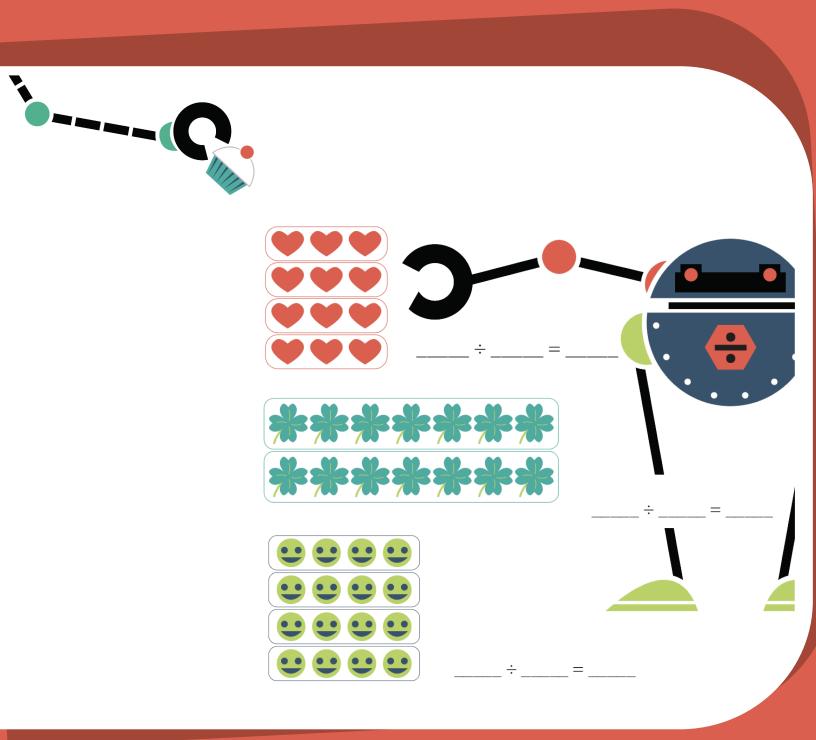
# Fundamentals of Division

# 3rd Grade



# Table of Contents

#### **Fundamentals of Division**

Division: Find the Total Number of Groups \*

Division: Find the Total Number of Objects \*

Division: Equal Groups (Part One) \*

Division: Equal Groups (Part Two) \*

Division: Factor Fun \*

Division: Repeated Subtraction (Part One) \*

Division: Repeated Subtraction (Part Two) \*

Division: Arrays for Division (Part One) \*

Division: Arrays for Division (Part Two) \*

Division: Hop to the Quotient! \*

Division: Skip-Count to the Quotient \*

Division: Dividing Cupcakes into Unequal Groups

Division: Dividing Gummy Bears into Equal Groups \*

Division: Word Problems (Part One) \*

Division: Word Problems (Part Two) \*

Division: Make a Match \*

Division: Key Terms and Strategies

Certificate of Completion
Answer Sheets

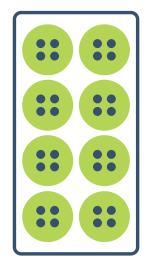
\* Includes Answer Sheet

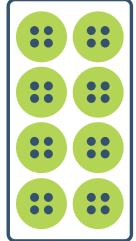
#### **Find the Total Number of Groups**

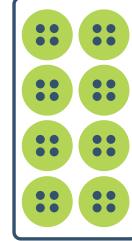
**Directions:** You can also use division to find the total number of groups.

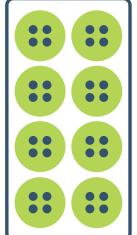
1. Divide 40 buttons into groups of 8. How many groups of button are there?

