) \div 3]$

Name: _____

Date: _____

Find the value of each numeric expression.

Example

$$\begin{aligned} 216 \div [(18 - 12) \times 3] &= \frac{216}{\quad} \div \left[\frac{6}{\quad} \times \frac{3}{\quad} \right] \\ &= \frac{216}{\quad} \div \frac{18}{\quad} \\ &= \frac{12}{\quad} \end{aligned}$$

52. $[72 - (21 + 3)] \div 8$

53. $704 \div [(52 - 44) \times 2]$

54. $[99 - (43 + 8)] \times 15$

55. $78 - [6 \times 8 - (12 + 7 - 3)]$

56. $(120 - 66) \div [(42 + 13) - 4 \times 7]$

Name: _____

Date: _____

Worksheet 8 Real-World Problems: Multiplication and Division

Fill in the circle next to the correct answer.

1. Samantha had 48 stamps. She gave 15 stamps to Cindy. Samantha then bought another 9 stamps. How many stamps did Samantha have in the end?

(A) $48 + 15 + 9$

(B) $48 - 15 - 9$

(C) $48 - 15 + 9$

(D) $48 + 15 - 9$

2. Mrs. Lee put 4 flowers into each of her 5 vases. She had 12 flowers left. How many flowers did she have altogether?

(A) $4 \times 5 + 12$

(B) $(4 + 12) \times 5$

(C) $4 \times (5 + 12)$

(D) $4 \times 5 \times 12$

3. There were 6 rows of tables in a room. In each row, there were 8 tables. Then Julie rearranged the tables so that there were only 4 rows. How many tables were there in each row in the end?

(A) $6 \times (8 \times 4)$

(B) $4 \times 6 \div 8$

(C) $6 \times 4 \times 8$

(D) $6 \times 8 \div 4$

4. Mr. Nathan bought a piano for \$6,194. He made an initial payment of \$1,250. He made equal, monthly payments for the next 6 months. How much did Mr. Nathan pay each month?

(A) $\$6,194 - \$1,250 \div 6$

(B) $\$6,194 - \$1,250 \times 6$

(C) $(\$6,194 - \$1,250) \div 6$

(D) $(\$6,194 - \$1,250) \times 6$

Name: _____

Date: _____

Solve.

5. When a number is divided by 57, the answer is 72.
What is the number?

$$\underline{\hspace{2cm}} \div 57 = 72$$

The number is _____.

6. When a number is multiplied by 46, the answer is 5,520.
What is the number?

7. The product of two numbers is 7,098. One of the numbers is 78.
Find the other number.

Name: _____

Date: _____

Solve.

8. Tran can type 56 words in a minute. How many words can he type in 45 minutes?
9. A business owner paid a total of \$7,392 in 48 months for her inventory. She paid the same amount of money each month. How much money did she pay each month?
10. Mrs. Gerber is preparing fruit skewers for a neighborhood block party. She has 275 pieces of fruit. She skewers 4 pieces of fruit on each stick. How many sticks does she need?

Name: _____

Date: _____

Solve.

11. Jorgen bought 6 boxes of cranberries and 7 boxes of blueberries. Each box contained 125 berries. How many berries did he buy in all?

12. Anna owed a bank \$12,750. She paid the bank \$475 every month. How much money did Anna still owe the bank after 22 months?

13. The table shows the pay rates for the staff at a café. Harry works at the café for 8 hours on each weekday from Monday to Friday. He also works for 5 hours each Saturday and Sunday. How much money does Harry make in a week?

Weekdays	\$15 per hour
Weekends	\$25 per hour

Name: _____

Date: _____

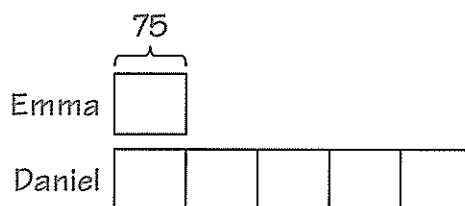
Worksheet 9 Real-World Problems: Multiplication and Division

Draw a model to represent the statements.

Example

Emma has 75 paper clips.

Daniel has 5 times as many paper clips as Emma.



1. Kathy's salary is \$720 per month.
Her father's salary is 3 times as much as Kathy's salary.

Name: _____

Date: _____

Solve. Draw models to help you.

2. Taylor has 83 stamps. Alyssa has 3 times as many stamps as Taylor.

a. Draw a model to show the number of stamps each child has.

b. How many stamps does Alyssa have?

c. How many stamps do they have altogether?

3. Container A has 4 times as much water as container B. Container C has 3 times as much water as container A. Container B has 87 gallons of water. How much water is in the three containers altogether?

Name: _____

Date: _____

Solve. Draw models to help you.

4. Box A contains 53 cubes and has a total mass of 1,760 grams. Box B contains 18 cubes and has a total mass of 1,620 grams. The mass of Box A is the same as the mass of Box B. Every cube has the same mass. Find the mass of each cube.

5. Ms. Brooks and Mrs. Gray had the same amount of money. Ms. Brooks gave \$1,140 to a charity, and Mrs. Gray gave \$580 to a different charity. In the end, Mrs. Gray had 9 times as much money as Ms. Brooks. How much money did each person have at first?

Name: _____

Date: _____

Solve. Draw models to help you.

6. Two crates contain apples, pears, and oranges. There are 184 apples and pears in the first crate, and 248 apples and oranges in the second crate. There are 3 times as many oranges as pears. How many apples are there altogether?

7. Chris is 4 times as old as Peter. Sara is 6 years younger than Chris. The total age of Chris, Peter, and Sara is 66 years. How old is Sara?

Name: _____

Date: _____

CHAPTER
3

Fractions and Mixed Numbers

Worksheet 1 Adding Unlike Fractions

Circle the unlike fraction in each set.

1. $\frac{3}{10}, \frac{2}{5}, \frac{7}{10}$

2. $\frac{2}{9}, \frac{5}{9}, \frac{1}{3}$

Write a like fraction and an unlike fraction for each fraction.

	Like Fraction	Unlike Fraction
3.	$\frac{1}{5}$	
4.	$\frac{3}{10}$	
5.	$\frac{4}{7}$	
6.	$\frac{5}{9}$	

Identify the like fractions. Put them into sets.

7. $\frac{1}{3}, \frac{5}{9}, \frac{3}{8}, \frac{2}{7}, \frac{4}{5}, \frac{8}{9}, \frac{3}{7}, \frac{3}{4}, \frac{1}{2}, \frac{5}{6}, \frac{1}{9}, \frac{7}{8}$

Set 1

Set 2

Set 3

Name: _____

Date: _____

List the first six multiples of each number.

Example

Multiples of 5: 5, 10, 15, 20, 25, 30

8. Multiples of 3: _____

9. Multiples of 4: _____

Each rectangle on the right is divided into smaller equal parts by the dotted lines. Find the equivalent fractions for the shaded parts of the rectangle.

Example

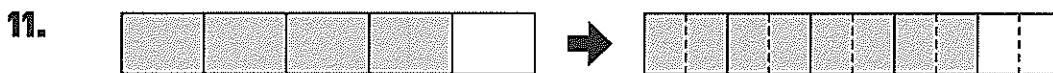


$$\frac{1}{2} = \frac{2}{4}$$

$\frac{1}{2}$ and $\frac{2}{4}$ are **equivalent fractions**.
They have the same value.



$$\frac{2}{3} = \frac{\boxed{}}{6}$$



$$\frac{4}{5} = \frac{\boxed{}}{\boxed{}}$$

Name: _____

Date: _____

List the equivalent fractions of the first fraction. Stop when you get a fraction that has the same denominator as the second fraction. Then find the least common denominator of both fractions.

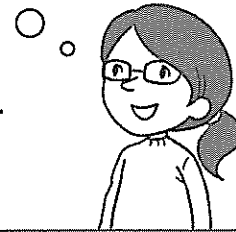
Example

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$$

$$\frac{1}{6}$$

The **least common multiple** of 2 and 6 is 6. The **least common denominator** of $\frac{1}{2}$ and $\frac{1}{6}$ is 6.

The least common denominator of $\frac{1}{2}$ and $\frac{1}{6}$ is 6.



12. $\frac{1}{3} =$ _____

$$\frac{2}{9}$$

The least common denominator of $\frac{1}{3}$ and $\frac{2}{9}$ is _____.

13. $\frac{3}{4} =$ _____

$$\frac{1}{16}$$

The least common denominator of $\frac{3}{4}$ and $\frac{1}{16}$ is _____.

14. $\frac{2}{3} =$ _____

$$\frac{2}{15}$$

The least common denominator of $\frac{2}{3}$ and $\frac{2}{15}$ is _____.

Name: _____

Date: _____

List the equivalent fractions of each fraction. Stop when you get equivalent fractions with the same denominator. Then find the least common denominator of both fractions.

Example

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$$

$$\frac{1}{3} = \frac{2}{6}$$

The least common denominator of $\frac{1}{2}$ and $\frac{1}{3}$ is 6.

15. $\frac{1}{3} =$ _____

$$\frac{3}{4} =$$

The least common denominator of $\frac{1}{3}$ and $\frac{3}{4}$ is _____.

16. $\frac{1}{4} =$ _____

$$\frac{1}{6} =$$

The least common denominator of $\frac{1}{4}$ and $\frac{1}{6}$ is _____.

17. $\frac{5}{6} =$ _____

$$\frac{7}{8} =$$

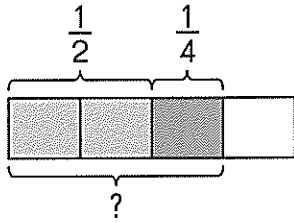
The least common denominator of $\frac{5}{6}$ and $\frac{7}{8}$ is _____.

Name: _____

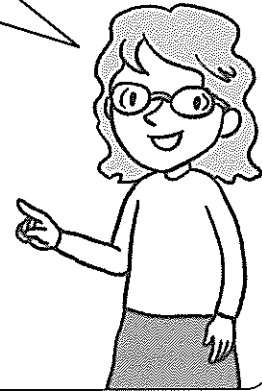
Date: _____

Shade and label each model to show the fractions. Then complete the addition sentence.

Example



To add unlike fractions, change them to fractions with the same denominator. The least common denominator of $\frac{1}{2}$ and $\frac{1}{4}$ is 4.



$$\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4}$$

18.



$$\frac{1}{3} + \frac{2}{9} = \boxed{} + \boxed{} = \boxed{}$$

19.



$$\frac{2}{5} + \frac{3}{10} = \boxed{} + \boxed{} = \boxed{}$$

20.



$$\frac{3}{4} + \frac{1}{12} = \boxed{} + \boxed{} = \boxed{} = \boxed{}$$

Name: _____

Date: _____

Add. Express each sum in simplest form.

Example

$$\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8}$$
$$= \frac{5}{8}$$

21. $\frac{1}{4} + \frac{1}{2} = \frac{1}{4} + \boxed{}$

$$= \boxed{}$$

22. $\frac{1}{10} + \frac{1}{5}$

23. $\frac{2}{3} + \frac{1}{6}$

24. $\frac{3}{4} + \frac{1}{8}$

25. $\frac{1}{9} + \frac{2}{3}$

26. $\frac{1}{4} + \frac{1}{12}$

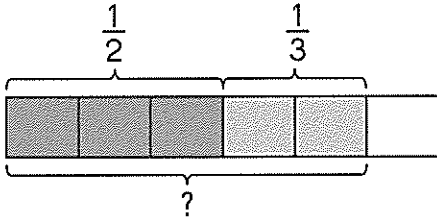
27. $\frac{2}{3} + \frac{1}{12}$

Name: _____

Date: _____

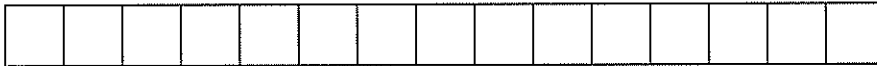
Shade and label each model to show the fractions. Then complete the addition sentence.

Example



$$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

28.



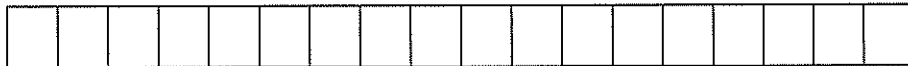
$$\frac{1}{3} + \frac{1}{5} = \text{ } + \text{ } = \text{ }$$

29.



$$\frac{3}{7} + \frac{1}{2} = \text{ } + \text{ } = \text{ }$$

30.



$$\frac{4}{9} + \frac{1}{2} = \text{ } + \text{ } = \text{ }$$

Name: _____

Date: _____

Add.

Example

$$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12}$$
$$= \frac{7}{12}$$

31. $\frac{1}{5} + \frac{1}{2} = \frac{2}{10} + \frac{\quad}{\quad}$

$$= \frac{\quad}{\quad}$$

32. $\frac{1}{4} + \frac{1}{9}$

33. $\frac{1}{7} + \frac{1}{8}$

34. $\frac{2}{5} + \frac{1}{4}$

35. $\frac{2}{5} + \frac{3}{8}$

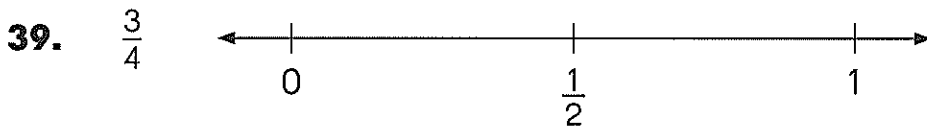
36. $\frac{2}{9} + \frac{2}{7}$

37. $\frac{3}{11} + \frac{2}{3}$

Name: _____

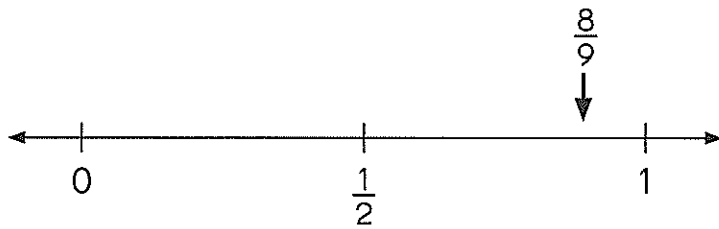
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Mark the fractions on the number line.

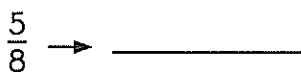
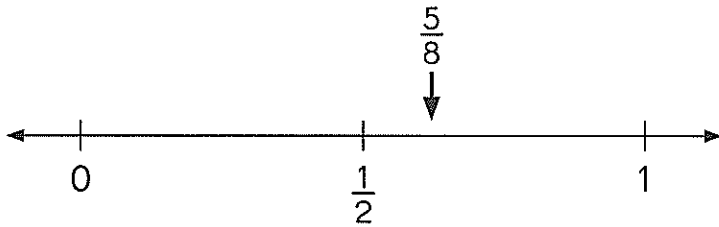


Look at the number line. Round the fraction to 0, $\frac{1}{2}$, or 1.

Example



40.



Name: _____

Date: _____

Use benchmarks to estimate each sum.

Example

$$\begin{array}{r} \frac{1}{4} \\ \downarrow \\ 0 \end{array} + \begin{array}{r} \frac{2}{5} \\ \downarrow \\ \frac{1}{2} \end{array} = \frac{1}{2}$$

Common **benchmarks** for estimating fractions are 0 , $\frac{1}{2}$, and 1 .

41. $\frac{3}{4} + \frac{7}{8}$

$$\begin{array}{r} \frac{3}{4} \\ \downarrow \\ \underline{\quad} \end{array} + \begin{array}{r} \frac{7}{8} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

42. $\frac{11}{12} + \frac{7}{12}$

$$\begin{array}{r} \frac{11}{12} \\ \downarrow \\ \underline{\quad} \end{array} + \begin{array}{r} \frac{7}{12} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

43. $\frac{5}{9} + \frac{5}{12} + \frac{10}{11}$

$$\begin{array}{r} \frac{5}{9} \\ \downarrow \\ \underline{\quad} \end{array} + \begin{array}{r} \frac{5}{12} \\ \downarrow \\ \underline{\quad} \end{array} + \begin{array}{r} \frac{10}{11} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

44. $\frac{6}{9} + \frac{11}{12}$

45. $\frac{3}{8} + \frac{5}{9}$

46. $\frac{1}{2} + \frac{4}{5} + \frac{8}{9}$

47. $\frac{5}{6} + \frac{6}{7} + \frac{7}{8}$

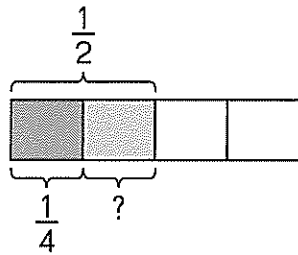
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Date: _____

Worksheet 2 Subtracting Unlike Fractions

Shade and label each model to show the fractions. Then complete the subtraction sentence.

Example



$$\frac{1}{2} - \frac{1}{4} = \frac{2}{4} - \frac{1}{4} = \frac{1}{4}$$

1.



$$\frac{2}{3} - \frac{5}{12} = \boxed{} - \boxed{} = \boxed{} = \boxed{}$$

2.



$$\frac{7}{9} - \frac{1}{3} = \boxed{} - \boxed{} = \boxed{}$$

3.



$$\frac{5}{8} - \frac{1}{4} = \boxed{} - \boxed{} = \boxed{}$$

Name: _____

Date: _____

Subtract. Express each difference in simplest form.

Example

$$\frac{1}{3} - \frac{1}{9} = \frac{3}{9} - \frac{1}{9}$$
$$= \frac{2}{9}$$

4. $\frac{1}{2} - \frac{1}{8} = \frac{4}{8} - \frac{1}{8}$

$$= \frac{3}{8}$$

5. $\frac{1}{5} - \frac{1}{10}$

6. $\frac{5}{6} - \frac{2}{3}$

7. $\frac{7}{8} - \frac{1}{4}$

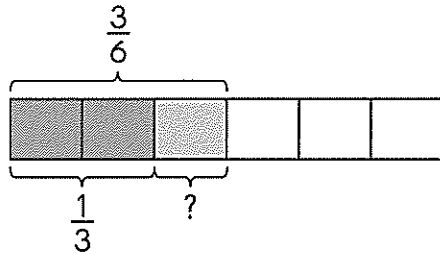
8. $\frac{3}{4} - \frac{5}{12}$

Name: _____

Date: _____

Shade and label each model to show the fractions. Then complete the subtraction sentence.

