

4th Grade Unit 1 Part 4: Division (Study Guide)

Name _____

Date _____

Study Guide directions:

Answer the questions and compare your answers to the answer key. Ask questions about anything you don't understand. Create similar questions to practice each skill with different numbers.

Standard:

16.NBT.6 find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models

1. Be able to find whole number quotients and missing factors:

- $432 \div 6 = \underline{\quad}$
- $5 \times \square = 835$; $\square = \underline{\quad}$
- $4 \times \square = 3,267$; $\square = \underline{\quad}$
- $5,344 \div 8 = \underline{\quad}$

2. Identify patterns in division calculations:

$48 \div 8 = 6$	$56 \div 7 = 8$
$480 \div 8 = 60$	$560 \div 70 = 8$
$4,800 \div 8 = 600$	$5,600 \div \underline{\quad} = 8$
$48,000 \div 8 = \underline{\quad}$	$56,000 \div 7,000 = 8$

3. Draw arrays to represent division problems:

$36 \div 4 = 9$	$36 \div 6 = 6$
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4. Understand division as the inverse of multiplication:

- $5 \times 184 = 920$ is the opposite of what division problem?
- What is the inverse of $70 \times 9 + 5 = 635$?
- How could you check the answer to $129 \div 8 = 15 \text{ r. } 1$?

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2.OA.2 solve multiplication and division word problems involving multiplicative comparison using drawings and equations (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison)**

5. *Solve multiplicative compare problems by drawing a diagram and writing an equation to represent the unknown value:*

Cycle Mart sold 5 times as many bicycles as Bikes-4-Us. If Cycle Mart sold 45 bicycles, how many bicycles did Bikes-4-Us sell?

6. *Review equal groups problems by drawing a diagram and writing an equation to represent the unknown value:*

Mrs. Lee bought 111 pencils for her class. She wants to have enough pencils to give 5 to each of her students. If she has 23 students, does she have enough pencils?

3.OA.3 solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding

7. *Use compatible numbers to estimate quotients:*

Ella baked 259 cookies. She wants to package them in sets of 3 for the bake sale. About how many packages can she make?

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8. *Solve multi-step problems involving division. Write an equation with a letter standing for the unknown quantity, and decide what to do with the remainder:*

- a. How many vans are needed for 22 girl scouts and 5 troop leaders if 7 people can ride in each van?

What did you do with the remainder?

- b. Mrs. Dee has 114 inches of ribbon to make bows for the cheerleaders. Each bow uses 9 inches of ribbon. How many cheerleader bows can Mrs. Dee make?

What did you do with the remainder?

- c. Giovanni was sharing 159 pieces of Halloween candy with 3 friends, so he divided it into 4 equal groups. He told his little sister she could have the extra candy. How many pieces of candy did Giovanni give to his sister?

What did you do with the remainder?

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Study Guide Answer Key (Problem solving questions may have other acceptable diagrams.)

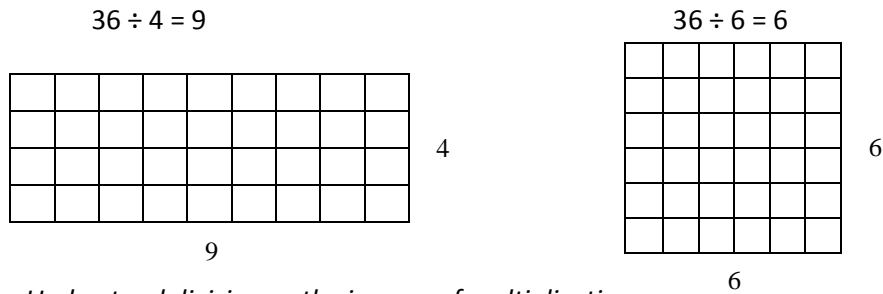
1. Be able to find whole number quotients and missing factors:

- e. $432 \div 6 = \underline{72}$
 f. $5 \times \square = 835; \square = \underline{167}$
 g. $4 \times \square = 3,267; \square = \underline{816 \text{ r.} 3}$
 h. $5,345 \div 8 = \underline{668 \text{ r.} 1}$

2. Identify patterns in division calculations:

- | | |
|-------------------------------------|----------------------------------|
| $48 \div 8 = 6$ | $56 \div 7 = 8$ |
| $480 \div 8 = 60$ | $560 \div 70 = 8$ |
| $4,800 \div 8 = 600$ | $5,600 \div \underline{700} = 8$ |
| $48,000 \div 8 = \underline{6,000}$ | $56,000 \div 7,000 = 8$ |