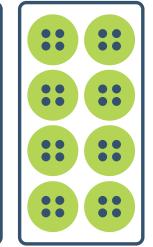






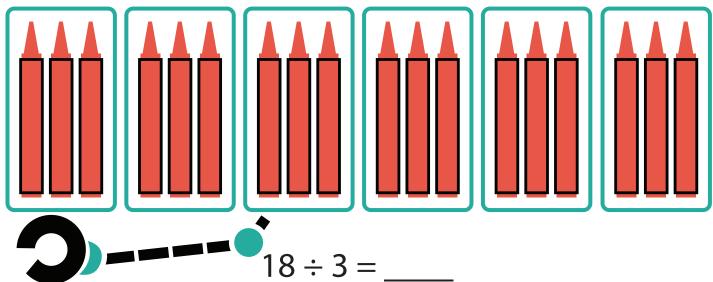






2. Divide the 18 crayons into groups of 3. How many groups of crayons are there?

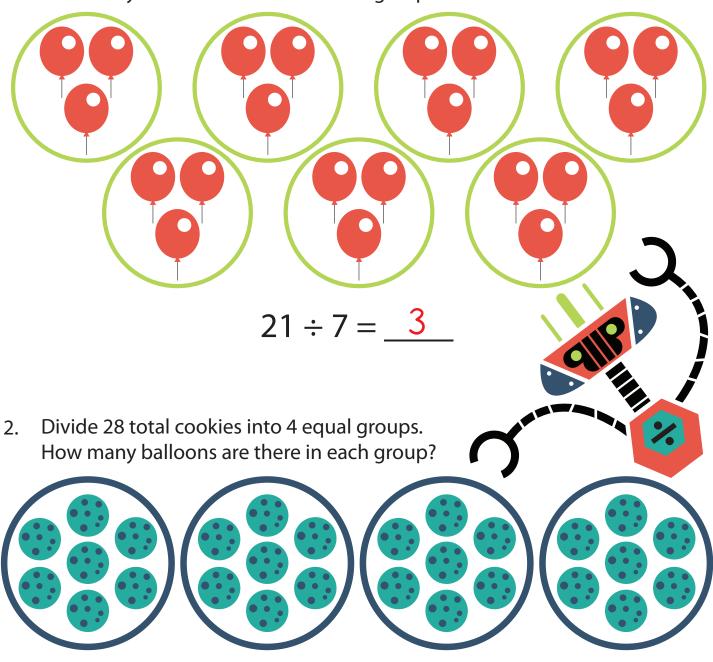




#### **Find the Total Number of Objects**

**Directions:** You can use division to find the number of objects in each group.

1. Divide 21 total balloons into 7 equal groups. How many balloons are there in each group?



$$28 \div 4 = _{\underline{\phantom{0}}}$$

#### **Equal Groups: Division**

In this drawing there are 5 equal groups of stars with 4 stars in each group. There are a total of 20 stars.



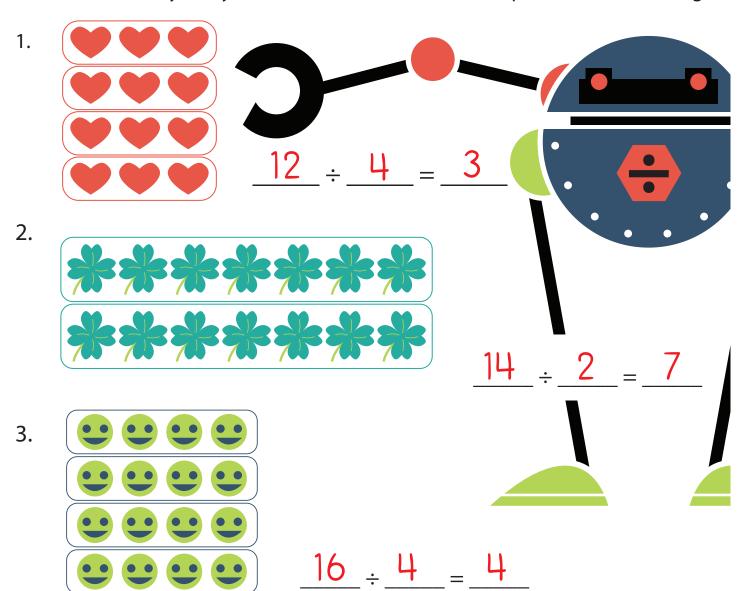
This division sentence shows how the 20 stars are divided into equal groups.

DIVIDEND QUOTIENT  $20 \div 5 = 4$ 

**DIVISOR** 

Dividend: total number of objects
Divisor: Number of equal groups
Quotient: Number of objects in each group

**Directions:** Now you try! Write a division sentence to represent each drawing.

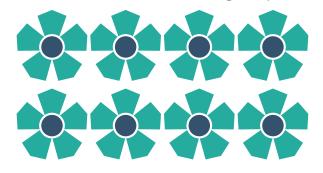


**Equal Groups: Division 2** 



**Directions:** Make equal groups. Then write a division sentence for each picture and solve.

There are 8 flowers. Make groups of 4.



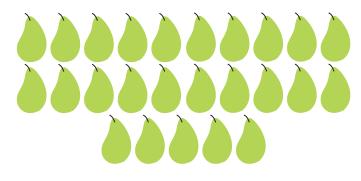
÷\_\_\_\_=\_\_

There are 9 bricks. Make groups of 3.



· : \_\_\_\_ = \_\_\_\_

There are 25 pears. Make groups of 5.

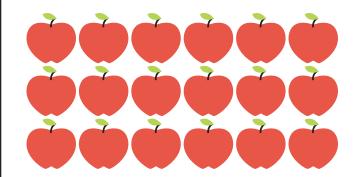


÷\_\_\_=\_

There are 15 bears. Make groups of 3.

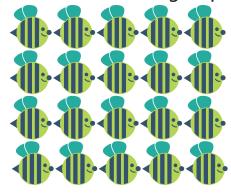


There are 18 apples. Make groups of 2.



\_\_\_ ÷ \_\_\_\_ = \_\_

There are 20 bees. Make groups of 4.



