

North Penn School District
Elementary Math Parent Letter

Grade 3

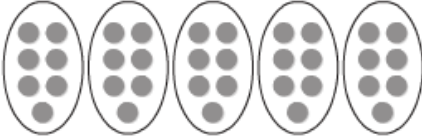
Unit 4 – Chapter 6: Understand Division

Examples for each lesson:

Lesson 6.1

Problem Solving • Model Division

There are 35 people going to the amusement park. They will all travel in 5 vans with the same number of people in each van. How many people will travel in each van?

Read the Problem	Solve the Problem
<p>What do I need to find?</p> <p>I need to find the number of <u>people</u> who will travel in each van.</p>	<p>Describe how to act out the problem to solve.</p> <p>Step 1 Start with 35 counters.</p>
<p>What information do I need to use?</p> <p>There are <u>35</u> people. <u>5</u> vans are taking all the people to the amusement park.</p>	<p>Step 2 Make 5 equal groups. Place 1 counter at a time in each group until all 35 counters are used.</p> <p>Step 3 Count the number of counters in each group. <u>7</u></p>
<p>How will I use the information?</p> <p>I can act out the problem by making equal <u>groups</u> with counters.</p>	 <p>So, 7 people will travel in each van.</p>

More information on this strategy is available on Animated Math Model #22.

Lesson 6.2

Size of Equal Groups

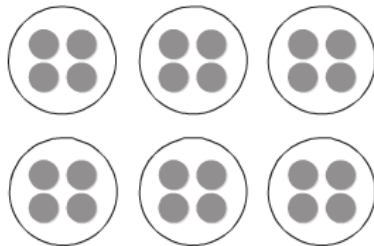
When you **divide**, you separate into equal groups.

Use counters or draw a quick picture. Make equal groups.
Complete the table.

Counters	Number of Equal Groups	Number in Each Group
24	6	■

The number in each group is unknown, so divide.

Place 1 counter at a time in each group until all 24 counters are used.



There are 4 counters in each of 6 groups.

More information on this strategy is available on Animated Math Model #22.

Lesson 6.3

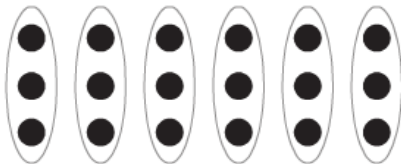
Number of Equal Groups

Complete the table. Use counters to help find the number of equal groups.

Counters	Number of Equal Groups	Number in Each Group
18	■	3

The number of equal groups is unknown, so divide.

Circle groups of 3 counters until all 18 counters are in a group.



There are 6 groups of 3 counters each.

More information on this strategy is available on Animated Math Model #22.

Lesson 6.4

Model with Bar Models

Use counters to find $15 \div 5$.

Step 1 Use 15 counters. Draw 5 circles to show the number of equal groups.



Step 2 Place 1 counter at a time in each circle.



Step 3 Continue until you have placed all 15 counters.

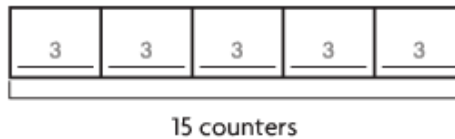


Step 4 Count the number of counters in each circle.

There are 3 counters in each of the 5 groups.

You can use a bar model to show how the parts of a problem are related.

- There are 15 counters.
- There are 5 equal groups.
- There are 3 counters in each group.



Write a division equation for the model.

$$15 \div 5 = 3$$

More information on this strategy is available on Animated Math Model #22.

Lesson 6.5

Algebra • Relate Subtraction and Division

Find $18 \div 6$.

Step 1 Start with the number you are dividing, 18.

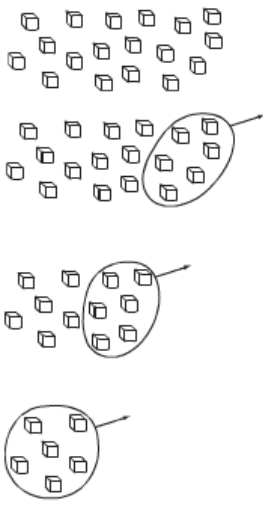
Step 2 Subtract the number you are dividing by, 6.

Step 3 There are more than 6 left. Subtract 6 again.

Step 4 There are 6 left. Subtract 6 again.

Step 5 Count the number of times you subtract 6.
You subtract 6 three times, so there are 3 groups of 6 in 18.
Write: $18 \div 6 = 3$

Use base-ten blocks.



