

STUDY LINK

4•1

Uses of Division



Use multiplication and division facts to solve the following problems mentally.

Remember: Break the number into two or more friendly parts.



Example: How many 4s in 71?

Break 71 into smaller, friendly numbers. Here are two ways.

◆ 40 and 31. Ask yourself: *How many 4s in 40?* (10) *How many 4s in 31?* (7 and 3 left over) Think: *What multiplication fact for 4 has a product near 31?* ($4 \times 7 = 28$)
Total = 17 and 3 left over.

◆ 20, 20, 20, and 11. Ask yourself: *How many 4s in 20?* (5) *How many 4s in three 20s?* (15) *How many 4s in 11?* (2 and 3 left over) Total = 17 and 3 left over.

So 71 divided by 4 equals 17 with 3 left over.

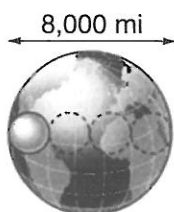
1. 57 divided by 3 equals _____.

(friendly parts for 57)

2. 96 divided by 8 equals _____.

(friendly parts for 96)

3. The diameter of Earth, about 8,000 miles, is about 4 times the diameter of the moon. What is the approximate diameter of the moon?



4. The weight of an object on Earth is 6 times heavier than its weight on the moon. An object that weighs 30 lb on Earth weighs how many pounds on the moon?

_____ unit

_____ unit

Practice

Solve. Then write the other problems in the fact families.

5. $1,803 - 925 =$ _____

6. $498 + 377 =$ _____

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4•2

Division



Here is the partial-quotients algorithm using a friendly numbers strategy.



$$7 \overline{)237}$$

Rename dividend (use multiples of the divisor):

$$237 = 210 + 21 + 6$$

$$\begin{array}{r} -210 \\ \hline 27 \end{array}$$

30

How many 7s are in 210? 30

The first partial quotient. $30 * 7 = 210$

Subtract. 27 is left to divide.

$$\begin{array}{r} -21 \\ \hline 6 \end{array}$$

3

How many 7s are in 27? 3

The second partial quotient. $3 * 7 = 21$

Subtract. 6 is left to divide.

6

33

Add the partial quotients: $30 + 3 = 33$

↑ ↑ **Answer: 33 R6**

1. Another way to rename 237 with multiples of 7 is

$$237 = 70 + 70 + 70 + 21 + 6$$

If the example had used this name for 237, what would the partial quotients have been?

2. $6 \overline{)166}$

3. $214 \div 5$

Answer: _____

Answer: _____

4. $485 \div 15$

5. $17 \overline{)408}$

Answer: _____

Answer: _____

Practice

6. $3,817 + 168 =$ _____

Check: _____ - _____ = _____

7. $52,517 - 281 =$ _____

Check: _____ + _____ = _____

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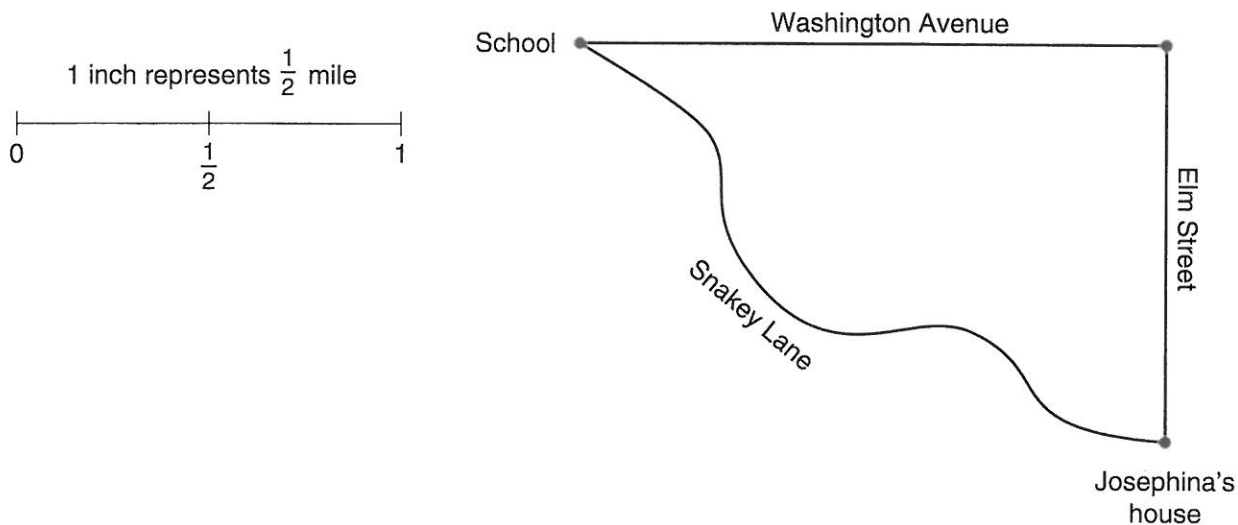
4•3

Distance to School



There are two ways to go from Josephina's house to school. She can take Elm Street and then Washington Avenue. She can also take Snakey Lane.

Use the map and scale below to answer the questions.



1. Josephina started walking from home to school along Elm Street.
 - a. How far would Josephina walk before she turned onto Washington Avenue? _____
 - b. How far would she be from school when she turned the corner? _____
2. Suppose Josephina could take a straight path from her house to school. Estimate the distance.
 - a. Draw and measure a straight line on the map from Josephina's house to the school. _____
 - b. Use the scale to measure this distance in miles. _____

Practice

3. $376 - 188 =$ _____

Check: _____ + _____ = _____

4. $3,997 + 151 =$ _____

Check: _____ - _____ = _____



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4•4

Division



Here is an example of the partial-quotients algorithm using an “at least...not more than” strategy.