÷\_\_\_\_=

#### **Factor Fun**

When you read a division question, ask yourself a multiplication question!

$$20 \div 5 = ?$$
  
Ask yourself  
 $5 \times ? = 20$ 

Five multiplied by what, equals 20?

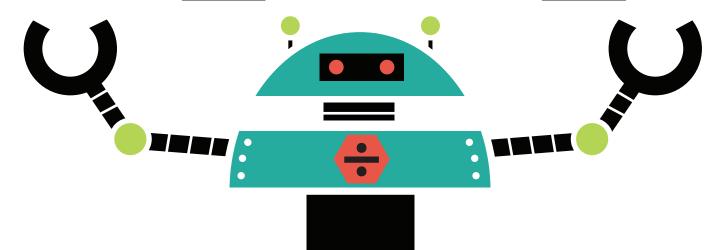
$$30 \div 6 =$$
 because  $6 \times$  = 30

$$60 \div 10 =$$
 because  $10 \times$  = 60

$$63 \div 9 =$$
 because  $9 \times$  = 63

$$49 \div 7 =$$
 because  $7 \times$  = 49

$$48 \div 12 =$$
 because 12 x \_\_\_\_ = 48



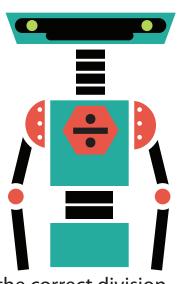
#### **Repeated Subtraction**

Review the diagram!

DIVIDEND QUOTIENT  $15 \div 5 = 3$ DIVISOR

#### How to perform repeated subtraction:

- Subtract the divisor from the dividend until you reach zero.
- Count up how many times you subtracted.
- The number of times you subtracted equals the quotient!



**Directions:** Match the repeated subtraction on the left with the correct division sentence on the right.

$$\begin{array}{c|cccc}
18 & 12 & 6 \\
 & -6 & -6 & -6 \\
\hline
12 & 6 & 0
\end{array}$$

$$\begin{array}{c|c}
16 & 8 \\
-8 & -8 \\
\hline
8 & 0
\end{array}$$

It's your Turn!

Use repeated subtraction to solve  $20 \div 5$ . Show your work in the space provided. Write the quotient on the answer line:

$$20 \div 5 =$$
\_\_\_\_

# 4-2)----

#### **Repeated Subtraction 2**

**Directions:** Represent each division problem with repeated subtraction.

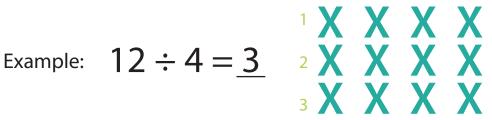
What division fact does the repeated subtraction number sentence represent?

#### **Arrays for Division**



**Directions:** The divisor tells you how many x's to draw in each row. Draw rows of x's until the total number of x's equals the dividend.







Now you try! Draw an array for each division problem and record the quotient on the answer line.

$$28 \div 7 =$$
\_\_\_

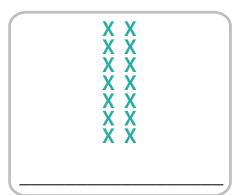
$$10 \div 5 =$$
\_\_\_

$$20 \div 5 =$$
\_\_\_

What division problems do the arrays represent?







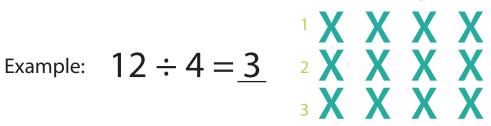
# Arrays for Division 2



**Directions:** The divisor tells you how many x's to draw in each row. Draw rows of x's until the total number of x's equals the dividend.



$$12 \div 4 = 3$$



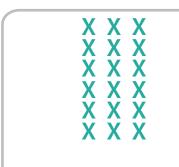


Now you try! Draw an array for each division problem and record the quotient on the answer line.

$$9 \div 3 = _{-}$$

What division problems do the arrays represent?



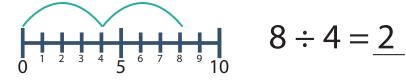




#### Hop to the Quotient!

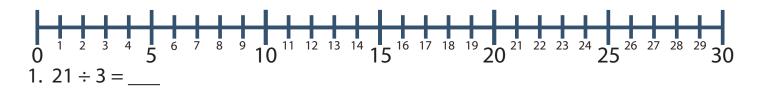
Hoppy the frog hopped down this number line to solve  $8 \div 4$ :

**Example:** 

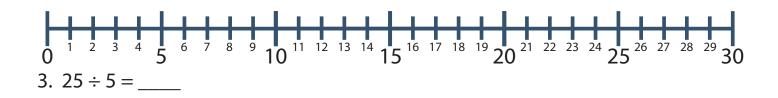


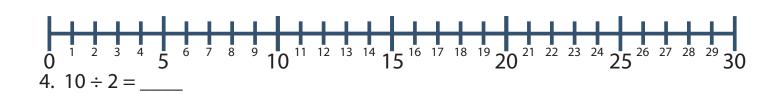
$$8 \div 4 = \underline{2}$$

**Directions:** Hop down each number line to find the quotient (answer). Write your answer on the blank space.









#### **Skip-Count to the Quotient**



How many times do you skip down the number line to find the quotient?