Use repeated subtraction.

$$\begin{array}{r} 18 \\ - 6 \\ \hline 12 \end{array}$$
$$\begin{array}{r} 18 \\ - 6 \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array}$$
$$\begin{array}{r} 18 \\ - 6 \\ \hline 12 \end{array} \quad \begin{array}{r} 12 \\ - 6 \\ \hline 6 \end{array} \quad \begin{array}{r} 6 \\ - 6 \\ \hline 0 \end{array}$$

More information on this strategy is available on Animated Math Model #23.

Lesson 6.6

Model with Arrays

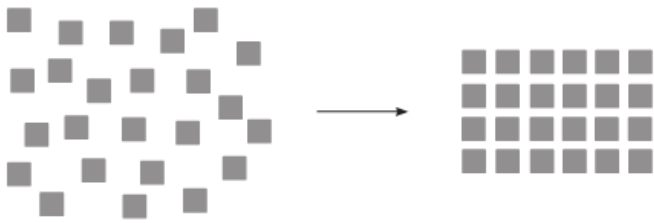
You can use arrays to model division.

How many rows of 6 tiles each can you make with 24 tiles?

Use square tiles to make an array. Solve.

Step 1 Use 24 tiles.

Step 2 Make as many rows of 6 as you can.



You can make 4 rows of 6.

So, there are 4 rows of 6 tiles in 24.

Lesson 6.7

Algebra • Relate Multiplication and Division

You can use an array to complete $21 \div 3 = \underline{\quad}$.

Use 21 counters.
Make 3 equal rows.

- There are 7 counters in each row.
- 3 rows of 7 = 21
- So, $21 \div 3 = 7$

The 21 tells the total number of counters in the array.
The 3 stands for the number of equal rows.
The 7 stands for the number of counters in each row.

You can use a related multiplication fact to check your answer.

$$21 \div 3 = 7 \quad 3 \times 7 = 21$$

So, 3 rows of 7 represents $21 \div 3 = 7$ or $3 \times 7 = 21$.

More information on this strategy is available on Animated Math Model #24.

Lesson 6.8

Algebra • Write Related Facts

Related facts are a set of related multiplication and division equations.

Write the related facts for the array.

There are 4 equal rows of tiles.
There are 6 tiles in each row.
There are 24 tiles.
Write 2 multiplication equations and 2 division equations for the array.



factor \times factor = product

$$\boxed{4} \times \boxed{6} = \mathbf{24}$$

$$\boxed{6} \times \boxed{4} = \mathbf{24}$$

dividend \div divisor = quotient

$$\mathbf{24} \div \boxed{4} = \boxed{6}$$

$$\mathbf{24} \div \boxed{6} = \boxed{4}$$

The equations show how the numbers 4, 6, and 24 are related.

So, the related facts are $4 \times 6 = 24$, $6 \times 4 = 24$, $24 \div 4 = 6$, and $24 \div 6 = 4$.

More information on this strategy is available on Animated Math Model #25.

Lesson 6.9

Algebra • Division Rules for 1 and 0

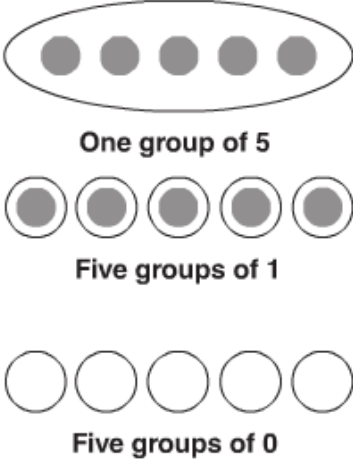
Division rules can help you understand how to divide with 1 and 0.

Rule A: Any number divided by 1 equals that number.
 $5 \div 1 = 5$ or $1 \overline{)5}$

Rule B: Any number (except 0) divided by itself equals 1.
 $5 \div 5 = 1$ or $5 \overline{)5}$

Rule C: Zero divided by any number (except 0) equals 0.
 $0 \div 5 = 0$ or $5 \overline{)0}$

Rule D: You cannot divide by 0.



More information on this strategy is available on Animated Math Model #26.

Vocabulary

Divide – to separate into equal groups

Dividend – the number that is to be divided in a division problem

Divisor – the number that divides the dividend

Inverse operations – opposite operations or operations that undo one another, such as addition and subtraction or multiplication and division

Quotient – the number, not including the remainder, that results from division

Related facts – a set of related multiplication and division facts