Example



$$\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$$

9.



$$\frac{1}{3} - \frac{1}{4} = \text{ } - \text{ } = \text{ }$$

10.



$$\frac{5}{7} - \frac{1}{2} = \text{ } - \text{ } = \text{ }$$

11.



$$\frac{3}{5} - \frac{1}{3} = \text{ } - \text{ } = \text{ }$$

Name: _____

Date: _____

Subtract.

Example

$$\frac{1}{2} - \frac{1}{5} = \frac{5}{10} - \frac{2}{10}$$
$$= \frac{3}{10}$$

12. $\frac{1}{3} - \frac{1}{5} = \frac{5}{15} - \frac{\quad}{\quad}$

$$= \frac{\quad}{\quad}$$

13. $\frac{1}{5} - \frac{1}{6}$

14. $\frac{1}{7} - \frac{1}{8}$

15. $\frac{4}{5} - \frac{1}{4}$

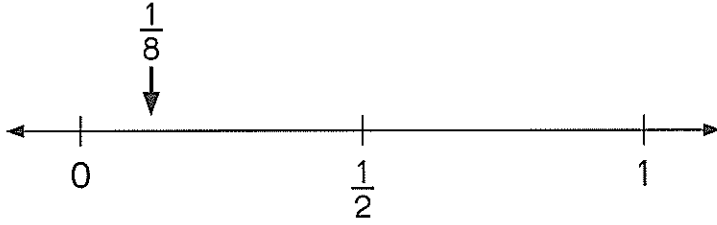
16. $\frac{5}{8} - \frac{3}{5}$

Name: _____

Date: _____

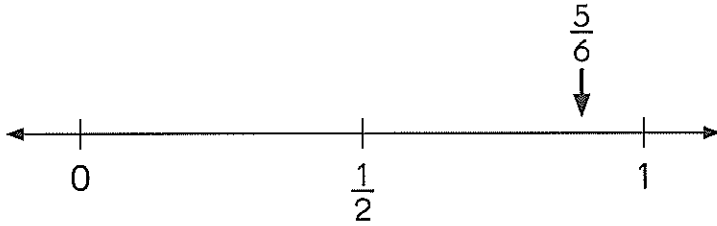
Look at the number line. Round the fraction to 0, $\frac{1}{2}$, or 1.

Example



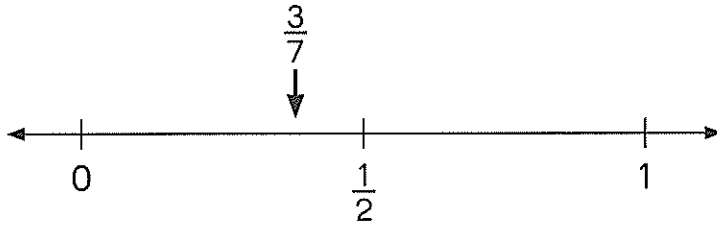
$\frac{1}{8} \rightarrow$ 0

17.



$\frac{5}{6} \rightarrow$ _____

18.



$\frac{3}{7} \rightarrow$ _____

Name: _____

Date: _____

Use benchmarks to estimate each difference.

Example

$$\begin{array}{r} \frac{7}{8} \\ \downarrow \\ 1 \end{array} - \begin{array}{r} \frac{4}{7} \\ \downarrow \\ \frac{1}{2} \end{array} = \frac{1}{2}$$

Common **benchmarks** for estimating fractions are 0, $\frac{1}{2}$, and 1.

19. $\frac{1}{2} - \frac{1}{4}$

$$\begin{array}{r} \frac{1}{2} \\ \downarrow \\ \underline{\quad} \end{array} - \begin{array}{r} \frac{1}{4} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

20. $\frac{11}{12} - \frac{1}{2}$

$$\begin{array}{r} \frac{11}{12} \\ \downarrow \\ \underline{\quad} \end{array} - \begin{array}{r} \frac{1}{2} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

21. $\frac{5}{6} - \frac{8}{9}$

$$\begin{array}{r} \frac{5}{6} \\ \downarrow \\ \underline{\quad} \end{array} - \begin{array}{r} \frac{8}{9} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

22. $\frac{10}{11} - \frac{5}{12}$

$$\begin{array}{r} \frac{10}{11} \\ \downarrow \\ \underline{\quad} \end{array} - \begin{array}{r} \frac{5}{12} \\ \downarrow \\ \underline{\quad} \end{array} = \underline{\quad}$$

23. $\frac{4}{5} - \frac{11}{22}$

24. $\frac{7}{8} - \frac{1}{9}$

25. $\frac{1}{2} - \frac{6}{11}$

26. $\frac{8}{9} - \frac{3}{7}$

Name: _____

Date: _____

Worksheet 3 Fractions, Mixed Numbers, and Division Expressions

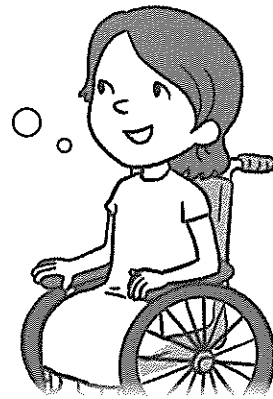
Write each improper fraction as a mixed number.

1. $\frac{4}{3} = \frac{3}{3} + \frac{1}{3}$

$= 1 +$

$=$

The number 3 is the denominator.
I need a 3 for a numerator.
 $4 = 3 + 1$



2. $\frac{6}{5} =$ $+$

$= 1 +$

$=$

3. $\frac{7}{3}$

4. $\frac{9}{5}$

Name: _____

Date: _____

Look at the diagram. Complete.

Example

Divide 3 circles into 5 equal parts each. What fraction of a whole is each part? How many parts are in each group?

$$\underline{\quad 3 \quad} \div \underline{\quad 5 \quad} = \frac{\boxed{3}}{\boxed{5}}$$

5.

$$\underline{\quad \quad} \div \underline{\quad \quad} = \frac{\boxed{\quad}}{\boxed{\quad}}$$

Name: _____

Date: _____

Write each division expression as a fraction.

Example

division expression $\rightarrow 2 \div 7 = \frac{2}{7}$

6. $4 \div 5 = \frac{\square}{\square}$

7. $5 \div 9 = \frac{\square}{\square}$

8. $7 \div 11 = \frac{\square}{\square}$

9. $5 \div 8 = \frac{\square}{\square}$

Write each fraction as a division expression.

Example

$\frac{9}{10} = \frac{9}{10} \div \frac{10}{10}$

10. $\frac{3}{8} = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$

11. $\frac{5}{6} = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$

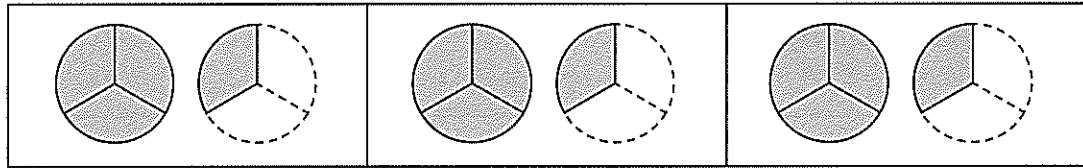
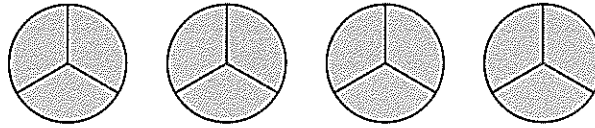
12. $\frac{4}{11} = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}}$

Name: _____

Date: _____

Look at the diagram. Complete.

13.



$$\begin{aligned}
 \underline{4} \div \underline{3} &= \frac{\boxed{4}}{\boxed{3}} \\
 &= \frac{\boxed{3}}{\boxed{3}} + \frac{\boxed{1}}{\boxed{3}} \\
 &= \boxed{1} + \frac{\boxed{}}{\boxed{}} \\
 &= \boxed{1} \frac{\boxed{}}{\boxed{}}
 \end{aligned}$$

Divide 4 circles into 3 equal parts each. What fraction of the whole is each part? How many parts are in each group?



Name: _____

Date: _____

Divide. Express your answer as a mixed number.

14. $8 \div 5 = \frac{\square}{\square}$

$= \frac{\square}{\square} + \frac{\square}{\square}$

$= \square + \frac{\square}{\square}$

$= \square \frac{\square}{\square}$

15. $7 \div 2 = \frac{\square}{\square}$

$= \frac{\square}{\square} + \frac{\square}{\square}$

$= \square + \frac{\square}{\square}$

$= \square \frac{\square}{\square}$

16. $10 \div 3$

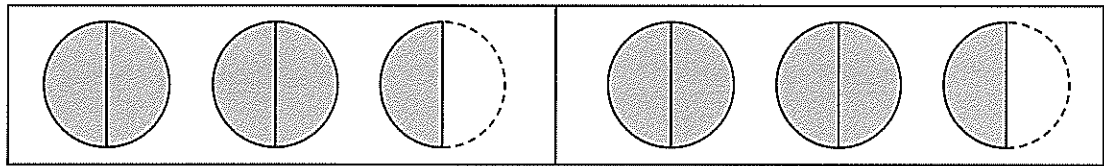
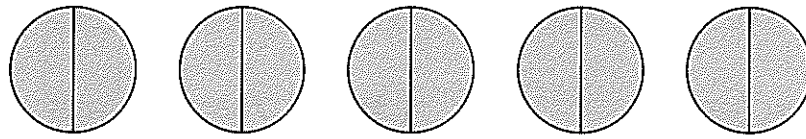
17. $17 \div 6$

Name: _____

Date: _____

Look at the diagram. Complete.

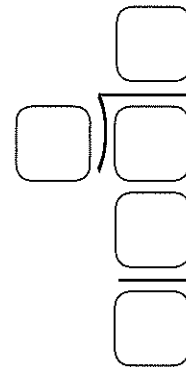
18.



$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \boxed{\hspace{1cm}} \frac{\boxed{\hspace{1cm}}}{\boxed{\hspace{1cm}}}$$



How do you use long division to find the answer?



Divide. Express your answer as a mixed number in simplest form.

19. $9 \div 2$

20. $14 \div 4$

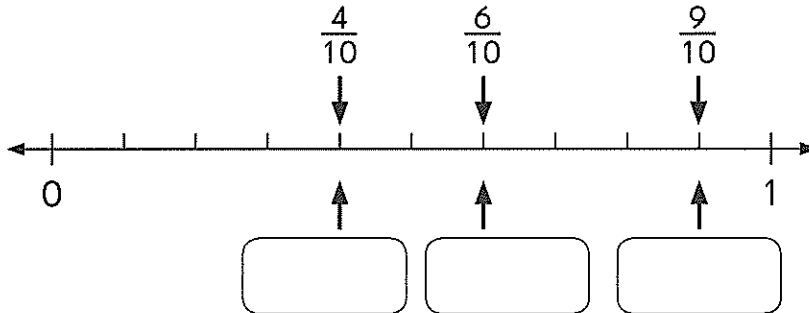
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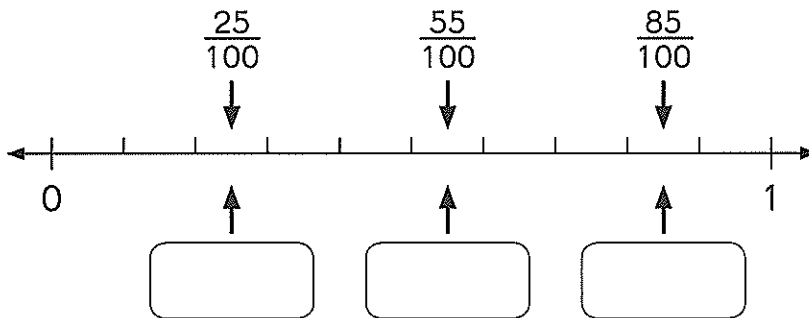
Worksheet 4 Expressing Fractions, Division Expressions, and Mixed Numbers as Decimals

Write each fraction shown on the number line as a decimal.

1.



2.



Write each fraction as a decimal.

3. $\frac{7}{10} =$ _____

4. $\frac{3}{10} =$ _____

5. $\frac{15}{100} =$ _____

6. $\frac{43}{100} =$ _____

7. $\frac{82}{100} =$ _____

8. $\frac{66}{100} =$ _____

Name: _____

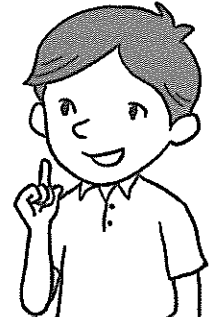
Date: _____

Write each fraction as a decimal.

Example

$$\begin{aligned}\frac{3}{5} &= \frac{\boxed{3} \times \boxed{2}}{\boxed{5} \times \boxed{2}} \\ &= \frac{\boxed{6}}{10} \\ &= \underline{\quad 0.6 \quad}\end{aligned}$$

Change to a fraction with a denominator of 10 or 100.



9. $\frac{4}{5} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$

$$= \frac{\boxed{}}{10}$$
$$= \underline{\hspace{2cm}}$$

10. $\frac{3}{4} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$

$$= \frac{\boxed{}}{100}$$
$$= \underline{\hspace{2cm}}$$

11. $\frac{1}{2}$

12. $\frac{12}{50}$

13. $\frac{9}{20}$

14. $\frac{21}{25}$

Name: _____

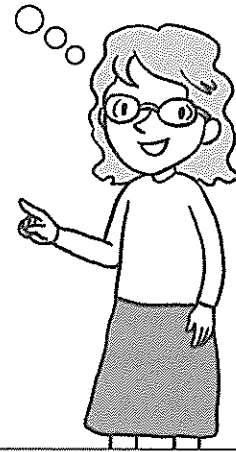
Date: _____

Write each division expression as a decimal.

Example

$$\begin{aligned} 6 \div 5 &= \frac{6}{5} \\ &= \frac{5}{5} + \frac{1}{5} \\ &= \frac{1}{1} + \frac{0.2}{1} \\ &= 1.2 \end{aligned}$$

$$\frac{1}{5} = \frac{2}{10} = 0.2$$



15. $5 \div 4 = \frac{\square}{4}$

$$= \frac{\square}{4} + \frac{\square}{4}$$
$$= \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$
$$= \underline{\hspace{2cm}}$$

16. $7 \div 2 = \frac{\square}{2}$

$$= \frac{\square}{2} + \frac{\square}{2}$$
$$= \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$
$$= \underline{\hspace{2cm}}$$

17. $13 \div 10$

18. $7 \div 5$

19. $10 \div 8$

20. $35 \div 25$

Name: _____

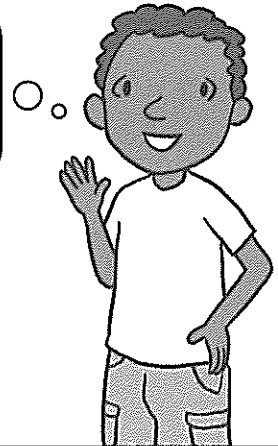
Date: _____

Write each mixed number as a decimal.

Example

$$\begin{aligned} 1\frac{4}{5} &= 1 + \frac{\boxed{4}}{5} \\ &= 1 + \underline{0.8} \\ &= \underline{1.8} \end{aligned}$$

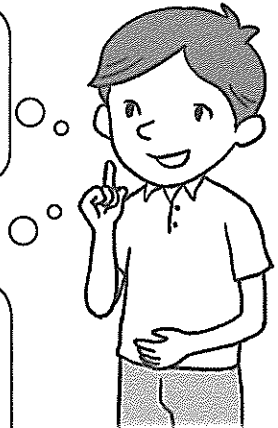
$$\frac{4}{5} = \frac{\boxed{8}}{10} = \underline{0.8}$$



21. $3\frac{11}{25} = 3 + \frac{\boxed{}}{25}$

$$= \underline{} + \underline{}$$
$$= \underline{}$$

$$\frac{11}{25} = \frac{\boxed{}}{100} = \underline{}$$



22. $5\frac{17}{20} = \boxed{} + \boxed{}$

$$= \underline{} + \underline{}$$
$$= \underline{}$$

$$\frac{17}{20} = \frac{\boxed{}}{100} = \underline{}$$

23. $2\frac{3}{4}$

24. $5\frac{49}{50}$

Name: _____

Date: _____

Worksheet 5 Adding Mixed Numbers

Add. Express each sum in simplest form.

1. $\frac{3}{4} + \frac{1}{2} = \frac{\square}{4} + \frac{\square}{4}$
 $= \frac{\square}{4}$
 $= \square$

2. $\frac{2}{3} + \frac{5}{6} = \frac{\square}{6} + \frac{\square}{6}$
 $= \frac{\square}{6}$
 $= \square \frac{\square}{6}$
 $= \square$

3. $\frac{7}{8} + \frac{3}{4}$

4. $\frac{2}{3} + \frac{4}{9}$

Name: _____

Date: _____

Add. Express each sum in simplest form.*Example*

$$\frac{2}{5} + 1\frac{7}{10} = \frac{4}{10} + \frac{7}{10} + 1$$

$$= 1\frac{11}{10}$$

$$= 2\frac{1}{10}$$

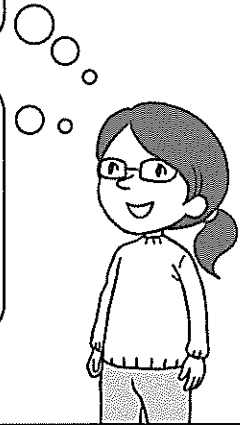
$$\frac{2}{5} = \frac{4}{10}$$

$$1\frac{7}{10} = \frac{7}{10} + 1$$

$$1\frac{11}{10} = 1 + \frac{11}{10}$$

$$= 1 + 1\frac{1}{10}$$

$$= 2\frac{1}{10}$$



5. $1\frac{3}{8} + \frac{3}{4} =$ $+$ $+$

$$=$$

$$=$$

6. $\frac{5}{6} + 2\frac{5}{12}$

7. $3\frac{2}{3} + \frac{5}{9}$

Name: _____

Date: _____

Add. Express each sum in simplest form.