The divisor tells you how many numbers to count down the number line.

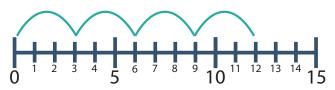
**Example:** 



$$10 \div 5 = \underline{2}$$

The divisor is 5, so you skip count by 5's down the number line. Since you hopped down the number line 2 times, the quotient is 2.

1.



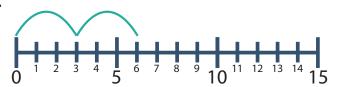
$$12 \div 3 =$$

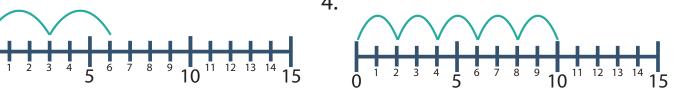


$$15 \div 5 =$$
\_\_\_\_

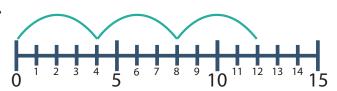
Match each number line with the correct division sentence.

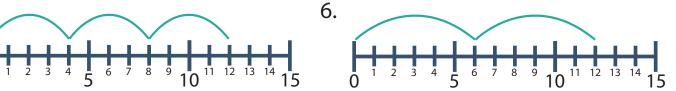
3.





5.





- a.  $12 \div 4 =$ \_\_\_\_ b.  $6 \div 3 =$ \_\_\_ c.  $10 \div 2 =$ \_\_\_ d.  $12 \div 2 =$ \_\_\_
- 7. Now you try! Show how you skip count on the number line below.
- First, draw how you hop down the number line.
- Then, write the quotient on the answer line.



#### **Dividing Cupcakes into Unequal Groups**



Jane has 10 cupcakes that she wants to divide among her three friends.

riends.	
Vere you able to	ivide the 10 cupcakes into equal groups?
oid you come up	vith one or more than one way to divide the 10 cupcakes?

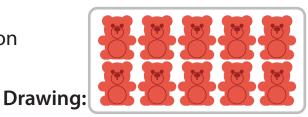
#### **Dividing Gummy Bears into Equal Groups**

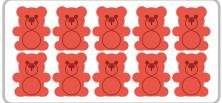


There are 20 gummy bears in Kimmie's candy jar.

**Step 1:** For each problem below draw a picture to show how 20 gummy bears are divided among the Kimmie's friends. You can use an "x" or other symbol to represent gummy bears in your drawing.

**Step 2:** Write a division sentence and solve.





**Example:** 2 best friends eat

the 20 gummy bears.

Division  $20 \div 2 = 10$ 

Kimmie's 4 friends eat the 20 gummy bears.

Kimmie's 5 friends eat the 20 gummy bears.

÷ =

Kimmie's 10 friends eat the 20 gummy bears.

Who ended up eating the most gummy bears?

- 1. Kimmie's 4 friends.
- 2. Kimmie's 5 friends.
- 3. Kimmie's 10 friends.



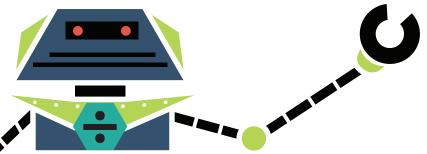
# **Division**: Division Word Problems





Use one of the following strategies when solving the following word problems:

- Draw an array
- Draw Equal Groups
- Repeated Subtraction
- Multiplication Sentence



Write the strategy you used on the line provided and show your work.

James Has 15 cookies. He wants to divide them and give an equal number to his 3 friends. How many cookies should he give each friend?



cookies

Samantha has 28 books. She wants to divide them and make 4 equal stacks to lend to her friends. How many books should she put in each stack?



\_\_\_\_\_ books

Mary is throwing a party. She has 20 soap hearts and wants to divide them equally into 5 party favor bags. How many soap hearts should she put in each bag?

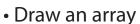


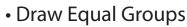
\_\_\_\_\_ soap hearts

# **Division**: Division Word Problems 2

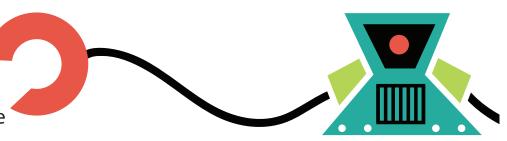


Use one of the following strategies when solving the following word problems:





- Repeated Subtraction
- Multiplication Sentence



Write the strategy you used on the line provided and show your work.

Kenny has 14 juice boxes. He wants to divide them and give an equal number to his 7 friends. How many juice boxes should he give each friend?