$8 \overline{)185}$		Begin estimating with multiples of 10.
$\underline{- 80}$	10	How many 8s are in 185? At least 10.
105		The first partial quotient. $10 * 8 = 80$
		Subtract. 105 is left to divide.
$\underline{- 80}$	10	How many 8s are in 105? At least 10.
25		The second partial quotient. $10 * 8 = 80$
		Subtract. 25 is left to divide.
$\underline{- 24}$	3	How many 8s are in 25? At least 3.
		The third partial quotient. $3 * 8 = 24$
		Subtract. 1 is left to divide.
1	23	Add the partial quotients: $10 + 10 + 3 = 23$
↑	↑	

Remainder **Quotient** **Answer: 23 R1**

Solve.

1. $639 \div 9$

Answer: _____

2. $954 \div 18$

Answer: _____

3. $1,990 \div 24$

Answer: _____

4. $972 \div 37$

Answer: _____

5. Robert is making a photo album. 6 photos fit on a page. How many pages will he need for 497 photos? _____ pages

Practice

6. $2,746 + 68 =$ _____

Check: _____ - _____ = _____

7. $3,461 - 165 =$ _____

Check: _____ + _____ = _____

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4•5

Estimate and Calculate Quotients



For each problem:

- ◆ Make a magnitude estimate of the quotient. Ask yourself:
Is the answer in the tenths, ones, tens, or hundreds?
- ◆ Circle a box to show the magnitude of your estimate.
- ◆ Write a number sentence to show how you estimated.
- ◆ If there is a decimal point, ignore it. Divide the numbers.
- ◆ Use your magnitude estimate to place the decimal point in the final answer.
- ◆ Check that your final answer is reasonable.

1. $6 \overline{)78.6}$

0.1s	1s	10s	100s
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How I estimated: _____

Answer: _____

2. $3 \overline{)387}$

0.1s	1s	10s	100s
------	----	-----	------

How I estimated: _____

Answer: _____

3. $\$29.52 \div 8$

0.1s	1s	10s	100s
------	----	-----	------

How I estimated: _____

Answer: _____

4. $989 \div 43$

0.1s	1s	10s	100s
------	----	-----	------

How I estimated: _____

Answer: _____

5. $845 \div 5$

0.1s	1s	10s	100s
------	----	-----	------

How I estimated: _____

Answer: _____

6. $15.84 \div 9$

0.1s	1s	10s	100s
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How I estimated: _____

Answer: _____

Practice

7. $8.54 + 6.004 =$ _____

Check: _____ - _____ = _____

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4•6

Division Number Stories with Remainders



For each number story draw a picture or write a number sentence on the back of this page. Then divide to solve the problem. Decide what to do about the remainder. Explain what you did.

**Example:**

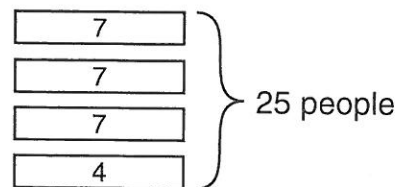
You need to set up benches for a picnic. Each bench seats 7 people. You expect 25 people to attend. How many benches do you need?

$$25 \div 7 = b$$

Circle what you did with the remainder.

How many benches?

7 seats per bench



4 benches.

Ignored it Reported it as a fraction or decimal Rounded the answer up

Why? 3 benches seat 21 people. One more bench is needed.

1. It costs \$50.00 to be a member of a soccer team. The team plays 8 games during the season. What is the cost per game?

\$ _____

Circle what you did with the remainder.

Ignored it Reported it as a fraction or decimal Rounded the answer up

Why? _____

2. Lynn is having a party. Pizzas cost \$8.00 each. How many pizzas can she buy with \$60.00?

_____ pizzas

Circle what you did with the remainder.

Ignored it Reported it as a fraction or decimal Rounded the answer up

Why? _____

Practice

3. $31 \div 2 \rightarrow$ _____

4. $629 \times 84 =$ _____



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4•7

Variables



For Problems 1–3:

- ◆ Find the value of x in the first number sentence.
- ◆ Use this value to complete the second number sentence.

1. x = number of days in a week

$x^2 =$ _____

2. $x = \frac{1}{10}$ of 100

$x * 78 =$ _____

3. x = largest sum possible with 2 six-sided dice

$598 + x =$ _____

4. Count the number of letters in your first name and in your last name.

a. My first name has _____ letters. b. My last name has _____ letters.

c. Find the product of these 2 numbers. Product = _____

Answer the questions in Problems 5–11 by replacing x with the product you found in Problem 4.

5. Is x a prime or a composite number? _____

6. Is $\frac{x}{30}$ less than 1? _____

7. Which is larger, $3 * x$, or $x + 100$? _____

8. What is the median and the range for this set of 3 weights: 30 pounds, 52 pounds, x pounds? _____

9. There are 200 students at Henry Clissold School. $x\%$ speak Spanish. How many students speak Spanish? _____

10. $(3x + 5) - 7 =$ _____

11. True or false: $x^2 > 30 * x$ _____

Practice

12. $3,817 + 168 =$ _____

13. $52,517 - 281 =$ _____