Example

$$1\frac{1}{3} + 2\frac{1}{9} = 1\frac{\boxed{3}}{9} + 2\frac{\boxed{1}}{9}$$
$$= \boxed{3\frac{4}{9}}$$

Add the fractions.

$$\frac{3}{9} + \frac{1}{9} = \frac{4}{9}$$

Add the whole numbers.

$$1 + 2 = 3$$



8. $2\frac{1}{5} + 4\frac{1}{6} = 2\frac{\boxed{}}{30} + 4\frac{\boxed{}}{30}$

$$= \boxed{}$$

9. $3\frac{1}{7} + 5\frac{1}{3} = 3\frac{\boxed{}}{21} + 5\frac{\boxed{}}{21}$

$$= \boxed{}$$

10. $2\frac{2}{3} + 1\frac{3}{5}$

11. $1\frac{5}{7} + 3\frac{1}{2}$

12. $2\frac{3}{4} + 4\frac{3}{5}$

13. $3\frac{3}{7} + 2\frac{5}{6}$

Name: _____

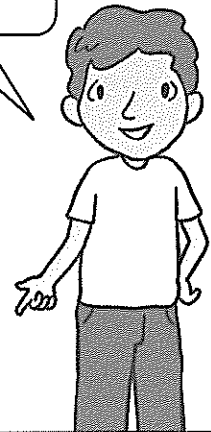
Date: _____

Use benchmarks to estimate each sum.

Example

$$\begin{array}{r} 2\frac{4}{5} + 1\frac{4}{9} \\ \downarrow \quad \downarrow \\ \underline{3} + \underline{1\frac{1}{2}} = \underline{4\frac{1}{2}} \end{array}$$

Compare the fractional part in each mixed number to the benchmarks 0, $\frac{1}{2}$, and 1.



14. $2\frac{3}{7} + 4\frac{7}{12}$

15. $5\frac{2}{11} + 3\frac{5}{8}$

16. $3\frac{5}{6} + 6\frac{8}{9}$

Worksheet 6 Subtracting Mixed Numbers

Subtract. Express each difference in simplest form.

$$1. \quad \frac{3}{4} - \frac{3}{8} = \frac{\boxed{}}{8} - \frac{\boxed{}}{8}$$

$$= \frac{\boxed{}}{8}$$

$$2. \quad \frac{2}{3} - \frac{4}{9} = \frac{\boxed{}}{9} - \frac{\boxed{}}{9}$$

$$= \frac{\boxed{}}{9}$$

$$3. \quad \frac{5}{6} - \frac{5}{12}$$

$$4. \quad \frac{7}{12} - \frac{1}{4}$$

Subtract. Express each difference in simplest form.

Example

$$1\frac{5}{6} - \frac{2}{3} = 1\frac{\boxed{5}}{6} - \frac{\boxed{4}}{6}$$

$$= \boxed{1\frac{1}{6}}$$

$$5. \quad 2\frac{7}{8} - \frac{1}{2} = 2\frac{\boxed{}}{8} - \frac{\boxed{}}{8}$$

$$= \boxed{}$$

$$6. \quad 4\frac{2}{3} - \frac{1}{9}$$

$$7. \quad 3\frac{3}{4} - \frac{5}{12}$$

Name: _____

Date: _____

Subtract. Express each difference in simplest form.

Example

$$4\frac{3}{5} - 1\frac{1}{10} = 4\frac{\boxed{6}}{10} - 1\frac{\boxed{1}}{10}$$

$$= 3\frac{5}{10}$$

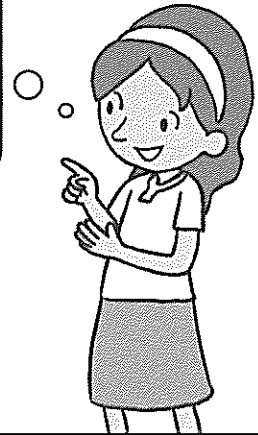
$$= 3\frac{1}{2}$$

Subtract the fractions.

$$\frac{6}{10} - \frac{1}{10} = \frac{5}{10}$$

Subtract the whole numbers.

$$4 - 1 = 3$$



8. $3\frac{1}{2} - 1\frac{1}{3} = 3\frac{\boxed{}}{6} - 1\frac{\boxed{}}{6}$

$$= \boxed{}$$

9. $4\frac{1}{3} - 1\frac{1}{5}$

10. $5\frac{1}{5} - 2\frac{1}{7}$

11. $6\frac{1}{4} - 3\frac{1}{8}$

Name: _____

Date: _____

Subtract. Express each difference in simplest form.

Example

$$\begin{aligned} 3\frac{1}{4} - 1\frac{1}{2} &= 3\frac{1}{4} - 1\frac{2}{4} \\ &= 2\frac{5}{4} - 1\frac{2}{4} \\ &= 1\frac{3}{4} \end{aligned}$$

We cannot subtract $\frac{1}{2}$ from $\frac{1}{4}$.

So, we rename $3\frac{1}{4}$ as

$$3\frac{1}{4} = 2 + \frac{4}{4} + \frac{1}{4} = 2\frac{5}{4}.$$



12. $5\frac{1}{10} - 2\frac{1}{5}$

13. $4\frac{1}{3} - 1\frac{7}{9}$

14. $3\frac{2}{3} - 1\frac{3}{4}$

15. $4\frac{3}{4} - 2\frac{4}{5}$

Name: _____

Date: _____

Use benchmarks to estimate each difference.*Example*

$$\begin{array}{r}
 3\frac{3}{4} - 1\frac{3}{5} \\
 \downarrow \quad \downarrow \\
 4 - 1\frac{1}{2} = 2\frac{1}{2}
 \end{array}$$

$$\begin{array}{l}
 \frac{3}{4} \rightarrow 1 \\
 \frac{3}{5} \rightarrow \frac{1}{2}
 \end{array}$$



16. $5\frac{1}{8} - 2\frac{11}{12}$

17. $4\frac{3}{4} - 2\frac{6}{7}$

18. $7\frac{2}{9} - 1\frac{7}{8}$

Name: _____

Date: _____

Worksheet 7 Real-World Problems: Fractions and Mixed Numbers

Solve. Show your work.

1. Lauren had 3 liters of water. She poured the water into 7 glasses equally. How much water was there in each glass?
2. Mr. Bennett bought a loaf of bread, which was cut into 20 equal slices. He gave the bread equally to 8 children. How many slices of bread did each child get?
3. Mrs. Williams had some watermelons. She gave $\frac{1}{4}$ of the watermelons to Mrs. Lopez and $\frac{7}{12}$ of the watermelons to Mrs. Brown. What fraction of the watermelons did Mrs. Williams give away?

Name: _____

Date: _____

Solve. Show your work.

4. Ellen bought $\frac{5}{9}$ pound of flour. She used $\frac{1}{2}$ pound of flour to make pies. How much flour did Ellen have left?
5. Mr. Hayes sold $\frac{7}{9}$ of a crate of grapefruit. He sold $\frac{3}{5}$ of another crate of grapefruit. How many crates of grapefruit did Mr. Hayes sell in all?
6. Latoya had $2\frac{3}{4}$ liters of water in a watering can. She used $1\frac{2}{7}$ liters of the water to water her plants. How much water did Latoya have left in the watering can?

Name: _____

Date: _____

Solve. Show your work.

7. Jose went jogging with Sam. Jose jogged $\frac{5}{8}$ mile before he stopped to rest. Sam jogged $\frac{1}{4}$ mile more than Jose before stopping. After resting, they continued jogging. Each of them jogged a total distance of $2\frac{1}{5}$ miles.

- a. How far did Sam jog before stopping?
- b. What was the distance Jose jogged after resting?

8. Sharon completed her English homework in $\frac{2}{3}$ hour. She completed her Science homework in $\frac{5}{6}$ hour.

- a. How much longer did Sharon take to complete her Science homework?
- b. How much time did she spend on her homework altogether?

Name: _____

Date: _____

Solve. Show your work.

9. Jana spent $\frac{1}{6}$ of her leisure time playing games. She spent $\frac{1}{4}$ more of her time reading than playing games. Jana spent the rest of her leisure time exercising.

a. What fraction of Jana's leisure time was spent reading?

b. What fraction of her leisure time was spent exercising?

10. A shopkeeper had $3\frac{1}{2}$ kilograms of onions. He sold $1\frac{1}{4}$ kilograms of onions in the morning and $1\frac{3}{8}$ kilograms in the afternoon.

a. How many kilograms of onions did the shopkeeper sell altogether?

b. How many kilograms of onions did he have left?

Name: _____

Date: _____

CHAPTER
4

Multiplying and Dividing Fractions and Mixed Numbers

Worksheet 1 Multiplying Proper Fractions

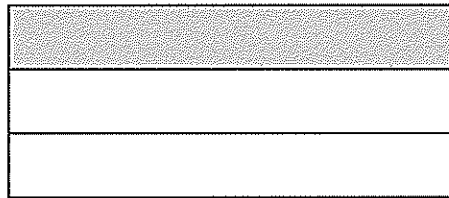
Look at the models. Follow the steps and fill in the blanks.

Example

What is the value of $\frac{1}{2}$ of $\frac{1}{3}$?

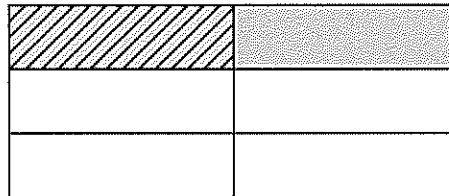
Step 1

A rectangle is divided into thirds. Shade $\frac{1}{3}$ of it.



Step 2

Draw stripes over $\frac{1}{2}$ of the shaded portion.



$\frac{1}{6}$ of the rectangle has stripes drawn over the shaded portion.

$\frac{1}{2}$ of $\frac{1}{3}$ is $\frac{1}{6}$.

Name: _____

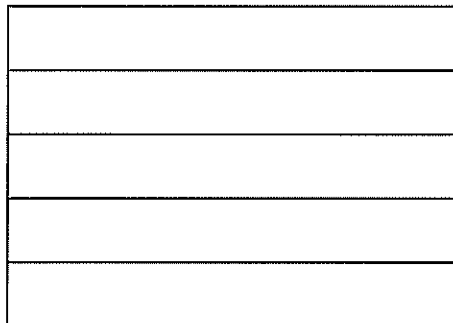
Date: _____

Look at the models. Follow the steps and fill in the blanks.

1. What is the value of $\frac{1}{4}$ of $\frac{2}{5}$?

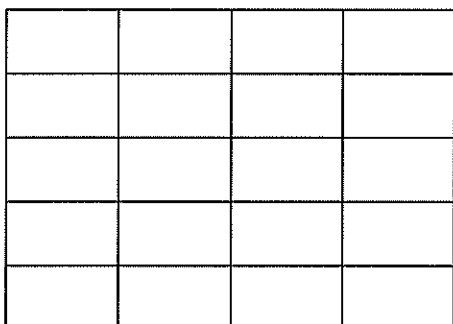
Step 1

A rectangle is divided into fifths. Shade $\frac{2}{5}$ of it.



Step 2

Draw stripes over $\frac{1}{4}$ of the shaded portion.



_____ of the rectangle has stripes drawn over the shaded portion.

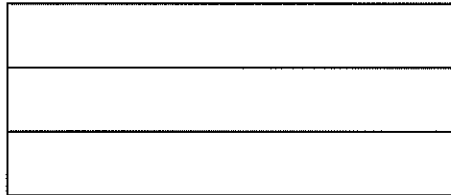
$\frac{1}{4}$ of $\frac{2}{5}$ is _____.

Name: _____

Date: _____

2. What is the value of $\frac{3}{4}$ of $\frac{2}{3}$?

Step 1 A rectangle is divided into thirds. Shade $\frac{2}{3}$ of it.



Step 2 Draw stripes over $\frac{3}{4}$ of the shaded portion.



of the rectangle has stripes drawn over the shaded portion.

$\frac{3}{4}$ of $\frac{2}{3}$ is .

Complete.

Example

$$\frac{1}{2} \text{ of } \frac{3}{4} = \frac{1}{2} \times \frac{3}{4}$$

3. $\frac{1}{5}$ of $\frac{2}{3} =$ \times

4. $\frac{1}{3}$ of $\frac{7}{8} =$ \times

5. $\frac{1}{4}$ of $\frac{5}{9} =$ \times

Name: _____

Date: _____

Complete.

Example

$$\frac{1}{3} \times \frac{5}{8} = \frac{1}{3} \text{ of } \frac{5}{8}$$

6. $\frac{3}{4} \times \frac{7}{12} =$ of

7. $\frac{1}{2} \times \frac{4}{9} = \frac{1}{2}$ _____ $\frac{4}{9}$

8. $\frac{2}{5} \times \frac{1}{6} =$ of

Multiply. Express each product in simplest form.

Example

$$\frac{1}{2} \times \frac{1}{3} = \frac{\boxed{1} \times \boxed{1}}{\boxed{2} \times \boxed{3}} \leftarrow \begin{array}{l} \text{Multiply the numerators.} \\ \text{Multiply the denominators.} \end{array}$$

$$= \frac{\boxed{1}}{\boxed{6}}$$

9. $\frac{3}{4} \times \frac{5}{7} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}} = \frac{\boxed{}}{\boxed{}}$

10. $\frac{2}{5} \times \frac{2}{9} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}} = \frac{\boxed{}}{\boxed{}}$

11. $\frac{5}{6} \times \frac{1}{3} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}} = \frac{\boxed{}}{\boxed{}}$

Multiply. Express each product in simplest form.

Example

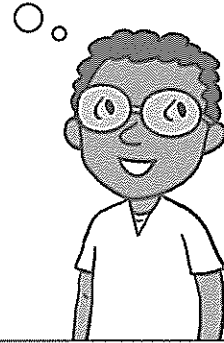
$$\frac{1}{3} \times \frac{6}{7} = \frac{\boxed{1} \times \boxed{2}}{\boxed{1} \times \boxed{7}}$$

$$= \frac{\boxed{2}}{\boxed{7}}$$

This is another way to multiply fractions. Divide a numerator and a denominator by the **common factor 3**.

$$\frac{1}{3} \times \frac{6}{7} = \frac{1}{3 \div 3} \times \frac{6 \div 3}{7}$$

$$= \frac{1}{1} \times \frac{2}{7}$$



12.

$$\frac{1}{2} \times \frac{4}{5} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$$

$$= \frac{\boxed{}}{\boxed{}}$$

13.

$$\frac{2}{5} \times \frac{3}{8} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$$

$$= \frac{\boxed{}}{\boxed{}}$$

14.

$$\frac{3}{4} \times \frac{7}{12} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$$

$$= \frac{\boxed{}}{\boxed{}}$$

15.

$$\frac{3}{4} \times \frac{8}{9} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$$

$$= \frac{\boxed{}}{\boxed{}}$$

Name: _____

Date: _____

Multiply. Express each product in simplest form.

16. $\frac{1}{6} \times \frac{8}{9}$

17. $\frac{1}{3} \times \frac{6}{7}$

18. $\frac{4}{9} \times \frac{7}{12}$

19. $\frac{3}{5} \times \frac{11}{12}$

20. $\frac{4}{7}$ of $\frac{5}{12}$

21. $\frac{3}{4}$ of $\frac{2}{3}$

Name: _____

Date: _____

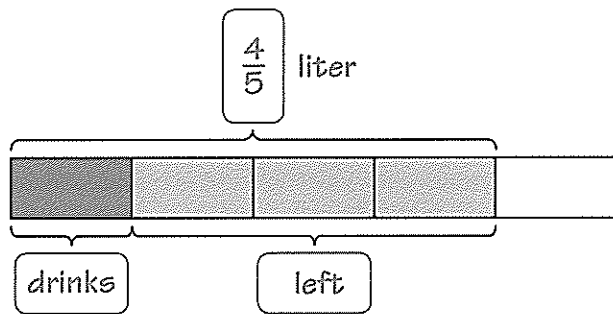
Worksheet 2 Real-World Problems: Multiplying with Proper Fractions

Complete each model to show the statements.

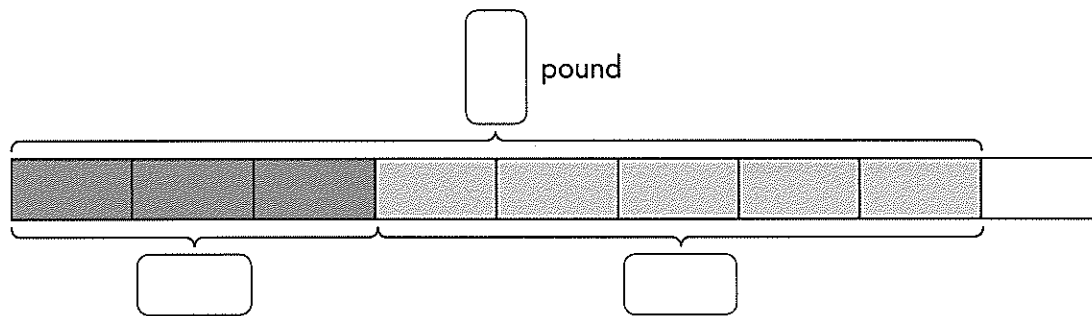
Example

A bottle contains $\frac{4}{5}$ liter of juice.

Any drinks $\frac{1}{4}$ of the juice.



1. Mrs. Costa bought $\frac{8}{9}$ pound of beef.
She cooked $\frac{3}{8}$ of the beef.



Name: _____

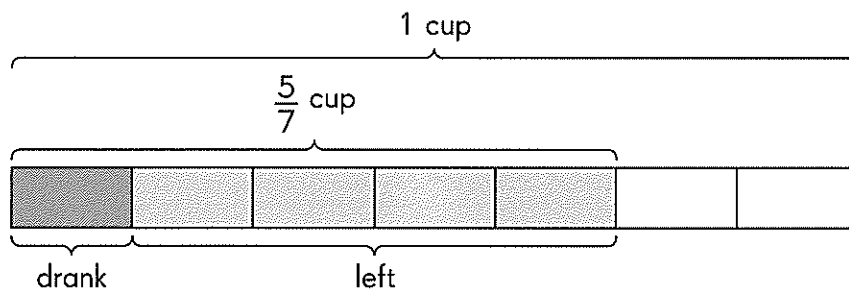
Date: _____

Draw a model to show the statements.

2. Harry had $\frac{7}{8}$ meter of ribbon.
He used $\frac{2}{7}$ of the ribbon to tie a gift.

Solve. Use a model to help you.