\_\_\_\_\_juice boxes

Chris has 8 bouncy balls. He wants to divide them and give an equal number to his 8 friends. How many bouncy balls should he give each friend?

\_\_\_\_ ÷ \_\_\_ = \_\_\_\_

\_\_\_\_\_ bouncy balls



Ada is bringing balloons to the class party. She has 30 balloons and wants to divide them equally among the 10 students in her class. How many balloons should each student get?



balloons

**Directions:** Draw a line from the word or phrase on the left side of the page to the phrase that best describes that word or phrase on the right side of the page.

Dividend

Quotient

Draw an Array

Skip Count

Repeated Subtraction

Divisor

Count by the divisor until you get the dividend and then count up your rows.

Count backwards by the value of the divisor.

Subtract the divisor until you reach 0.

The number of groups that the dividend is being separated into.

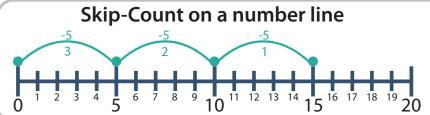
The larger number that is being divided into smaller groups.

The answer to a division problem.

#### **Your Guide to Key Terms & Strategies**

DIVIDEND QUOTIENT  $15 \div 5 = 3$ DIVISOR

**Directions:** Use this mini-poster as your guide to solving the division problems in this workbook!



Skip-count (backwards) by the value of the divisor.

3 hops of 5 lands on 0, so  $15 \div 5 = 3$ .

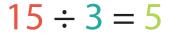
#### **Repeated Subtraction**

$$15 - 5 = 10 \rightarrow 10 - 5 = 5 \rightarrow 5 - 5 = 0$$

- Write the value of the dividend (in this example, write the number 15).
- Then, subtract the value of the divisor (in this example, subtract 5).
- Continue to subtract the value of the divisor until the difference equals 0.
- •The number of times you subtracted the divisor in the repeated subtraction problem equals the answer to the division problem (quotient).

#### **Fact Family**





$$3 \times 5 = 15$$

$$5 \times 3 = 15$$



• A group of multiplication and division facts that share the same three numbers.

#### **Array**

- The value of the divisor tells you how many x's to draw in each row of the array.
- In this example, the value of the divisor is 5 and the dividend is 15, so you draw 5 x's in each row until the total number of x's in the array equals 15.
- The total number of rows in the array equals the answer to the division problem (quotient). In this example, since you have three rows of x's, the quotient is 3.

#### **Equal Groups**



- The value of the divisor equals the number of circles you should draw.
- Once you draw your circles, draw one dot in each circle. Keep drawing one dot in each circle until the total number of dots is equal to the value of the dividend.
- The number of dots in each circle is the answer to the division problem, the quotient.

**Division:** splitting something into equal groups

Dividend: the larger number that is being split into smaller groups

Divisor: the number of groups that the dividend is being separated into

**Quotient:** the answer to a division problem



# DIPLOMA

Hereby bestowed upon

for excellence in completion of

#### **Fundamentals of Division**

Division: Find the Total Number of Groups Division: Find the Total Number of Objects

Division: Equal Groups (Part One) Division: Equal Groups (Part Two)

Division: Factor Fun

Division: Repeated Subtraction (Part One)
Division: Repeated Subtraction (Part Two)
Division: Arrays for Division (Part One)
Division: Arrays for Division (Part Two)
Division: Hop to the Quotient!
Division: Skip-Count to the Quotient

Division: Dividing Gummy Bears into Equal Groups

Division: Word Problems (Part One) Division: Word Problems (Part Two)

Division: Make a Match

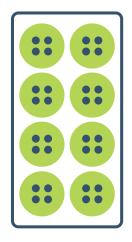
# **Division:**

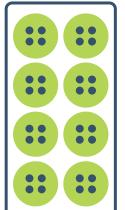
#### Find the Total Number of Groups

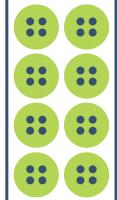
**Directions:** You can also use division to find the total number of groups.

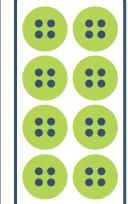
Divide 40 buttons into groups of 8.
 How many groups of button are there?

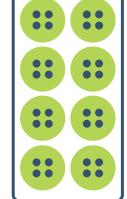






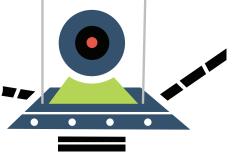


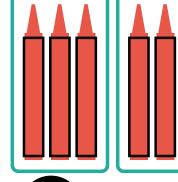


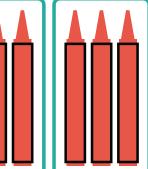


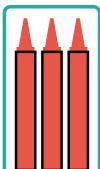
$$40 \div 8 = _{\underline{5}}$$

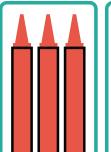
2. Divide the 18 crayons into groups of 3. How many groups of crayons are there?