3. Draw arrays to represent division problems:

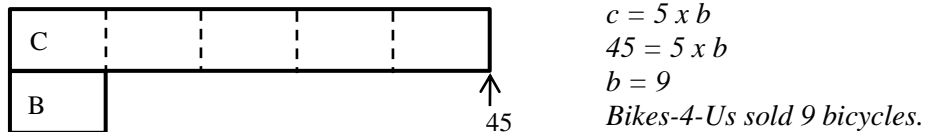


Understand division as the inverse of multiplication:

- a. $5 \times 184 = 920$ is the opposite of what division problem?
 $920 \div 5 = 184$ or $920 \div 184 = 5$
- b. What is the inverse of $70 \times 9 + 5 = 635$?
 $635 \div 9 = 70$ with 5 left over
- c. How could you check the answer to $129 \div 8 = 15 \text{ r.} 1$?
 Multiply the quotient (15) by the divisor (8) and add the remainder (1):
 $15 \times 8 + 1$. If the answer is the dividend (129), then it's correct.
 The answer is 121, so the answer to the division problem is incorrect.

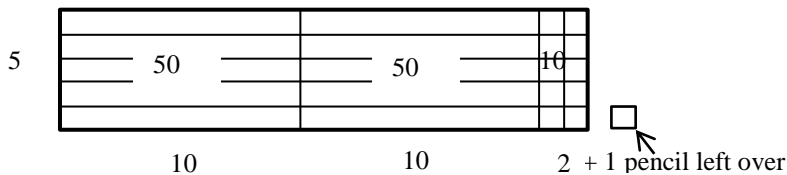
4. Solve multiplicative compare problems by drawing a diagram and writing an equation to represent the unknown value:

Cycle Mart sold 5 times as many bicycles as Bikes-4-Us. If Cycle Mart sold 45 bicycles, how many bicycles did Bikes-4-Us sell?



5. Review equal groups problems by drawing a diagram and writing an equation to represent the unknown value:

Mrs. Lee bought 111 pencils for her class. She wants to have enough pencils to give 5 to each of her students. If she has 23 students, does she have enough pencils?



$s \times p/s = p$
 $s \times 5 = 111$
 $s = 22 \text{ r.} 1$
 No, Mrs. Lee will have enough pencils for only 22 students.

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6. Use compatible numbers to estimate quotients:

Ella baked 259 cookies. She wants to package them in sets of 3 for the bake sale. About how many packages can she make?

$3 \times 80 = 240$ and $3 \times 90 = 270$. Since 259 is closer to 270, Ella can make about 90 packages.

7. Solve multi-step problems involving division. Write an equation with a letter standing for the unknown quantity, and decide what to do with the remainder:

- a. How many vans are needed for 22 girl scouts and 5 troop leaders if 7 people can ride in each van?

$v \times p / v = p$ (vans \times people in each van = people)

$v \times 7 = 22 + 5$

$v \times 7 = 27$

$v = 3 \text{ r. } 6$

The girl scouts will need 4 vans.

7

7

7

6

What did you do with the remainder?

I added an extra van for the 6 remaining people. You can't leave people behind.

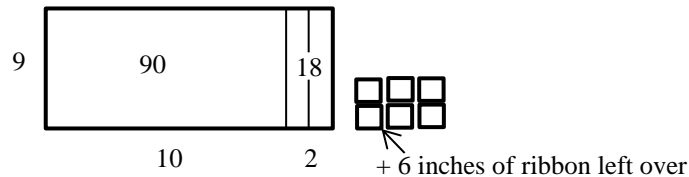
- b. Mrs. Dee has 114 inches of ribbon to make bows for the cheerleaders. Each bow uses 9 inches of ribbon. How many cheerleader bows can Mrs. Dee make?

$b \times \text{in.} / b = \text{in.}$ (bow \times inches per bow = inches)

$b \times 9 = 114$

$b = 12 \text{ r. } 6$

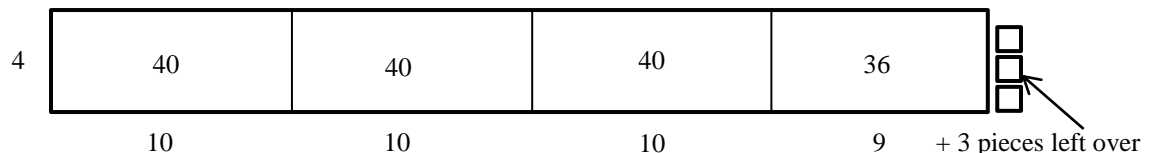
Mrs. D can make 12 bows.



What did you do with the remainder?

I left it. You can't make a bow with just 6 inches of ribbon. Mrs. D can throw it away or save it for another project.

- c. Giovanni was sharing 159 pieces of Halloween candy with 3 friends, so he divided it into 4 equal groups. He told his little sister she could have the extra candy. How many pieces of candy did Giovanni give to his sister?



Giovanni gave 3 pieces of candy to his sister.

- d. What did you do with the remainder?

The remainder was the answer to the question.