3. Sarah poured $\frac{5}{7}$ cup of milk into a glass. She drank $\frac{1}{5}$ of it.
a. How much milk did she drink?



From the model,

7 units \longrightarrow _____ cup

1 unit \longrightarrow _____ cup

She drank _____ cup of milk.

- b. How much milk was left?

4 units \longrightarrow _____ cup

_____ cup of milk was left.

Name: _____

Date: _____

Solve. Use a model to help you.

4. A farmer had $\frac{3}{4}$ of a bag of seeds. He planted $\frac{2}{3}$ of the seeds.
- a. What fraction of the bag of seeds did the farmer plant?

Model:

From the model,

_____ units → _____

1 unit → _____

_____ units → _____

He planted _____ of a bag of seeds.

- b. What fraction of the bag of seeds was left?

_____ unit → _____

_____ of a bag of seeds was left.

Name: _____

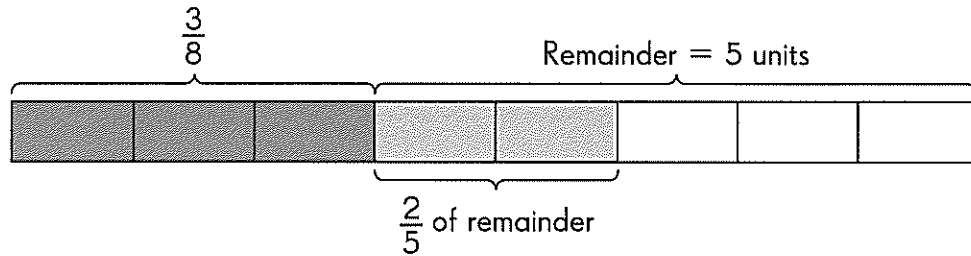
Date: _____

Complete each model to show the statements.

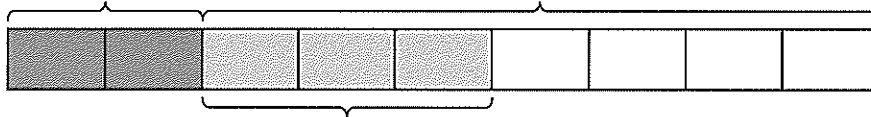
Example

Barry bought a box of fruit. Of the fruit, $\frac{3}{8}$ were apples.

Of the remainder, $\frac{2}{5}$ were oranges.



5. Cindy collects Canadian, U.S., and British coins. Of the coins, $\frac{2}{9}$ are Canadian. Of the remainder, $\frac{3}{7}$ are British coins.



6. Jessica had some money. She spent $\frac{4}{9}$ of her money on food and $\frac{3}{10}$ of the remainder on drinks.



Name: _____

Date: _____

Solve. Use models to help you.

7. Mike has an aquarium. Of the fish in his aquarium, $\frac{2}{5}$ are clownfish.

Of the remaining fish, $\frac{1}{3}$ are damselfish.

a. What fraction of Mike's fish are damselfish?

--	--	--	--	--

b. What fraction of his fish are not clownfish or damselfish?

8. Lillian collects stickers. Of her collection, $\frac{5}{12}$ are animal stickers.

Of the remainder, $\frac{5}{14}$ are flower stickers.

a. What fraction of Lillian's stickers are flower stickers?

b. What fraction of her stickers are not animal or flower stickers?

Complete.

Example

$$\frac{2}{3} \times \frac{18}{5} = \frac{\boxed{2} \times \boxed{6}}{\boxed{1} \times \boxed{5}}$$

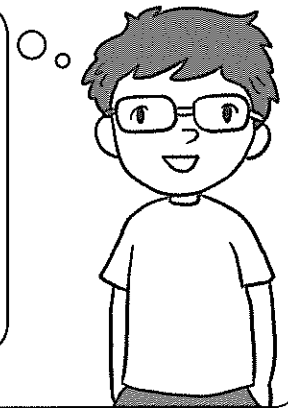
$$= \frac{\boxed{12}}{\boxed{5}}$$

$$= \boxed{2\frac{2}{5}}$$

Divide a numerator and a denominator by the common factor 3.

$$\frac{2}{3} \times \frac{18}{5} = \frac{2}{3 \div 3} \times \frac{18 \div 3}{5}$$

$$= \frac{2 \times 6}{1 \times 5}$$



5. $\frac{1}{2} \times \frac{8}{7} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$

$$= \frac{\boxed{}}{\boxed{}}$$

6. $\frac{5}{4} \times \frac{3}{20} = \frac{\boxed{} \times \boxed{}}{\boxed{} \times \boxed{}}$

$$= \frac{\boxed{}}{\boxed{}}$$

7. $\frac{5}{4} \times \frac{16}{3}$

8. $\frac{5}{4} \times \frac{12}{13}$

9. $\frac{7}{8} \times \frac{12}{7}$

10. $\frac{14}{9} \times \frac{18}{7}$

Name: _____

Date: _____

Answer each question.

11. $F \times \frac{8}{3}$

F is a proper fraction.

- a.** Find a value of F so that the product is less than 1.

$F =$

- b.** Find a value of F so that the product is greater than 1.

$F =$

12. $\frac{15}{4} \times K$

K is a proper fraction.

- a.** Find a value of K so that the product is less than 1.

$K =$

- b.** Find a value of K so that the product is greater than 1.

$K =$

13. $2 \times M$

M is an improper fraction.

- a.** Find a value of M so that the product is less than 2 but more than 1.

$M =$

- b.** Find a value of M so that the product is greater than 1.

$M =$

Name: _____

Date: _____

14. $N \times 5$

N is an improper fraction.

- a. Find a value of N so that the product is more than 1 but less than 5.

$N =$

- b. Find a value of N so that the product is greater than 1.

$N =$

15. $W \times S$ is a product of a whole number and an improper fraction.

W is a whole number. S is an improper fraction.

Which do you think is greatest: W , S , or $W \times S$?

Give your reasons.

Complete.

16. $5 \times 4 =$ _____ groups of _____

17. $12 \times 7 =$ _____ groups of _____

Name: _____

Date: _____

Write in addition.

18. $2 \times 3 =$ _____ groups of _____
 $=$ _____ + _____

19. $3 \times 6 =$ _____ groups of _____
 $=$ _____ + _____ + _____

Write in addition.

20. $4 \times \frac{1}{2} =$ _____ groups of _____
 $=$ _____ + _____ + _____ + _____
 $=$ _____

21. $3 \times \frac{1}{4} =$ _____ groups of _____
 $=$ _____ + _____ + _____
 $=$ _____

Name: _____

Date: _____

Without calculating, answer each question. Explain your reasoning.

22. Which is greater? 5×4 or 5 or 4?

23. Which is greater? $3 \times \frac{1}{2}$ or 3 or $\frac{1}{2}$?

Answer the question. Then, give your reasons.

24. Are the following statements true or false?

- a.** The product of a whole number by a proper fraction is always greater than the whole number.

- b.** The factor fraction is the smallest among the factors and the product. (Assuming none of the factors is a whole number.)

Name: _____

Date: _____

Worksheet 4 Multiplying Mixed Numbers and Whole Numbers

Write each mixed number as an improper fraction.

1. $3\frac{2}{5} = \frac{\boxed{}}{\boxed{}}$

2. $2\frac{7}{9} = \frac{\boxed{}}{\boxed{}}$

Write the product as an improper fraction.

3. $\frac{6}{5} \times 2 = \frac{\boxed{}}{\boxed{}}$

4. $\frac{9}{4} \times 5 = \frac{\boxed{}}{\boxed{}}$

Write each improper fraction as a mixed number.

5. $\frac{12}{5} = \frac{10}{5} + \frac{2}{5}$
 $= \boxed{} + \boxed{}$
 $= \boxed{}$

6. $\frac{15}{8} = \boxed{} + \boxed{}$
 $= \boxed{} + \boxed{}$
 $= \boxed{}$

Name: _____

Date: _____

**Divide. Find the quotient and remainder.
Then write the answer as a mixed number.**

7.
$$\begin{array}{r} 2 \overline{) 9} \\ \underline{8} \\ 1 \end{array}$$

Quotient = 4

Remainder = 1

$\frac{9}{2} = 4 \frac{\boxed{}}{\boxed{2}}$

8.
$$\begin{array}{r} \boxed{} \\ 3 \overline{) 10} \\ \underline{ \boxed{}} \\ \boxed{} \end{array}$$

Quotient = _____

Remainder = _____

$\frac{10}{3} = \boxed{} \frac{\boxed{}}{\boxed{}}$

9.
$$\begin{array}{r} \boxed{} \\ 4 \overline{) 13} \\ \underline{\boxed{} \boxed{}} \\ \boxed{} \end{array}$$

Quotient = _____

Remainder = _____

$\frac{13}{4} = \boxed{} \frac{\boxed{}}{\boxed{}}$

10.
$$\begin{array}{r} \boxed{} \\ 5 \overline{) 28} \\ \underline{\boxed{} \boxed{}} \\ \boxed{} \end{array}$$

Quotient = _____

Remainder = _____

$\frac{28}{5} = \boxed{} \frac{\boxed{}}{\boxed{}}$

Name: _____

Date: _____

Complete.

Example

$$3\frac{1}{2} \times 5 = \frac{\boxed{7}}{\boxed{2}} \times 5$$

$$= \frac{\boxed{35}}{\boxed{2}}$$

$$= \boxed{17} \frac{\boxed{1}}{\boxed{2}}$$

$3\frac{1}{2} = \frac{7}{2}$ ○ ○



11.

$$4\frac{2}{5} \times 3 = \frac{\boxed{}}{\boxed{}} \times 3$$

$$= \frac{\boxed{}}{\boxed{}}$$

$$= \boxed{} \frac{\boxed{}}{\boxed{}}$$

12.

$$5\frac{1}{3} \times 4 = \frac{\boxed{}}{\boxed{}} \times 4$$

$$= \frac{\boxed{}}{\boxed{}}$$

$$= \boxed{} \frac{\boxed{}}{\boxed{}}$$

Name: _____

Date: _____

Multiply. Express the product as a whole number or a mixed number in simplest form.

13. $2\frac{8}{13} \times 2$

14. $8 \times 2\frac{4}{7}$

15. $9 \times 4\frac{3}{4}$

16. $7\frac{2}{5} \times 10$

Name: _____

Date: _____

Complete.

17. $\blacktriangle \times 2\frac{2}{3}$

\blacktriangle can be a fraction or a whole number.

a. Find a value of \blacktriangle so that the product is greater than 1. $\blacktriangle =$

b. Find a value of \blacktriangle so that the product is the same as 1. $\blacktriangle =$

c. Find a value of \blacktriangle so that the product is smaller than 1. $\blacktriangle =$

18. $\bullet \times 1\frac{7}{8}$

\bullet can be a fraction or a whole number.

a. Find a value of \bullet so that the product is greater than 1. $\bullet =$

b. Find a value of \bullet so that the product is the same as 1. $\bullet =$

c. Find a value of \bullet so that the product is smaller than 1. $\bullet =$

Name: _____

Date: _____

Solve.

19. ■ × ★ is a product of whole number and mixed number.

■ is a whole number. ★ is a mixed number.

Can you say that the product is the greatest as compared with ■ and ★?

Give your reasons.

20. ■ is a whole number greater than 1.

♥ is a fraction less than 1.

♦ is a mixed number.

Tell whether each product can be less than one, one, or greater than one.

Write *yes* or *no*. The first one is done for you.

Factors	Product can be less than 1.	Product can be 1.	Product can be greater than 1.
♦ × ♦	no	no	yes
■ × ♦			
■ × ♥			
♦ × ♥			
♥ × ♥			

Name: _____

Date: _____

Worksheet 5 Real-World Problems: Multiplying with Mixed Numbers

Solve. Show your work.

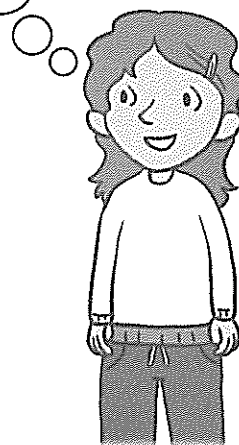
1. Juan has 8 rabbits. He wants to give $1\frac{1}{4}$ carrots to each rabbit.

How many carrots does Juan need?

_____ \times _____ = _____

Juan needs _____ carrots.

$1\frac{1}{4} = \frac{5}{4}$



2. Mr. Foster buys 7 boxes of cornflakes. Each box weighs $13\frac{1}{2}$ ounces.
Find the total weight of the cornflakes.

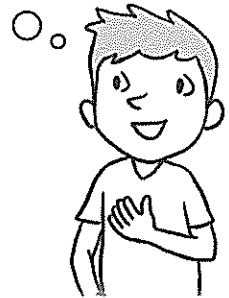
Name: _____

Date: _____

Solve. Show your work.

3. A rectangular envelope is 8 inches wide and $4\frac{1}{3}$ inches long.
Find the area of the envelope.

Area of a rectangle
= length \times width



4. A carpenter bought 4 boxes of nails. Each box weighed $3\frac{2}{5}$ pounds.
The price of the nails was \$8 per pound. How much did the carpenter pay for the nails?

Worksheet 6 Dividing Fractions and Whole Numbers

Each whole is divided into parts. Each part is subdivided into smaller parts. Complete each model. Then complete the division sentence.

Example

1 whole

$\frac{1}{3}$

$\frac{1}{3}$ is divided into 2 parts.

$\frac{1}{6}$

$\frac{1}{3} \div 2 = \frac{1}{6}$

Each whole is divided into equal parts. Write a fraction to represent the shaded part.

1.

2.

Name: _____

Date: _____

Answer each question.

3.

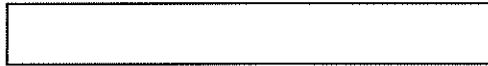


Divide the bar into 5 equal parts. Shade one of them.

The shaded part equals .



4.

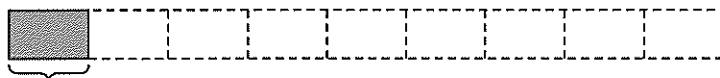
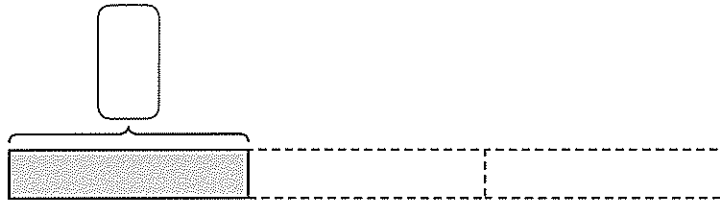
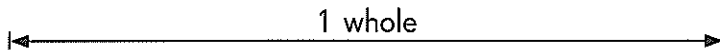


Divide the bar into 8 equal parts. Shade one of them.

The shaded part equals .



5.



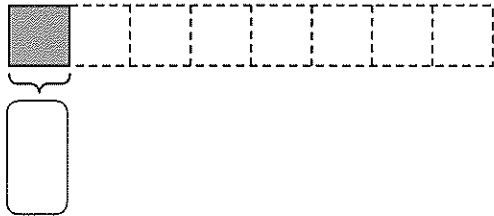
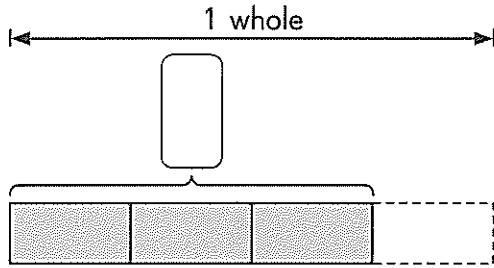
$$\boxed{} \div \boxed{} = \boxed{}$$

Name: _____

Date: _____

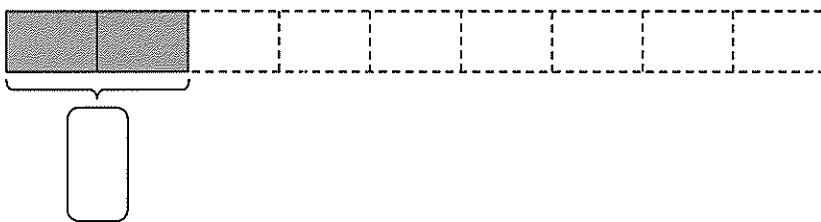
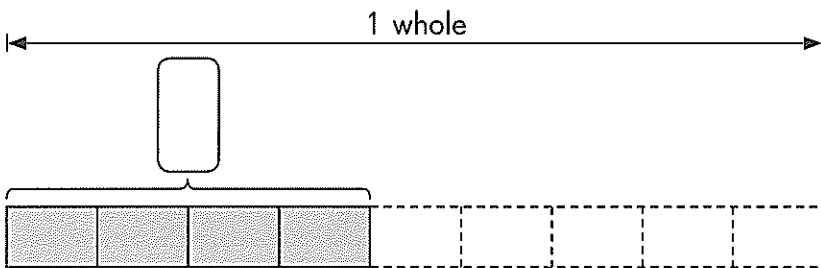
Each whole is divided into parts. Each part is subdivided into smaller parts. Complete each model. Then complete the division sentence.

6.



$$\boxed{} \div \boxed{} = \boxed{}$$

7.



$$\boxed{} \div \boxed{} = \boxed{}$$

Name: _____

Date: _____

Complete.

8. There are _____ $\frac{1}{2}$ s in 1 whole.

9. There are _____ $\frac{1}{2}$ s in 2 wholes.

10. Draw 2 wholes made from $\frac{1}{2}$ circles.

Complete.

11. There are _____ $\frac{1}{5}$ s in 1 whole.

12. There are _____ $\frac{1}{5}$ s in 3 wholes.

13. Draw 3 wholes made from $\frac{1}{5}$ circles.

Complete.