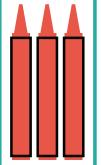












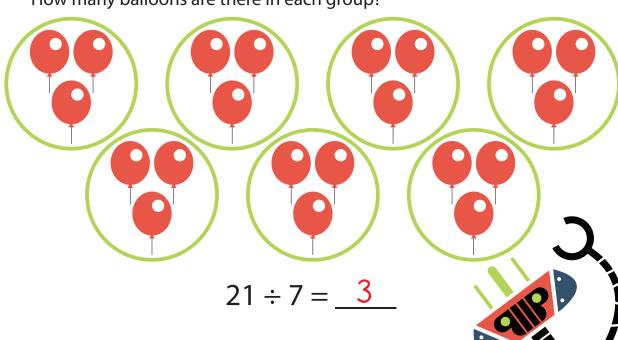


# **Division:**

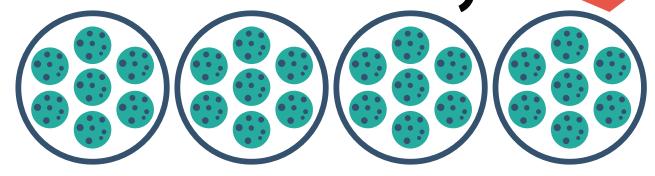
#### Find the Total Number of Objects

**Directions:** You can use division to find the number of objects in each group.

1. Divide 21 total balloons into 7 equal groups. How many balloons are there in each group?



2. Divide 28 total cookies into 4 equal groups. How many balloons are there in each group?



$$28 \div 4 = _{7}$$

# **Division:**

**Equal Groups: Division** 

In this drawing there are 5 equal groups of stars with 4 stars in each group. There are a total of 20 stars.



This division sentence shows how the 20 stars are divided into equal groups.

DIVIDEND QUOTIENT  $20 \div 5 = 4$ DIVISOR

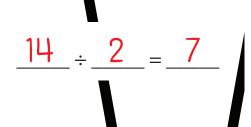
Dividend: total number of objects
Divisor: Number of equal groups
Quotient: Number of objects in each group

**Directions:** Now you try! Write a division sentence to represent each drawing.

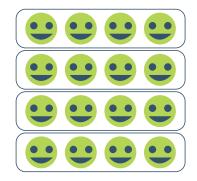








3.



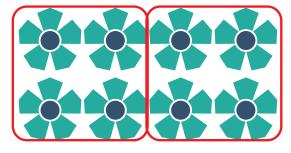
# **Division:**

**Equal Groups: Division 2** 



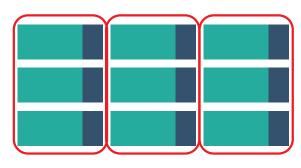
**Directions:** Make equal groups. Then write a division sentence for each picture and solve.

There are 8 flowers. Make groups of 4. There are 15 bears. Make groups of 3.



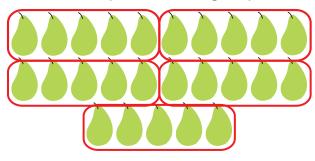
$$8 \div 4 = 2$$

There are 9 bricks. Make groups of 3.

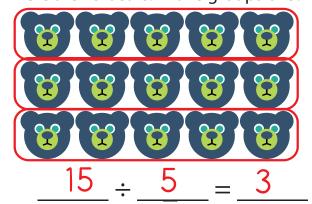


$$9 \div 3 = 3$$

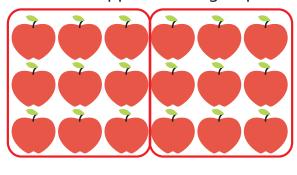
There are 25 pears. Make groups of 5.



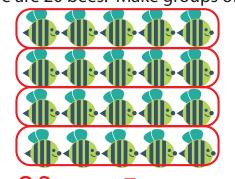
$$25 \div 5 = 5$$



There are 18 apples. Make groups of 2.



There are 20 bees. Make groups of 4.



# **Division:**

**Factor Fun** 

When you read a division question, ask yourself a multiplication question!

$$20 \div 5 = ?$$

Ask yourself

Five multiplied by what, equals 20?

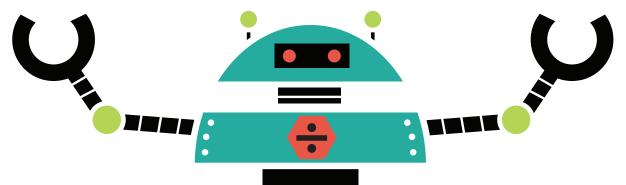
$$30 \div 6 = 5$$
 because  $6 \times 5 = 30$ 

$$60 \div 10 = \underline{6}$$
 because  $10 \times \underline{6} = 60$ 

$$63 \div 9 = _{\underline{}}$$
 because  $9 \times _{\underline{}}$  = 63

$$49 \div 7 = _{7}$$
 because  $7 \times _{7} = 49$ 

$$48 \div 12 = 4$$
 because  $12 \times 4 = 48$ 



# **Division:**

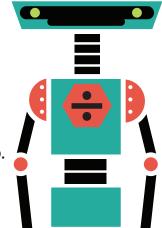
#### **Repeated Subtraction**

Review the diagram!