Example

$$\frac{1}{4} \div 3 = \boxed{\frac{1}{3}} \text{ of } \frac{1}{4}$$

$$= \boxed{\frac{1}{3}} \times \frac{1}{4} = \boxed{\frac{1}{12}}$$

$$\frac{1}{3} \times \frac{1}{4} = \frac{1 \times 1}{3 \times 4}$$

$$= \frac{1}{12}$$



14. $\frac{7}{8} \div 5 = \boxed{\phantom{\frac{1}{3}}} \text{ of } \frac{7}{8}$

$$= \boxed{\phantom{\frac{1}{3}}} \times \frac{7}{8}$$

$$= \boxed{\phantom{\frac{1}{12}}}$$

15. $\frac{8}{9} \div 4 = \boxed{\phantom{\frac{1}{3}}} \text{ of } \boxed{\phantom{\frac{1}{4}}}$

$$= \boxed{\phantom{\frac{1}{3}}} \times \boxed{\phantom{\frac{1}{4}}}$$

$$= \boxed{\phantom{\frac{1}{12}}}$$

16. $\frac{5}{12} \div 8 = \boxed{\phantom{\frac{1}{3}}} \text{ of } \boxed{\phantom{\frac{1}{4}}}$

$$= \boxed{\phantom{\frac{1}{3}}} \times \boxed{\phantom{\frac{1}{4}}}$$

$$= \boxed{\phantom{\frac{1}{12}}}$$

Name: _____

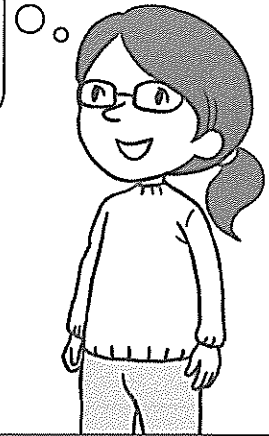
Date: _____

Divide. Express each quotient in simplest form.

Example

$$\begin{aligned}\frac{2}{5} \div 3 &= \frac{2}{5} \times \frac{1}{3} \\ &= \frac{2 \times 1}{5 \times 3} \\ &= \frac{2}{15}\end{aligned}$$

Dividing by 3 is the same as multiplying by $\frac{1}{3}$.



17. $\frac{2}{3} \div 6$

18. $\frac{7}{8} \div 9$

19. $\frac{4}{9} \div 8$

20. $\frac{9}{11} \div 3$

Name: _____

Date: _____

Complete the table.

21.

Number	Reciprocal
7	$\frac{1}{7}$
9	
13	
18	

22.

Reciprocal	Number
$\frac{1}{2}$	2
$\frac{1}{12}$	
$\frac{1}{15}$	
$\frac{1}{20}$	

Complete.

23. $3 \div \frac{1}{4} = 3 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

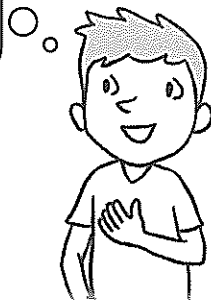
24. $7 \div \frac{1}{8} = \underline{\hspace{2cm}} \times 8 = \underline{\hspace{2cm}}$

25. $9 \div \frac{1}{5} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

26. $11 \div \frac{1}{4} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

27. $14 \div \frac{1}{11} = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

$\div \frac{1}{3}$ is the same as $\times 3$.



Name: _____

Date: _____

Complete each statement.

- 28.** If each child receives $\frac{1}{4}$ of an apple,
- a.** one apple can be shared among _____ children.
 - b.** two apples can be shared among _____ children.
- 29.** If each child drinks $\frac{1}{8}$ liter of milk,
- a.** one liter of milk can be shared among _____ children.
 - b.** three liters of milk can be shared among _____ children.
- 30.** If each gift can be wrapped using $\frac{1}{3}$ of a piece of wrapping paper,
- a.** each piece of paper can be used to wrap _____ gifts.
 - b.** two pieces of paper can be used to wrap _____ gifts.
 - c.** five pieces of paper can be used to wrap _____ gifts.

Name: _____

Date: _____

Worksheet 7 Real-World Problems: Multiplying and Dividing with Fractions

Solve. Use models to help you.

1. There are 144 pieces of fruit in a box. Of the fruit in the box, $\frac{1}{8}$ are red apples and $\frac{1}{4}$ are green apples. The rest are oranges.

a. How many oranges are there altogether?

b. What fraction of the fruit are oranges?

2. A bakery had 54 rolls. Of the rolls that the bakery had, $\frac{1}{6}$ were sold in the morning and $\frac{1}{2}$ were sold in the evening.

a. How many rolls were sold altogether?

b. How many rolls were not sold?

Name: _____

Date: _____

Solve. Use models to help you.

3. Mr. Woods had \$840. He spent $\frac{3}{7}$ of the money on a lawn mower. He spent $\frac{1}{8}$ of the remaining money on a gift for his wife. How much money did Mr. Woods have left?

4. Rebecca had a piece of ribbon. She used $\frac{3}{8}$ of it to tie a package. She used $\frac{1}{5}$ of the remainder for a bookmark. Rebecca had 24 centimeters of ribbon left. What was the length of ribbon Rebecca had at first?

Name: _____

Date: _____

Complete each model to show the statements.

5. A liter of milk is divided among 2 adults and 4 children. Each adult drinks $\frac{1}{4}$ liter and each child drinks $\frac{1}{8}$ liter.

--	--	--	--	--	--	--	--

6. A pizza is divided and given to 3 boys and 2 girls. Each boy gets $\frac{1}{6}$ of a pizza and each girl gets $\frac{1}{4}$ of a pizza.

--	--	--	--	--	--	--	--	--	--	--	--

Name: _____

Date: _____

Solve. Show your work.

7. James has 5 melons. Two of them are shared among 10 students.

What fraction of a melon will each student get?

The remaining melons are then divided into $\frac{1}{3}$ each. These pieces are shared equally among the students. How many students do not get a piece of these melons?

How much of a melon will each student get in total?

Name: _____

Date: _____

CHAPTER
5

Algebra

Worksheet 1 Number Patterns and Relationships

Complete.

1. Multiply each term by 2 to get the next term.
Complete the set of number series.

4, 8, _____, _____, _____, _____, 256, . . .

2. Add 15 to each term to get the next term.
Complete the set of number series.

5, 20, _____, _____, _____, _____,

_____ , _____ , 125, . . .

3. Divide each term by 3 to get the next term.
Complete the set of number series.

972, 324, _____, _____, _____, _____, . . .

4. The table shows a relationship between the number of cubes used to make 2 castles. Look at this table.

Jen's Castle	18	20	22	24	26
Marcus' Castle	22	24	26		

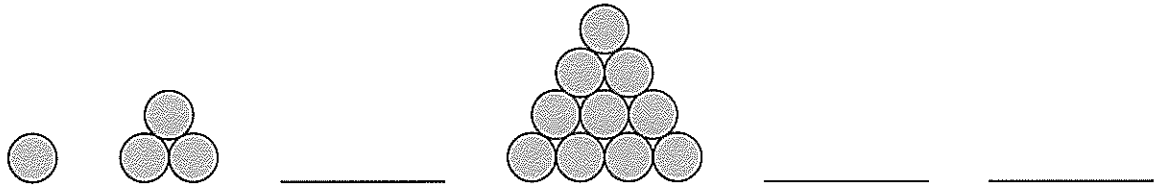
- a. Complete the table.
- b. Write a sentence comparing the number of cubes used by Marcus with the number of cubes used by Jen.

Name: _____

Date: _____

Complete the picture and table. Then, explain.

5. Chris drew some circles.
He counted the number of circles drawn.
Help him to complete the picture and the table.



- a. Complete the picture.

Sequence of Picture	1	2	3	4	5	6
Number of Circles Drawn	1	3				

- b. Complete the table.

- c. Explain how you can get the number of circles used in the next drawing.

Name: _____

Date: _____

Worksheet 2 Using Letters as Numbers

Complete.

1. Add 3 to 5. _____
2. Subtract 6 from 10. _____
3. 12 more than 3 is _____.
4. 4 less than 9 is _____.

Write an algebraic expression for each of the following.

Example

Subtract 3 from k .

 $k - 3$

An **algebraic expression** contains numbers, **variables**, and operation symbols. In this expression, k is the variable.

- | | |
|---------------------|-------------------------|
| 5. Add 2 to x . | 6. Subtract y from 7. |
| _____ | _____ |
| 7. 12 more than t | 8. 9 less than s |
| _____ | _____ |

Name: _____

Date: _____

Complete the tables.

9.

Child	Present Age	5 Years Ago	3 Years From Now	10 Years From Now
Tim	8			
Ken	x	$x - 5$		
Sid	y			

10.

Child	Present Age	x Years Ago	t Years From Now	y Years From Now
Tara	8			
May	13			

Evaluate each expression for the given values of x .

11.

Expression	Value of the Expression	
	$x = 3$	$x = 15$
$x + 9$	12	
$7 + x$		
$x - 2$		

To **evaluate** means to find the value.
When $x = 3$,
 $x + 9 = 3 + 9 = 12$.

**Complete.**

12. $3 + 3 + 3 + 3 =$ _____ groups of 3

13. $5 + 5 + 5 = 3$ groups of _____

14. $4 + 4$ is the same as $2 \times$ _____.

Name: _____

Date: _____

Write an algebraic expression for each of the following.

Example

Multiply p by 6.

$$\underline{6p}$$

Divide p by 6.

$$\underline{\frac{p}{6}}$$

15. Multiply 3 by h .

16. Divide 5 by t .

17. Half of f

18. Twice the value of b

Complete the tables.

19. There are m socks in each bag.

Number of Bags	Total Number of Socks
1	m
4	
7	

20. A box contains g crayons. The crayons are shared equally among some children.

Number of Children	Number of Crayons Each Child Gets
3	$\frac{g}{3}$
6	
10	

Name: _____

Date: _____

Circle the correct expression in each set for $n = 24$.

21. $4 + n = 4 + 24$ $4 + n = 4n$ $4 + n = 424$

22. $32 - n = 32n$ $32 - n = 32 - 24$ $32 - n = \frac{32}{n}$

23. $5n = 5 \times 24$ $5n = 524$ $5n = 5 + 24$

24. $\frac{2}{n} = 2 \div 24$ $2 \times n = \frac{2}{n}$ $2 \div n = \frac{n}{2}$

Complete the table.

25.

Child	Present Age	4 Years Ago	3 Years From Now	10 Years From Now
Faye	$5t$	$5t - 4$		
Elijah	$10u$			

Evaluate each expression for the given values of x .

26.

Expression	Value of the Expression	
	$x = 3$	$x = 15$
$4x$		
$\frac{x}{3}$		
$3x - 5$		
$\frac{5x}{6}$		
$\frac{20 - x}{2}$		

Name: _____

Date: _____

Worksheet 3 Simplifying Algebraic Expressions

Complete.

1. $3 + 3 = 2 \times$ _____

2. $4 + 4 + 4 + 4 + 4 + 4 =$ _____ $\times 4$

3. $4 \times 5 =$ _____ $\times 4$

4. _____ $\times 8 = 8 \times 3$

Simplify each expression.

Example

$$x + x + x = \underline{3} x$$

5. $y + y + y + y + y = 5$ _____

6. $s + s + s + s + s + s = 6$ _____

7. $t + t + t + t + t + t + t =$ _____ t

Complete.

8. $3p =$ _____ $+$ _____ $+$ _____

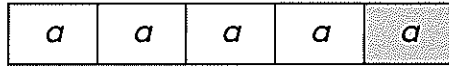
9. $8w =$ _____ $+$ _____ $+$ _____ $+$ _____ $+$
_____ $+$ _____ $+$ _____ $+$ _____

Name: _____

Date: _____

Write an expression to represent each model.

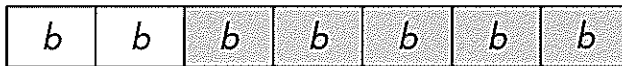
Example



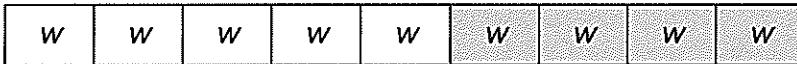
$4a + a$

$4a$ and a are **like terms** because they are multiples of a .

10.



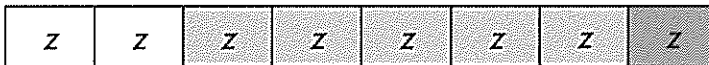
11.



12.



13.

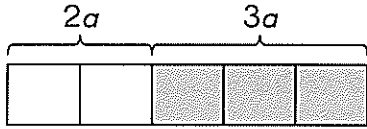


Name: _____

Date: _____

Look at each model. Then fill in the blanks.

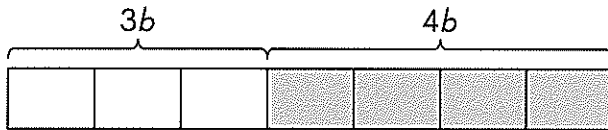
Example



$$2a + 3a = \underline{5} a$$

$$\underline{5} a - \underline{3} a = 2a$$

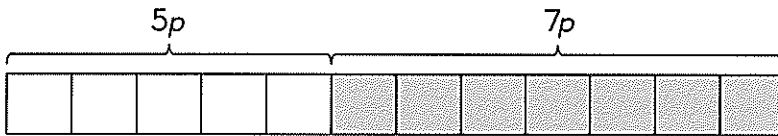
14.



$$4b + 3b = \underline{\quad} b$$

$$\underline{\quad} b - \underline{\quad} b = 3b$$

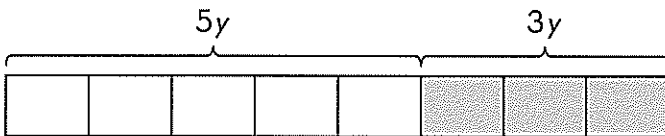
15.



$$\underline{\quad} p + \underline{\quad} p = \underline{\quad} p$$

$$\underline{\quad} p - \underline{\quad} p = 7p$$

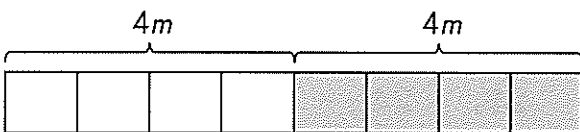
16.



$$\underline{\quad} y + \underline{\quad} y = \underline{\quad} y$$

$$\underline{\quad} y - \underline{\quad} y = 5y$$

17.



$$\underline{\quad} m + \underline{\quad} m = \underline{\quad} m$$

$$\underline{\quad} m - \underline{\quad} m = 4m$$

Name: _____

Date: _____

Simplify each expression.

18. $3x + 4x =$ _____

19. $6y + 3y =$ _____

20. $7c - 2c =$ _____

21. $14d - 5d =$ _____

22. $12f + 8f =$ _____

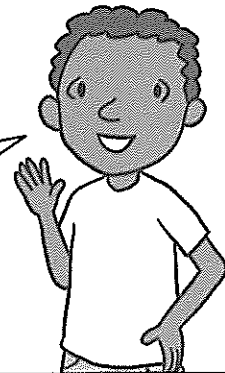
23. $29g - 29g =$ _____

Simplify each expression.

Example

$$\begin{aligned}8d - 2d + 4d &= 6d + 4d \\ &= 10d\end{aligned}$$

As in the addition and subtraction of whole numbers, work from left to right.



24. $9x - 3x - 2x$

25. $10b - 4b - 3b$

26. $6c + 7c + 3c$

27. $8d + 2d + 9d$

28. $15f + 8f - 4f$

29. $24g - 9g + 5g$

Name: _____

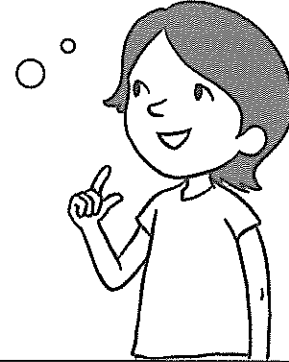
Date: _____

Simplify each expression.

Example

$$\begin{aligned}9d + 8 + 2d - 4 \\ = 11d + 4\end{aligned}$$

Collect like terms.
 $9d + 2d = 11d$
 $8 - 4 = 4$



30. $w + 5 + 2w$

31. $12p + 7p + 10 - 1$

32. $8 + d + 4d + 6$

33. $10k + 7 - 5k - 3$

34. $14 + 9f - 5 - 4f$

35. $10g + 10 - g + 2$

Name: _____

Date: _____

Write an algebraic expression for each situation.

- 36.** Alison walked $7x$ kilometers from her house to the library. She then walked $4x$ kilometers from the library to her school. What was the total distance Alison walked?
- 37.** Mrs. Wilson bought $3h$ red party hats, 4 blue party hats, and $5h$ yellow party hats. How many party hats did Mrs. Wilson buy in all?
- 38.** Each carton contains 12 eggs. Mr. Harris has $6x$ eggs and a full carton of eggs. Mrs. King has $2x$ fewer eggs than Mr. Harris. How many eggs does Mrs. King have?

Name: _____

Date: _____

Worksheet 4 Inequalities and Equations

Write *true* or *false* next to each statement.

1. $>$ means less than. _____

2. $<$ means greater than. _____

3. $5 > 2$ _____

4. $14 < 4$ _____

Write five possible values for each variable.

5. $x > 2$

x can be _____

6. $y < 10$

y can be _____

Write five impossible values of each variable.

7. $u < 15$

u cannot be _____

8. $v > 36$

v cannot be _____

Name: _____

Date: _____

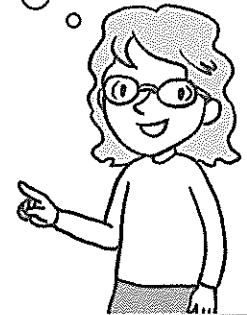
Compare. Write =, <, or >.

Example

For $a = 5$, $7a$ 25

$$7a = 7 \times 5 = 35$$
$$35 > 25$$

$7a$ is not equal to 25.
 $7a > 25$ is an **inequality**.



9. For $y = 8$, $9y$ 90

10. For $z = 9$, $6z$ 45

11. For $p = 7$, 28 $4p$

12. For $q = 4$, 36 $7q$

13. For $r = 6$, 55 $9r$

14. For $n = 5$, 35 $7n$

Name: _____

Date: _____

Evaluate each expression for the given value of the variable.

15. For $x = 8$, $6x - 3 =$ _____.

16. For $y = 12$, $7y + 14 =$ _____.

Complete with $=$, $<$, or $>$, for $a = 8$.

17. $3a - 2$ 22

18. $5a + 4$ 45

19. $6a + 8$ 65

20. $9a - 12$ 58

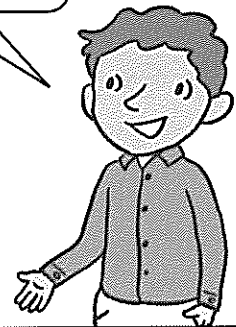
Name: _____

Date: _____

Solve each equation.*Example*

$$\begin{aligned}4r + 8 &= 24 \\4r + 8 - 8 &= 24 - 8 \\4r &= 16 \\4r \div 4 &= 16 \div 4 \\r &= 4\end{aligned}$$

$4r + 8 = 24$ is an **equation**.
 $4r + 8$ has a value of 24.
To **solve** an equation means to
find the value of the variable.



21. $7x = 28$

22. $8x = 72$

23. $6x + 12 = 60$

24. $7x - 5 = 58$

25. $8x + 24 = 48$

26. $9x - 5 = 76$

Name: _____

Date: _____

Worksheet 5 Real-World Problems: Algebra

Solve. Show your work.

1. A bag contains y pieces of fruit. A box can hold 4 times as many fruit as the bag.
- a. How many pieces of fruit can the box hold?

b. If $y = 8$, how many pieces of fruit can the box hold?

2. Ryan is 127 centimeters tall. Serena is p centimeters taller than Ryan.

a. Find the height of Serena in terms of p .

b. What is their combined height in terms of p ?

c. If $p = 9$, find their combined height.

Name: _____

Date: _____

Solve. Show your work.

3. Beth had k dollars. She spent \$8 on a bag and the rest of the money on 4 notepads.
- Find the cost of each notepad in terms of k .
 - If Beth had \$16 at first, find the cost of each notepad.
4. Bruce has $(2m + 7)$ stamps and Gregory has $(7m - 35)$ stamps. If $m = 8$,
- how many stamps does each boy have?
 - who has more stamps?
 - how many more stamps must one of the boys buy so that both boys have the same number of stamps?

Name: _____

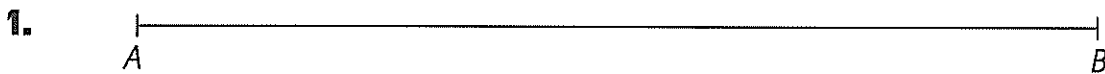
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CHAPTER
6

Area

Worksheet 1 Finding the Area of a Rectangle with Fractional Side Lengths

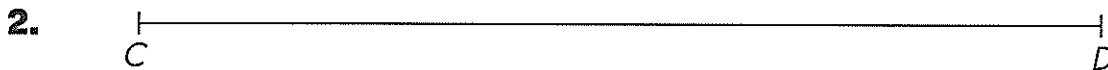
Complete.



Divide into 7 segments.

Label each segment as a unit fraction.

Mark $\frac{4}{7}$ on the line.



Divide into 10 segments.

Label each segment as a unit fraction.

Mark $\frac{3}{10}$ on the line.

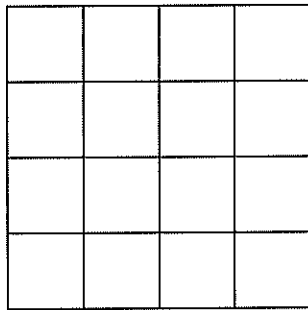
Mark $\frac{7}{10}$ on the line.

Name: _____

Date: _____

Calculate the area.

3.



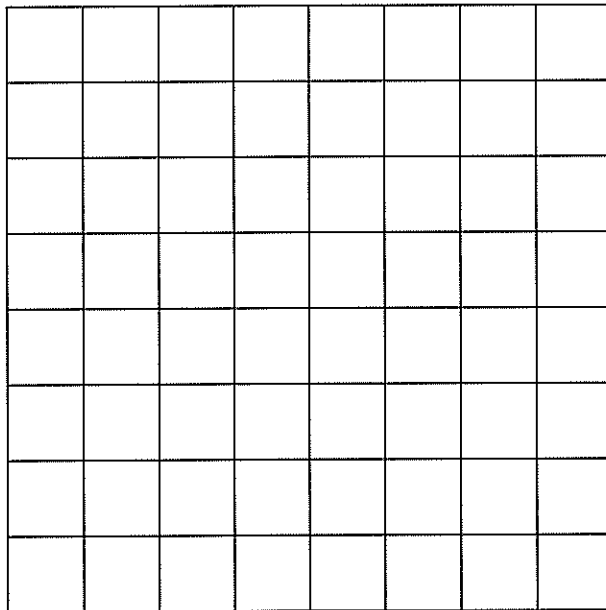
Label each small square as a unit fraction.

Mark $\frac{1}{4}$ and $\frac{3}{4}$ on the sides of the rectangle.

Shade the area of the rectangle with sides of $\frac{1}{4}$ unit and $\frac{3}{4}$ unit.

Area of the shaded rectangle = _____ square units

4.



Label each small square as a unit fraction.

Mark $\frac{3}{8}$ and $\frac{5}{8}$ on the sides of the rectangle.

Shade the area of the rectangle with sides of $\frac{3}{8}$ unit and $\frac{5}{8}$ units.

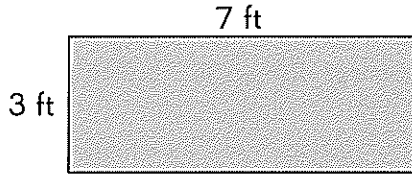
Area of the shaded rectangle = _____ square units

Name: _____

Date: _____

Find the area of each rectangle.

5.

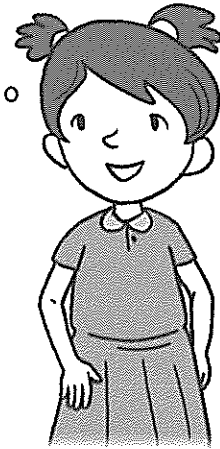


Length = _____ ft

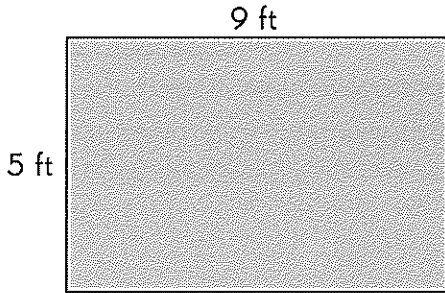
Width = _____ ft

Area = _____ ft \times _____ ft
= _____ ft²

Area of a rectangle
= length \times width



6.



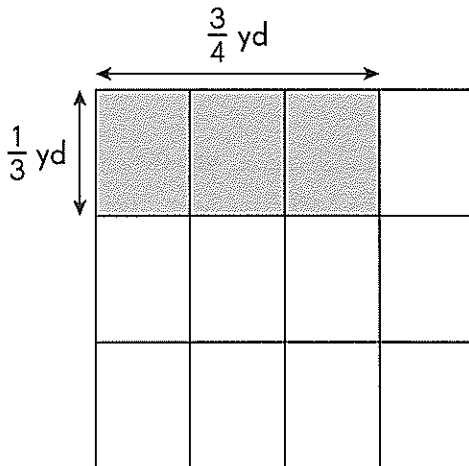
Length = _____ ft

Width = _____ ft

Area = _____ ft \times _____ ft
= _____ ft²

Find the area of each shaded rectangle.

7.

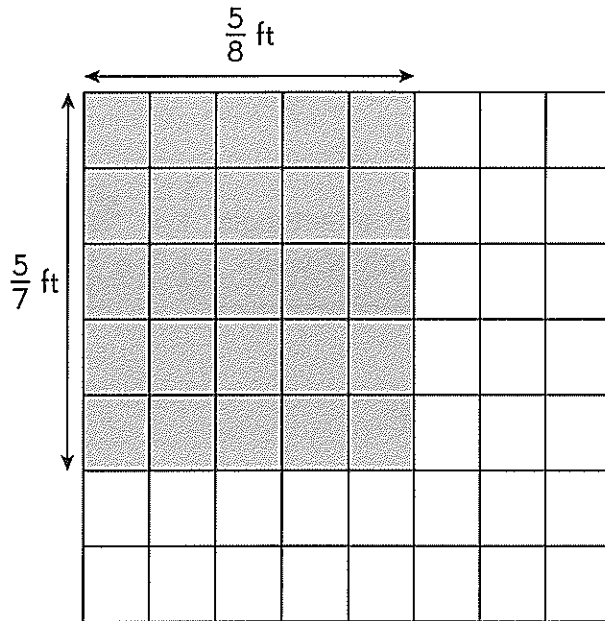


Area = _____ yd \times _____ yd
= _____ yd²

Name: _____

Date: _____

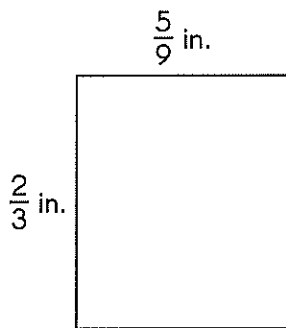
8.



$$\begin{aligned} \text{Area} &= \text{_____ ft} \times \text{_____ ft} \\ &= \text{_____ ft}^2 \end{aligned}$$

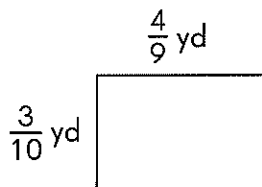
Find the area of each rectangle.

9.



$$\begin{aligned} \text{Area} &= \text{_____ in.} \times \text{_____ in.} \\ &= \text{_____ in.}^2 \end{aligned}$$

10.



$$\begin{aligned} \text{Area} &= \text{_____ yd} \times \text{_____ yd} \\ &= \text{_____ yd}^2 \end{aligned}$$

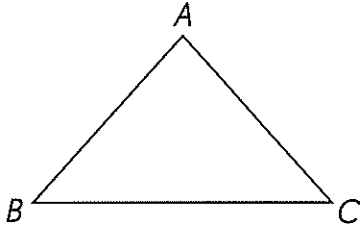
Name: _____

Date: _____

Worksheet 2 Base and Height of a Triangle

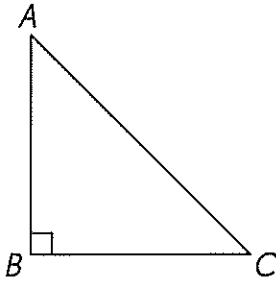
Name the sides of the triangle.

1.



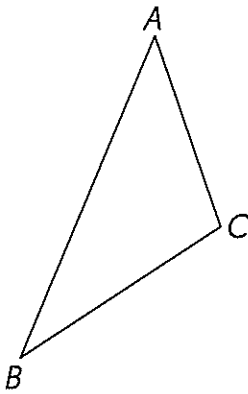
Sides: _____

2.



Sides: _____

3.



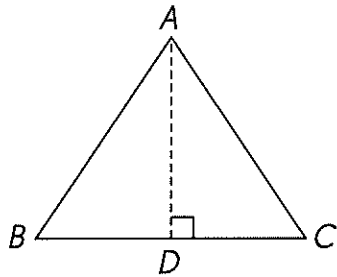
Sides: _____

Name: _____

Date: _____

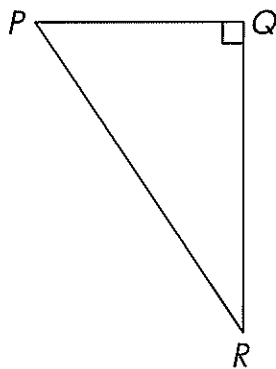
Name the height for the given base of each triangle.

Example



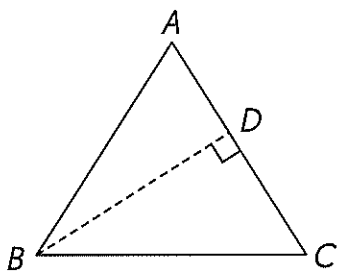
In triangle ABC , if the base is \overline{BC} ,
the height is \underline{AD} .

4.



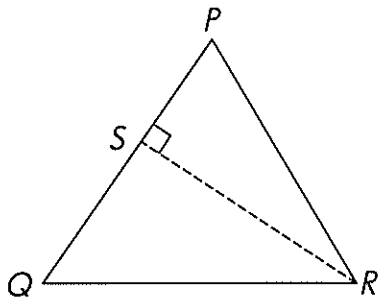
In triangle PQR , if the base is \overline{PQ} ,
the height is _____.

5.



In triangle ABC , if the base is \overline{AC} ,
the height is _____.

6.



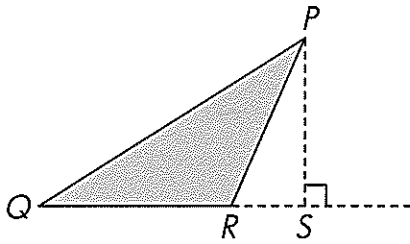
In triangle PQR , if the base is \overline{PQ} ,
the height is _____.

Name: _____

Date: _____

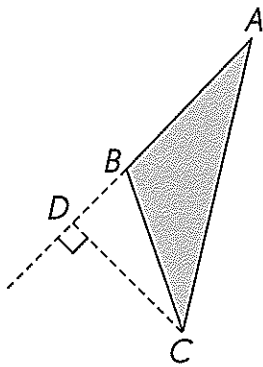
Name the height for the given base of each triangle.

Example



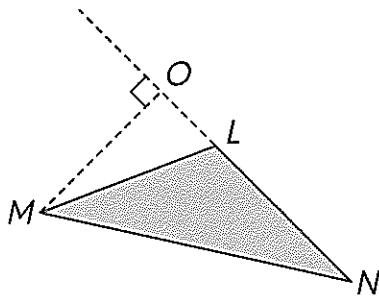
In triangle PQR , if the base is \overline{QR} ,
the height is PS.

7.



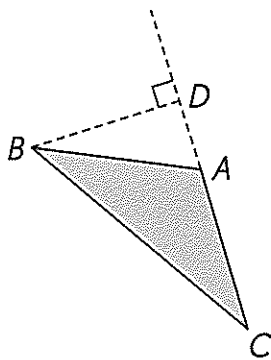
In triangle ABC , if the base is \overline{AB} ,
the height is _____.

8.



In triangle LMN , if the base is \overline{LN} ,
the height is _____.

9.



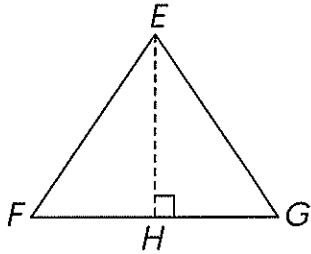
In triangle ABC , if the base is \overline{AC} ,
the height is _____.

Name: _____

Date: _____

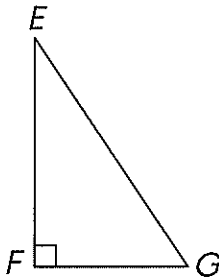
Name the base for the given height of each triangle.

Example



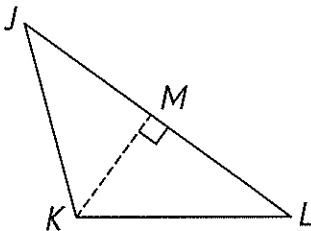
In triangle EFG , if the height is EH ,
the base is \overline{FG} .

10.



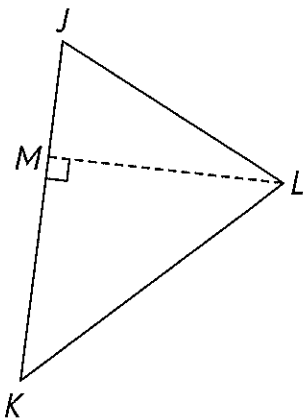
In triangle EFG , if the height is EF ,
the base is _____.

11.



In triangle JKL , if the height is KM ,
the base is _____.

12.



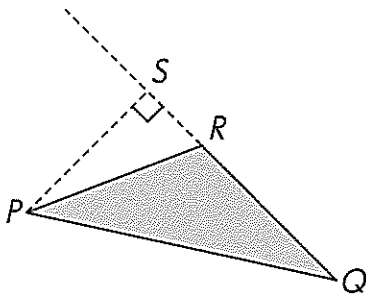
In triangle JKL , if the height is LM ,
the base is _____.

Name: _____

Date: _____

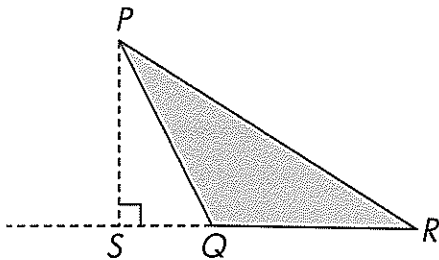
Name the base for the given height of each triangle.

Example



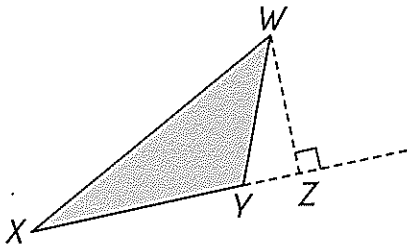
In triangle PQR , if the height is PS ,
the base is \overline{QR} .

13.



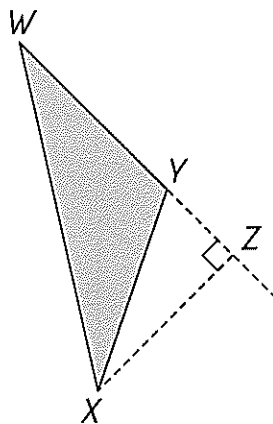
In triangle PQR , if the height is PS ,
the base is _____.

14.



In triangle WXY , if the height is WZ ,
the base is _____.

15.



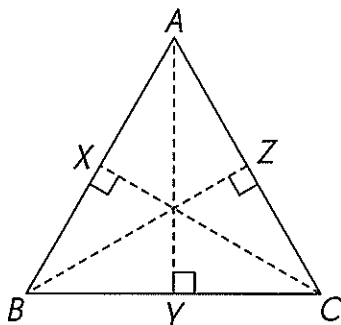
In triangle WXY , if the height is XZ ,
the base is _____.

Name: _____

Date: _____

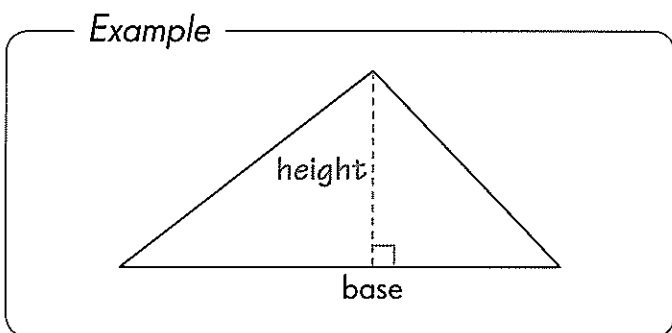
Complete.