DIVIDEND QUOTIENT 
$$15 \div 5 = 3$$
DIVISOR



- Subtract the divisor from the dividend until you reach zero.
- Count up how many times you subtracted.
- The number of times you subtracted equals the quotient!



**Directions:** Match the repeated subtraction on the left with the correct division sentence on the right.

20 15 10 5

<u>-5</u> /	<u>- 5</u> /	<u>- 5</u> /	<u>- 5</u>
15	10	5	0
10	12		

It's your Turn!

Use repeated subtraction to solve  $20 \div 5$ . Show your work in the space provided. Write the quotient on the answer line:

# **Division:**

#### **Repeated Subtraction 2**

**Directions:** Represent each division problem with repeated subtraction.

$$15 \div 5 = \_$$

$$15 \quad 10 \quad 5$$

$$-\frac{5}{-5} / -\frac{5}{-5}$$

$$10 \quad 5 \quad 0$$

$$24 \div 8 = \underline{\phantom{0}}$$

$$24 \cdot 8 = \underline{\phantom{0}}$$

$$\frac{24 \cdot 8}{16} = \underline{\phantom{0}}$$

$$\frac{8}{-8} - \underline{8} - \underline{8}$$

$$\frac{-8}{16} = \underline{\phantom{0}}$$

$$18 \div 3 = \underline{\phantom{0}}$$

$$18 \stackrel{15}{\cancel{-3}} \stackrel{12}{\cancel{-3}} \stackrel{9}{\cancel{-3}} \stackrel{6}{\cancel{-3}} \stackrel{3}{\cancel{-3}} \stackrel{3}$$

 $30 \div 5 =$ \_\_\_

What division fact does the repeated subtraction number sentence represent?

$$12 \div 6 = 2$$

$$24 \div 8 = 3$$

$$10 \div 5 = 2$$

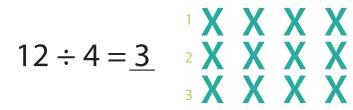
# **Division:**

**Arrays for Division** 



**Directions:** The divisor tells you how many x's to draw in each row. Draw rows of x's until the total number of x's equals the dividend.

Example:





Now you try! Draw an array for each division problem and record the quotient on the answer line.

$$28 \div 7 = \underline{4}$$

$$18 \div 2 = 9$$

$$10 \div 5 = 2$$

$$20 \div 5 = 4$$

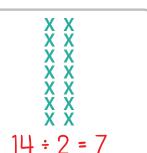
$$X \times X \times X$$

$$X \times X \times X$$

What division problems do the arrays represent?



$$8 \div 4 = 2$$



# **Division:**

Arrays for Division 2



**Directions:** The divisor tells you how many x's to draw in each row. Draw rows of x's until the total number of x's equals the dividend.

Example:  $12 \div 4 = 3$  2 X X X



Now you try! Draw an array for each division problem and record the quotient on the answer line.

$$30 \div 6 = 5$$

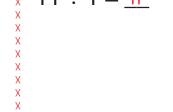
$$\times \times \times \times \times \times$$

$$20 \div 10 = 2$$

$$9 \div 3 = 3$$

$$12 \div 4 = 3$$

$$11 \div 1 = 11$$



What division problems do the arrays represent?



$$21 \div 7 = 3$$

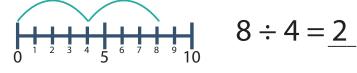
# Division



Hop to the Quotient!

Hoppy the frog hopped down this number line to solve  $8 \div 4$ :

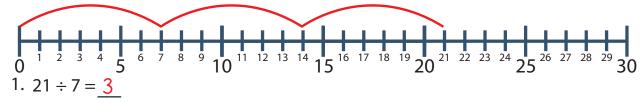
**Example:** 

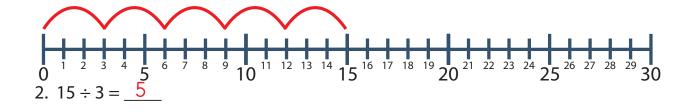


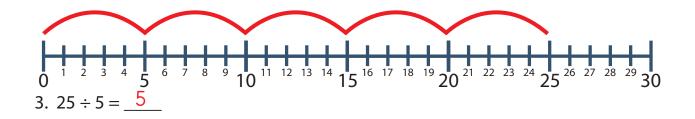
$$8 \div 4 = \underline{2}$$

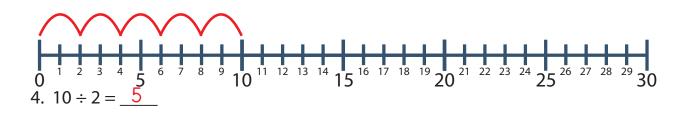


Directions: Hop down each number line to find the quotient (answer). Write your answer on the blank space.