16. In triangle ABC ,

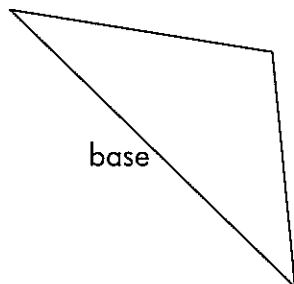


- a. If the height is AY , the base is _____.
- b. If the height is BZ , the base is _____.
- c. If the height is CX , the base is _____.

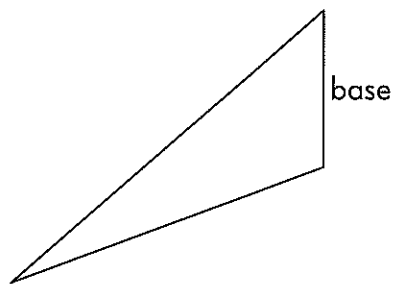
For each triangle, the base is given. Use a drawing triangle to draw and label the height.



17.



18.



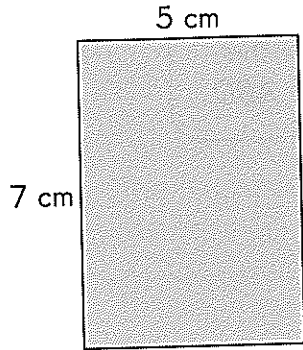
Name: _____

Date: _____

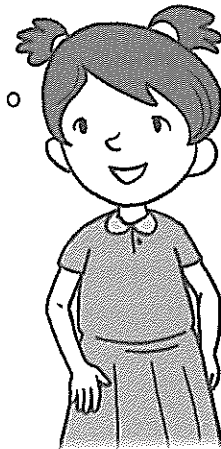
Worksheet 3 Finding the Area of a Triangle

Find the area of each rectangle.

1.



Area of a rectangle
= length \times width



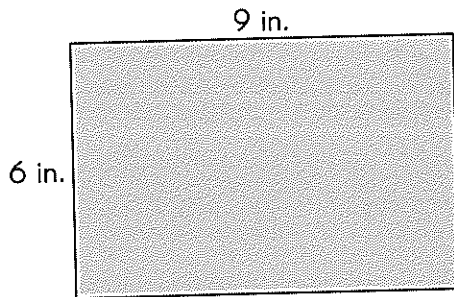
Length = _____ cm

Width = _____ cm

Area = _____ \times _____

= _____ cm^2

2.



Length = _____ in.

Width = _____ in.

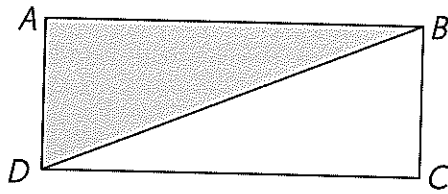
Area = _____ \times _____

= _____ in.^2

Name: _____

Date: _____

The area of triangle ABD is given. Find the area of rectangle $ABCD$.



The area of rectangle $ABCD$ is double the area of triangle ABD .



Example

$$\text{Area of the triangle} = 8 \text{ cm}^2$$

$$\begin{aligned} \text{Area of the rectangle} &= \underline{2} \times \underline{8} \\ &= \underline{16} \text{ cm}^2 \end{aligned}$$

3. Area of the triangle = 28 m^2

$$\begin{aligned} \text{Area of the rectangle} &= \underline{\quad} \times \underline{\quad} \\ &= \underline{\quad} \text{ m}^2 \end{aligned}$$

4. Area of the triangle = 12 ft^2

$$\begin{aligned} \text{Area of the rectangle} &= \underline{\quad} \times \underline{\quad} \\ &= \underline{\quad} \text{ ft}^2 \end{aligned}$$

5. Area of the triangle = 16 in.^2

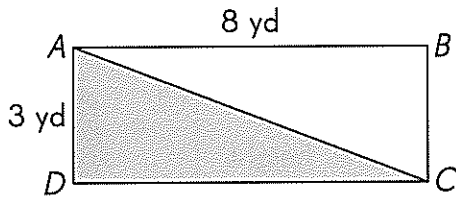
$$\begin{aligned} \text{Area of the rectangle} &= \underline{\quad} \times \underline{\quad} \\ &= \underline{\quad} \text{ in.}^2 \end{aligned}$$

Name: _____

Date: _____

Find the area of each shaded triangle.

6.



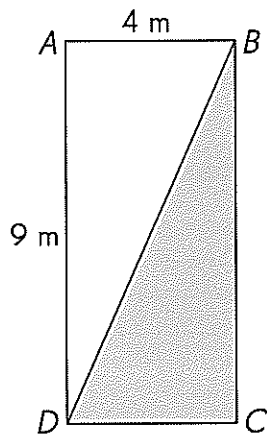
The area of the shaded triangle is half the area of the rectangle.



$$\begin{aligned} \text{Area of rectangle } ABCD &= \text{_____} \times \text{_____} \\ &= \text{_____} \text{ yd}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of triangle } ACD &= \frac{1}{2} \times \text{_____} \\ &= \text{_____} \text{ yd}^2 \end{aligned}$$

7.



$$\begin{aligned} \text{Area of rectangle } ABCD &= \text{_____} \times \text{_____} \\ &= \text{_____} \text{ m}^2 \end{aligned}$$

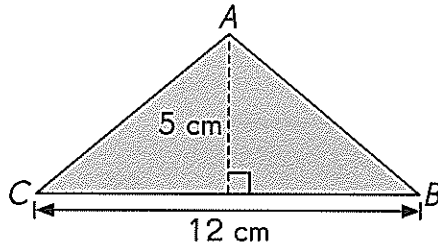
$$\begin{aligned} \text{Area of triangle } BCD &= \frac{1}{2} \times \text{_____} \\ &= \text{_____} \text{ m}^2 \end{aligned}$$

Name: _____

Date: _____

Find the area of each shaded triangle.

Example



$$\text{Area of a triangle} \\ = \frac{1}{2} \times \text{base} \times \text{height}$$

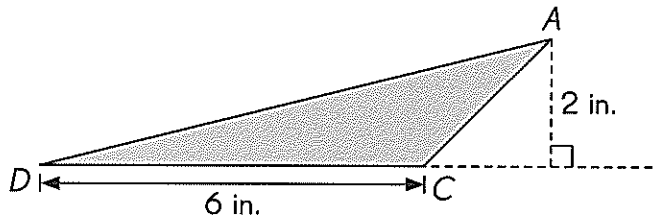


$$\text{Base} = \underline{12} \text{ cm}$$

$$\text{Height} = \underline{5} \text{ cm}$$

$$\begin{aligned} \text{Area of triangle } ABC &= \frac{1}{2} \times \underline{12} \times \underline{5} \\ &= \underline{30} \text{ cm}^2 \end{aligned}$$

8.



$$\text{Base} = \underline{\hspace{2cm}} \text{ in.}$$

$$\text{Height} = \underline{\hspace{2cm}} \text{ in.}$$

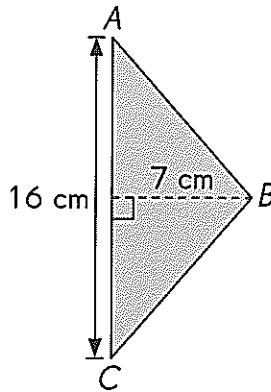
$$\begin{aligned} \text{Area of triangle } ACD &= \frac{1}{2} \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \text{ in.}^2 \end{aligned}$$

Name: _____

Date: _____

Find the area of the shaded triangle.

9.



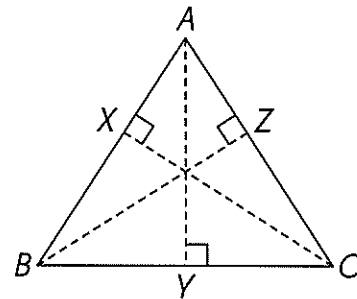
Base = _____ cm

Height = _____ cm

$$\begin{aligned} \text{Area of triangle } ABC &= \frac{1}{2} \times \text{_____} \times \text{_____} \\ &= \text{_____ cm}^2 \end{aligned}$$

Solve. Show your work.

10. In the figure, $AB = 14$ inches, $AC = 16$ inches, $AY = 9$ inches, and $BZ = 10$ inches. Find the area of triangle ABC .

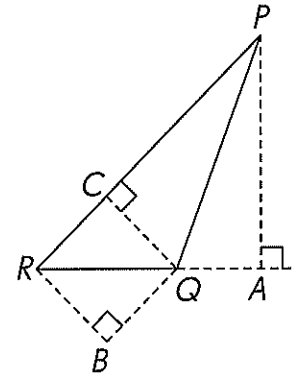


Name: _____

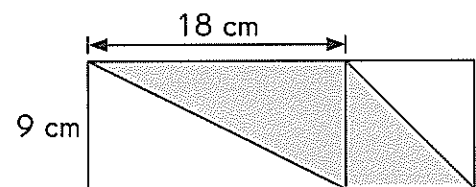
Date: _____

Solve. Show your work.

11. In the figure, $PR = 24$ meters, $RQ = 16$ meters, and $RB = 12$ meters. Find the area of triangle PQR .



12. The figure is formed by a rectangle and a square. Find the area of the shaded part of the figure.

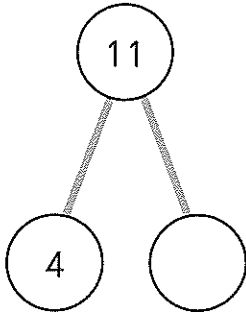


CHAPTER
7 **Ratio**

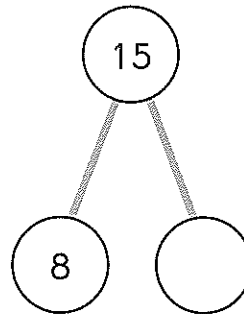
Worksheet 1 Finding Ratio

Complete the number bonds.

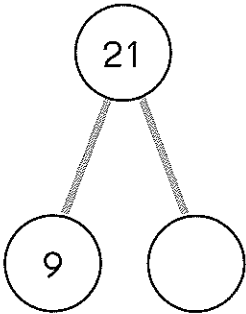
1.



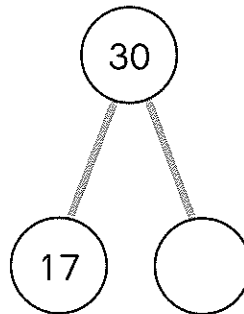
2.



3.

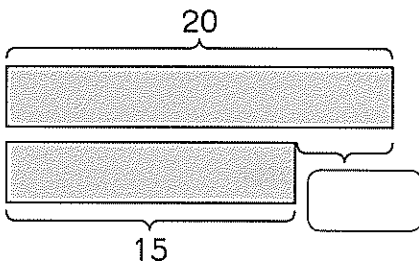


4.

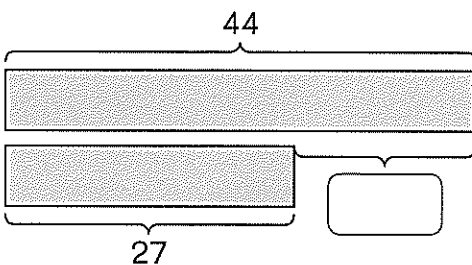


Complete the models.

5.



6.



Name: _____

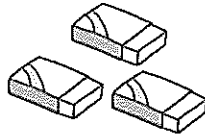
Date: _____

Complete the table to show the ratios.

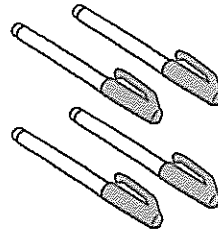
These are some items found in Mia's pencil case.



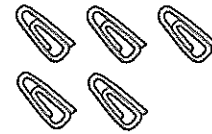
pencils



erasers



pens



paper clips

		Ratio
7.	Number of erasers to number of pens	_____ : _____
8.	Number of pencils to number of paper clips	_____ : _____
9.	Number of pens to number of pencils	_____ : _____
10.	Number of paper clips to number of erasers	_____ : _____

Complete.

Emily had 15 bottles of milk and 11 bottles of water.

11. Number of bottles of milk : Number of bottles of water

= _____ : _____

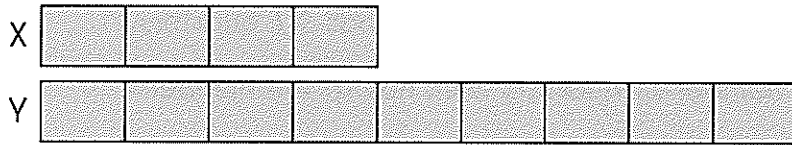
12. Number of bottles of water : Number of bottles of milk

= _____ : _____

Name: _____

Date: _____

Look at the model. Complete.



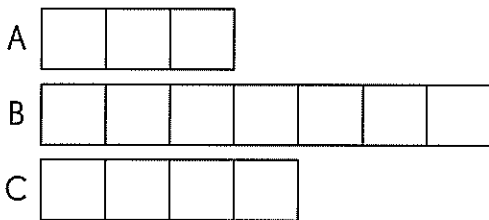
13. Number of units in X : Number of units in Y

= _____ : _____

14. Number of units in Y : Number of units in X

= _____ : _____

Look at the model. Complete.



15. Number of units in A : Number of units in B

= _____ : _____

16. Number of units in B : Number of units in C

= _____ : _____

17. Number of units in C : Number of units in A

= _____ : _____

Name: _____

Date: _____

Solve.

18. Sam has 52 quarters, Gil has 24 quarters, and John has 17 quarters.

a. Find the ratio of the number of quarters Sam has to the number of quarters John has.

b. Find the ratio of the number of quarters John has to the number of quarters Gil has.

19. Isabelle had 27 pencils. She gave away 8 pencils.

a. How many pencils did she have left?

b. What is the ratio of the original number of pencils to the number of pencils left?

Name: _____

Date: _____

Worksheet 2 Equivalent Ratios

Complete.

Damien bought 6 pears and 18 apples.

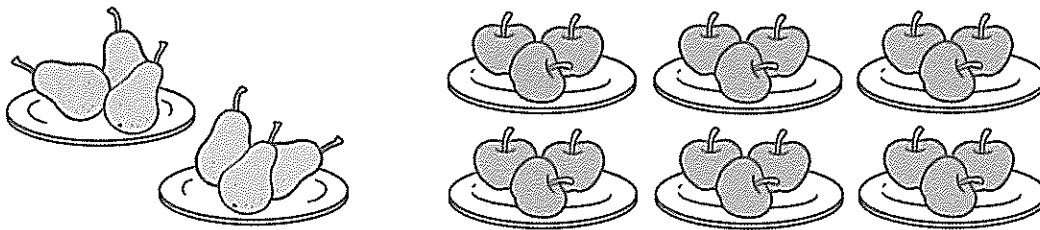
1. The ratio of the number of pears to the number of apples is

_____ : _____.

2. Damien put each pear on a plate. He also put each apple on a plate. There was one fruit on each plate. The ratio of the number of plates of pears to the number of plates of apples is

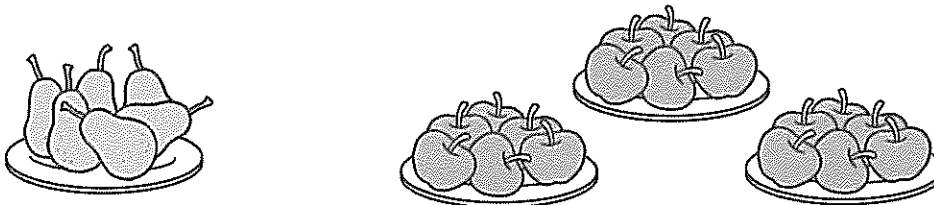
_____ : _____.

3. Damien put 3 pears on each plate and 3 apples on each plate.



The ratio of the number of plates of pears to the number of plates of apples is _____ : _____.

4. Damien put 6 pears on a plate and 6 apples on each plate.



The ratio of the number of plates of pears to the number of plates of apples is _____ : _____.

Name: _____

Date: _____

Use your answers for Exercises 2 to 4 to fill in the blanks.

5. The equivalent ratios from the exercises are

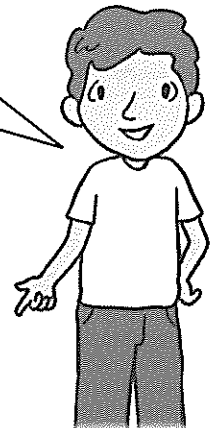
_____ : _____, _____ : _____, and

_____ : _____.

6. In Exercise 4, the greatest possible number of pears was put on a plate. The simplest form of these equivalent ratios is

_____ : _____.

Put only one type of fruit on each plate. Using all the fruits, find another way of putting an equal number of fruits on each plate. This will give you another equivalent ratio.



Find the greatest common factor of each pair of numbers.

7. 20 and 15 _____

8. 8 and 36 _____

Express each ratio in simplest form.

Example

Method 1

$$\begin{array}{ccc}
 6 & : & 18 \\
 \div 3 & \swarrow & \searrow \div 3 \\
 = & \boxed{2} & : & \boxed{6} \\
 \div 2 & \swarrow & \searrow \div 2 \\
 = & \boxed{1} & : & \boxed{3}
 \end{array}$$

Both terms, 6 and 18, can be divided by the common factor 3.

Both terms can be divided by the common factor 2.

Both terms cannot be divided further by a common factor. This is the **simplest form** of the ratio 6 : 18.

Method 2

$$\begin{array}{ccc}
 6 & : & 18 \\
 \div \boxed{6} & \swarrow & \searrow \div \boxed{6} \\
 = & \boxed{1} & : & \boxed{3}
 \end{array}$$

The **greatest common factor** of 6 and 18 is 6. To write a ratio in simplest form, divide the terms by their greatest common factor.



9.

$$\begin{array}{ccc}
 3 & : & 12 \\
 \div \boxed{} & \swarrow & \searrow \div \boxed{} \\
 = & \boxed{} & : & \boxed{}
 \end{array}$$

10.

$$\begin{array}{ccc}
 28 & : & 16 \\
 \div \boxed{} & \swarrow & \searrow \div \boxed{} \\
 = & \boxed{} & : & \boxed{}
 \end{array}$$

Name: _____

Date: _____

Express each ratio in simplest form.