# **Division:**

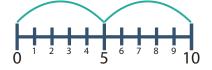
**Skip-Count to the Quotient** 



How many times do you skip down the number line to find the quotient?

The divisor tells you how many numbers to count down the number line.

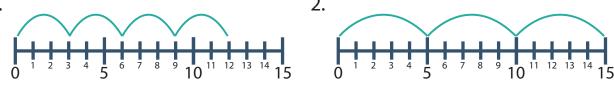
**Example:** 



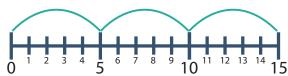
$$10 \div 5 = 2$$

The divisor is 5, so you skip count by 5's down the number line. Since you hopped down the number line 2 times, the quotient is 2.

1.



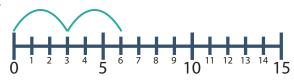
$$12 \div 3 = 4$$

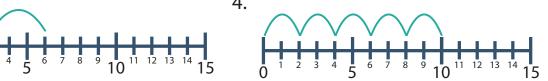


$$15 \div 5 = 3$$

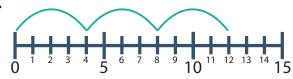
Match each number line with the correct division sentence.

3.





5.



6.



- 7. Now you try! Show how you skip count on the number line below.
- First, draw how you hop down the number line.
- Then, write the quotient on the answer line.



$$18 \div 6 = 3$$

# **Division:**

#### **Dividing Gummy Bears into Equal Groups**

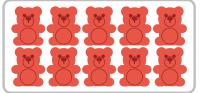
There are 20 gummy bears in Kimmie's candy jar.



**Step 1:** For each problem below draw a picture to show how 20 gummy bears are divided among the Kimmie's friends. You can use an "x" or other symbol to represent gummy bears in your drawing.

**Step 2:** Write a division sentence and solve.



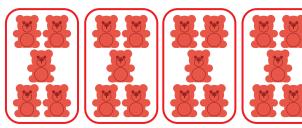


**Example:** 2 best friends eat the 20 gummy bears.

Division sentence: 2

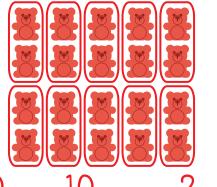
 $20 \div 2 = 10$ 

Kimmie's 4 friends eat the 20 gummy bears.



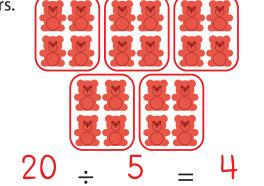
 $20 \div 4 = 5$ 

Kimmie's 10 friends eat the 20 gummy bears.



 $20 \div 10 = 2$ 

Kimmie's 5 friends eat the 20 gummy bears.



Who ended up eating the most gummy bears?

- 1. Kimmie's 4 friends.
- 2. Kimmie's 5 friends.
- 3. Kimmie's 10 friends.



# **Division:**

**Division Word Problems** 



Use one of the following strategies when solving the following word problems:

- Draw an array
- Draw Equal Groups
- Repeated Subtraction
- Multiplication Sentence



Write the strategy you used on the line provided and show your work.

James Has 15 cookies. He wants to divide them and give an equal number to his 3 friends. How many cookies should he give each friend?



\_\_\_\_5 cookies

Samantha has 28 books. She wants to divide them and make 4 equal stacks to lend to her friends. How many books should she put in each stack?



\_\_\_\_<del>7</del>\_\_\_ books

Mary is throwing a party. She has 20 soap hearts and wants to divide them equally into 5 party favor bags. How many soap hearts should she put in each bag?



\_\_\_\_\_ 4 \_\_\_\_ soap hearts

# **Division:**

**Division Word Problems 2** 



Use one of the following strategies when solving the following word problems:

- Draw an array
- Draw Equal Groups
- Repeated Subtraction
- Multiplication Sentence



Write the strategy you used on the line provided and show your work.

Kenny has 14 juice boxes. He wants to divide them and give an equal number to his 7 friends. How many juice boxes should he give each friend?



\_\_\_\_\_juice boxes

Chris has 8 bouncy balls. He wants to divide them and give an equal number to his 8 friends. How many bouncy balls should he give each friend?

\_\_\_\_\_1 bouncy balls

Ada is bringing balloons to the class party. She has 30 balloons and wants to divide them equally among the 10 students in her class. How many balloons should each student get?



3 balloons



**Directions:** Draw a line from the word or phrase on the left side of the page to the phrase that best describes that word or phrase on the right side of the page.

Count by the divisor until you get the Dividend dividend and then count up your rows. Count backwards by Quotient the value of the divisor. Subtract the divisor Draw an Array until you reach 0. The number of groups that the Skip Count dividend is being separated into. The larger number Repeated that is being divided Subtraction into smaller groups. The answer to a Divisor division problem.