11. $\frac{8}{6} = \frac{\square}{\square}$

12. $\frac{12}{20} = \frac{\square}{\square}$

Express each ratio in simplest form.

13. $18 : 30 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

14. $14 : 18 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

15. $12 : 28 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

16. $16 : 40 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

Find the missing term in each equivalent ratio.

Example

$15 : 24 = 5 : \underline{8}$

$15 \div 3 = 5$
 $24 \div 3 = 8$



17. $6 : 14 = 3 : \underline{\hspace{2cm}}$

18. $9 : 15 = \underline{\hspace{2cm}} : 5$

19. $24 : 28 = 6 : \underline{\hspace{2cm}}$

20. $35 : 45 = \underline{\hspace{2cm}} : 9$

21. $12 : 27 = \underline{\hspace{2cm}} : 9$

22. $14 : 22 = \underline{\hspace{2cm}} : 11$

Name: _____

Date: _____

Find an equivalent ratio by multiplying both terms by the same number.

Example

$$\begin{array}{ccc} & 3 & : & 4 \\ \times 2 & \downarrow & & \downarrow & \times 2 \\ = & 6 & : & 8 \end{array}$$

23.

$$\begin{array}{ccc} & 4 & : & 5 \\ \times 3 & \downarrow & & \downarrow & \times 3 \\ = & \square & : & \square \end{array}$$

24.

$$\begin{array}{ccc} & 3 & : & 8 \\ \times 4 & \downarrow & & \downarrow & \times 4 \\ = & \square & : & \square \end{array}$$

25.

$$\begin{array}{ccc} & 5 & : & 7 \\ \times 5 & \downarrow & & \downarrow & \times 5 \\ = & \square & : & \square \end{array}$$

Find the missing term in each equivalent ratio.

Example

$$\begin{array}{ccc} & 7 & : & 3 \\ \times \square & \downarrow & & \downarrow & \times \square \\ = & 35 & : & 15 \end{array}$$

26.

$$\begin{array}{ccc} & 6 & : & 5 \\ \times \square & \downarrow & & \downarrow & \times \square \\ = & 24 & : & \square \end{array}$$

27.

$$\begin{array}{ccc} & \square & : & 8 \\ \times \square & \downarrow & & \downarrow & \times \square \\ = & 15 & : & 24 \end{array}$$

28.

$$\begin{array}{ccc} & 7 & : & \square \\ \times \square & \downarrow & & \downarrow & \times \square \\ = & 21 & : & 27 \end{array}$$

Name: _____

Date: _____

Complete the equivalent ratios.

29. $3 : 2 = 12 : \underline{\hspace{2cm}}$

30. $9 : 8 = \underline{\hspace{2cm}} : 56$

31. $7 : 12 = 28 : \underline{\hspace{2cm}}$

32. $\underline{\hspace{2cm}} : 42 = 12 : 7$

33. $10 : 20 = \underline{\hspace{2cm}} : 4$

34. $1 : \underline{\hspace{2cm}} = 6 : 30$

35. $40 : 72 = 5 : \underline{\hspace{2cm}}$

36. $3 : \underline{\hspace{2cm}} = 48 : 32$

Remember, you can get equivalent ratios by multiplying or dividing both terms by the same number.



Name: _____

Date: _____

Worksheet 3 Real-World Problems: Ratios

Solve. Show your work.

1. There are 40 student volunteers at a charity fundraiser. Of the volunteers, 12 are boys.
 - a. How many student volunteers are girls?

- b. Find the ratio of the number of boys to the number of girls.

Name: _____

Date: _____

2. Mrs. Roberts bought 48 potatoes and carrots. She cooked all of the 16 carrots for a family meal.

a. How many potatoes did she buy?

b. What is the ratio of the number of carrots to the number of potatoes?

Name: _____

Date: _____

Solve. Show your work.

3. The ratio of the number of boys to the number of girls in a fund-raising club is 2 : 3. There are 18 girls in the club. How many boys are in the club?

$$\begin{array}{l} \text{Number of boys} \quad : \quad \text{Number of girls} \\ = \quad 2 \quad : \quad 3 \\ \times \quad \square \quad \left(\begin{array}{l} \curvearrowright \\ \downarrow \end{array} \right) \quad \times \quad \square \\ = \quad \square \quad : \quad 18 \end{array}$$

_____ boys are in the club.

4. A shopkeeper has corn flour and wheat flour. The ratio of the weight of the corn flour to the weight of the wheat flour is 3 : 5. The weight of the corn flour is 21 pounds. What is the weight of the wheat flour?

Name: _____

Date: _____

5. Fiona made a mango shake using mango syrup and milk. The ratio of the amount of mango syrup to the amount of milk was 5 : 8. Fiona used 32 liters of milk. How much mango syrup did Fiona use?

Name: _____

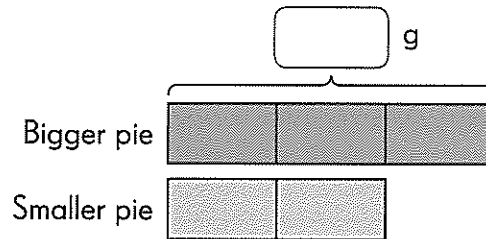
Date: _____

Worksheet 4 Real-World Problems: Ratios

Complete.

1. Rachel buys two pies. The ratio of the mass of the bigger pie to the mass of the smaller pie is 3 : 2. The mass of the bigger pie is 210 grams. What is the mass of the smaller pie?

Step 1 Draw a model to show the ratio 3 : 2.
One bar has 3 units and the other bar has 2 units.
The longer bar represents the bigger pie.
Fill in the missing number in the model below.



Step 2 Look at the model. How many units represent 210 grams?
Complete the statement below.

_____ units \rightarrow 210 g

Step 3 From the statement above, find the mass represented by 1 unit.

1 unit \rightarrow _____ \div _____ = _____ g

Step 4 Find the mass of the smaller pie. Multiply the number of units representing the smaller pie by the mass represented by 1 unit.

_____ units = _____ \times _____
= _____ g

The mass of the smaller pie is _____ g.

Name: _____

Date: _____

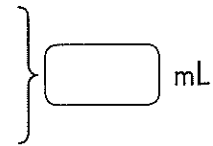
Complete.

2. Kim prepared a mixture of apple juice and carrot juice. The ratio of the volume of the apple juice used to the volume of the carrot juice used was 7 : 4. The total volume of the mixture was 451 milliliters. How many milliliters of apple juice did Kim use?

Step 1 Draw a model to show the ratio 7 : 4 and the total volume of 451 milliliters.

Apple juice

Carrot juice



Step 2 Write a statement about the total volume.

_____ units \rightarrow _____ mL

Step 3 Find the volume represented by 1 unit.

1 unit \rightarrow _____ \div _____ = _____ mL

Step 4 Find the volume of apple juice.

_____ units = _____ \times _____

= _____ mL

Kim used _____ milliliters of apple juice.

Name: _____

Date: _____

Solve. Use models to help you.

3. Sunita had \$72. She spent some of it on books. The ratio of the amount of money Sunita spent to the amount of money she has left is 2 : 7.
- a. How much money does Sunita have left?

First, draw a model to show the ratio 2 : 7. Then use the model to find the answers.

Amount spent

Amount left

- b. How much money did she spend?

Name: _____

Date: _____

4. A teacher brought a group of students on a field trip. Of the students on the trip, 35 were girls. The ratio of the number of boys to the number of girls was 4 : 5.

a. How many boys went on the field trip?

Number of boys

Number of girls

b. How many students went on the field trip?

Name: _____

Date: _____

Solve. Use models to help you.

5. Sunny has a collection of 152 CDs and DVDs. The ratio of the number of DVDs to the number of CDs is 3 : 5.

a. How many CDs does Sunny have?

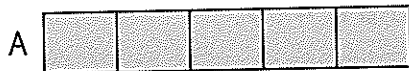
b. How many more CDs than DVDs does he have?

Name: _____

Date: _____

Complete.

Cara has two bags of nuts. The weight of bag A is $\frac{5}{9}$ of the weight of bag B.



3. The ratio of the weight of bag A to the weight of bag B is $\frac{\square}{\square}$.

4. The weight of bag A is $\frac{\square}{\square}$ times the weight of bag B.

5. The weight of bag B is $\frac{\square}{\square}$ times the weight of bag A.

6. The ratio of the weight of bag B to the total weight of bags A and B is $\frac{\square}{\square}$.

7. The weight of bag B is $\frac{\square}{\square}$ times the total weight of bags A and B.

Name: _____

Date: _____

Solve. Use a model to help you.

8. There are peaches and nectarines in a box. The number of peaches is $\frac{7}{3}$ times the number of nectarines.
- a. Find the ratio of the number of peaches to the number of nectarines. Give your answer in fraction form.

- b. Find the ratio of the number of peaches to the total number of peaches and nectarines. Give your answer in fraction form.

- c. How many times the number of nectarines is the total number of peaches and nectarines?

Name: _____

Date: _____

Solve. Use a model to help you.

9. Joe is twice as old as Drew.

a. Find the ratio of Drew's age to Joe's age. Give your answer in fraction form.

b. Find the ratio of Drew's age to their combined age. Give your answer in fraction form.

c. How many times Drew's age is Joe's age?

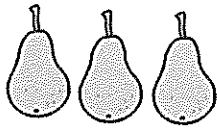
Name: _____

Date: _____

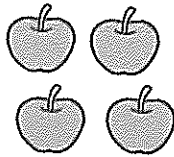
Worksheet 6 Comparing Three Quantities

Complete.

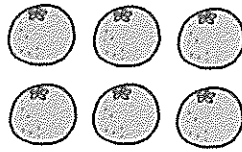
Jessica has some fruit in her refrigerator.



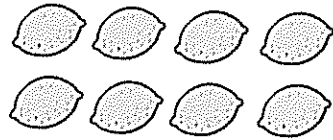
pears



apples



oranges



lemons

Example

The ratio of the number of apples to the number of lemons to the number of pears is 4 : 8 : 3.

1. The ratio of the number of oranges to the number of pears to the number of apples is _____ : _____ : _____.
2. The ratio of the number of lemons to the number of oranges to the total number of fruit is _____ : _____ : _____.

Complete to find the equivalent ratios.

Example

$$\begin{array}{r} 3 : 6 : 12 \\ \div 3 \quad \downarrow \quad \downarrow \quad \div 3 \\ = \boxed{1} : \boxed{2} : \boxed{4} \end{array}$$

3 is a common factor of 3, 6, and 12.
Divide each term in the ratio by the common factor.

Complete to find the equivalent ratios.

3.

$$\begin{array}{c} \div \square \quad 14 : 4 : 6 \\ \quad \quad \quad \downarrow \quad \downarrow \quad \downarrow \\ = \square : \square : 3 \end{array}$$

What number can 6 be divided by to get 3?

4.

$$\begin{array}{c} \div 2 \quad 16 : 12 : 8 \\ \quad \quad \quad \downarrow \quad \downarrow \quad \downarrow \\ = \square : \square : \square \end{array}$$

Look at Exercises 4 and 5. The same ratio of 16 : 12 : 8 is used. Dividing by different common factors results in different equivalent ratios.

5.

$$\begin{array}{c} \div \square \quad 16 : 12 : 8 \\ \quad \quad \quad \downarrow \quad \downarrow \quad \downarrow \\ = \square : 3 : \square \end{array}$$

The ratio 16 : 12 : 8 is expressed in its simplest form here. When a ratio is in its simplest form, the terms cannot be divided further by a common factor.

6.

$$\begin{array}{c} \times 5 \quad 1 : 5 : 2 \\ \quad \quad \quad \downarrow \quad \downarrow \quad \downarrow \\ = \square : \square : \square \end{array}$$

Multiply by 5 to find the equivalent ratio.

7.

$$\begin{array}{c} \times \square \quad 3 : 5 : 7 \\ \quad \quad \quad \downarrow \quad \downarrow \quad \downarrow \\ = 9 : \square : \square \end{array}$$

What number multiplied by 3 gives 9?

Name: _____

Date: _____

Complete to find the equivalent ratios.

8. $1 : 4 : 5 = \underline{\hspace{2cm}} : 8 : 10$

9. $4 : 7 : 9 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}} : 27$

10. $5 : 2 : 8 = 15 : \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

11. $10 : 16 : 8 = \underline{\hspace{2cm}} : \underline{\hspace{2cm}} : 4$

12. $12 : 20 : 36 = \underline{\hspace{2cm}} : 5 : \underline{\hspace{2cm}}$

13. $45 : 27 : 63 = 5 : \underline{\hspace{2cm}} : \underline{\hspace{2cm}}$

Solve. Show your work.

14. During the lunch break, 12 plates of baked rice, 15 plates of pasta, and 24 plates of salad were sold at the snack bar. Find the ratio of the number of plates of baked rice sold to the number of plates of pasta sold to the number of plates of salad sold. Express your answer in simplest form.

Name: _____

Date: _____

Solve. Show your work. Express your answers in simplest form.

- 15.** Mr. Carson counted how much fruit he sold in his shop on a Sunday. He sold 32 oranges, 22 apples, 12 cantaloupes, and 16 pears.
- a.** Find the ratio of the number of oranges sold to the number of apples sold to the number of cantaloupes sold.
- b.** Find the ratio of the number of apples sold to the number of pears sold to the number of oranges sold.
- c.** Find the ratio of the total number of oranges and apples sold to the total number of cantaloupes and pears sold.

Name: _____

Date: _____

Worksheet 7 Real-World Problems: More Ratios

Solve. Show your work.

1. Mrs. Sims bought 12 liters of cooking oil. She poured the cooking oil into three bottles, A, B, and C. Bottle A contains 6 liters of cooking oil. Bottle B contains 2 liters less cooking oil than bottle A.
 - a. How much cooking oil is in bottle B?
 - b. How much cooking oil is in bottle C?
 - c. What is the ratio of the volume of cooking oil in bottle A to the volume of cooking oil in bottle B to the volume of cooking oil in bottle C?

Name: _____

Date: _____

2. Joe placed three sticks end to end to get a total length of 42 inches. The length of the first stick is 12 inches. The second stick is 3 inches longer than the first stick.

a. Find the length of the second stick.

b. Find the length of the third stick.

c. What is the ratio of the length of the first stick to the length of the second stick to the length of the third stick?

Name: _____

Date: _____

Complete.

3. Aiesha went to school, surfed the Internet, and slept for a few hours in the ratio 3 : 2 : 4. Aiesha spent 6 hours at school. How many hours did Aiesha sleep?

Method 1 Use equivalent ratios to find the answer.

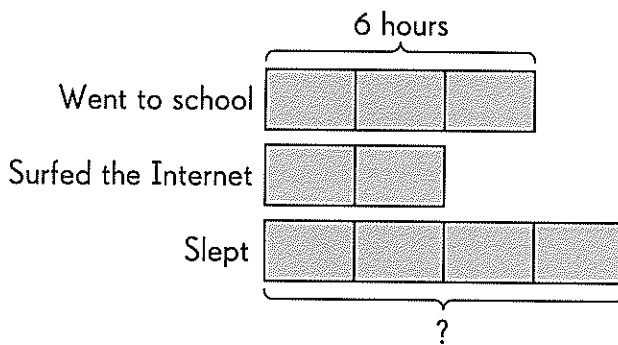
$$\begin{array}{r} \times \quad \square \quad \begin{array}{l} \curvearrowright 3 \\ \downarrow \end{array} : \quad \begin{array}{l} 2 \\ \downarrow \end{array} : \quad \begin{array}{l} \square \\ \downarrow \end{array} \quad \begin{array}{l} \curvearrowright 4 \\ \downarrow \end{array} \times \quad \square \\ = 6 : \quad \square : \quad \square \end{array}$$

What number multiplied by 3 gives 6?



Aiesha slept for _____ hours.

Method 2 Use a model to find the answer.



3 units \longrightarrow _____ hours

1 unit \longrightarrow _____ \div _____ = _____ hours

4 units \longrightarrow _____ \times _____ = _____ hours

Aiesha slept for _____ hours.

Name: _____

Date: _____

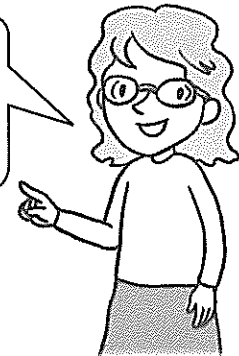
Complete.

4. Mrs. Lauren cut a ribbon into three pieces, X, Y, and Z, with lengths in the ratio 4 : 1 : 2. The longest piece is 36 centimeters long. Find the length of ribbon Z.

Method 1 Use equivalent ratios to find the answer.

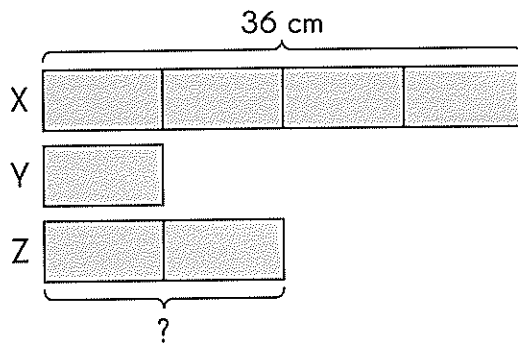
$$\begin{array}{ccccccc} & & 4 & : & 1 & : & 2 \\ \times & \square & \downarrow & & \downarrow & \times & \square & \times & \square \\ & & & & & & & & \\ = & 36 & : & \square & : & \square & & & \end{array}$$

What number multiplied by 4 gives 36?



The length of ribbon Z is _____ centimeters.

Method 2 Use a model to find the answer.



4 units \longrightarrow _____ cm

1 unit \longrightarrow _____ \div _____ = _____ cm

2 units \longrightarrow _____ \times _____ = _____ cm

The length of ribbon Z is _____ centimeters.

Name: _____

Date: _____

Solve. Use models to help you.

5. A tailor cut a piece of fabric that was 56 meters long into three pieces, X, Y, and Z, with lengths in the ratio 4 : 3 : 1. Find the length of the longest piece of fabric.

Complete the model. Then use it to solve the problem.



Name: _____

Date: _____

6. In a survey of 50 people, the ratio of the number of people who exercise once a week to the number of people who exercise twice a week to the number of people who exercise three times a week is 2 : 5 : 3.

a. How many people exercise twice a week?

b. How many fewer people exercise three times a week than those who exercise twice a week?