

Modelling Division



Quick Review

- ▶ Jacob arranges his 8 marbles into groups of 2.
How many groups are there?



There are 4 groups of 2.

You write:

$$\begin{array}{ccccccc} 8 & \div & 2 & = & 4 & & \\ \downarrow & & \downarrow & & \downarrow & & \\ \text{number of} & & \text{number in} & & \text{number of} & & \\ \text{marbles} & & \text{each group} & & \text{groups} & & \end{array}$$

This is a division sentence.

You say, "8 divided by 2 is 4."

- ▶ Now Jacob arranges the marbles into 8 equal groups.
How many marbles are in each group?



There are 8 groups of 1.

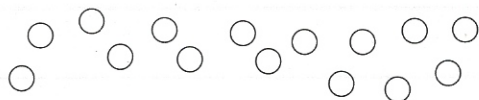
You write:

$$\begin{array}{ccccccc} 8 & \div & 8 & = & 1 & & \\ \downarrow & & \downarrow & & \downarrow & & \\ \text{number of} & & \text{number in} & & \text{number of} & & \\ \text{marbles} & & \text{each group} & & \text{groups} & & \end{array}$$

You say, "8 divided by 8 is 1."

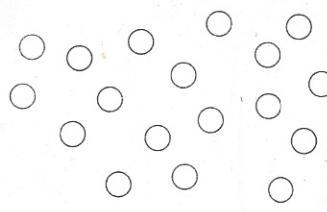
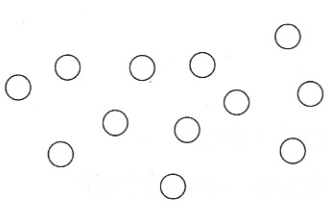
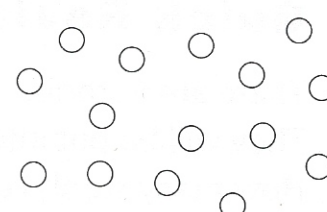
Try These

- Find the number of groups.
Then write a division sentence.
Make groups of 3.
- Find the number in each group.
Then write a division sentence.
Make 5 equal groups.

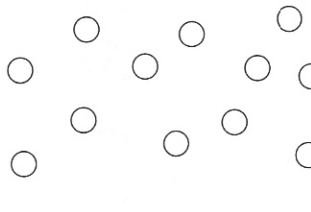
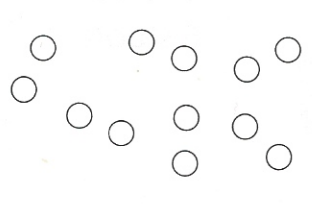
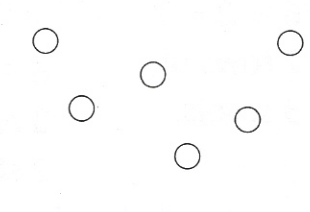


Practice

1. Find the number of groups. Then write a division sentence.

| | | |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <p>a) Make groups of 6.</p>  <p>_____</p> | <p>b) Make groups of 3.</p>  <p>_____</p> | <p>c) Make groups of 5.</p>  <p>_____</p> |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|

2. Find the number in each group. Then write a division sentence.

| | | |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <p>a) Make 3 equal groups.</p>  <p>_____</p> | <p>b) Make 6 equal groups.</p>  <p>_____</p> | <p>c) Make 2 equal groups.</p>  <p>_____</p> |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|

3. Ira has 16 plums. He gives 4 plums to each person at his lunch table.
How many people get plums? _____
4. Sari has 15 photos. She puts 5 photos on each page.
How many pages does Sari use? _____

Stretch Your Thinking

Find as many ways to put 20 counters into equal groups as you can.
Write a division sentence for each way you find.

Using Arrays to Divide

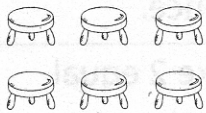


Quick Review

There are 6 stools.
They will be put into equal rows.
How many stools could be in each row?

You can make an array to show each way.

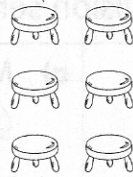
2 rows of 3



$$6 \div 2 = 3$$

2 rows of
3 stools

3 rows of 2



$$6 \div 3 = 2$$

3 rows of
2 stools

1 row of 6



$$6 \div 1 = 6$$

1 row of
6 stools

6 rows of 1



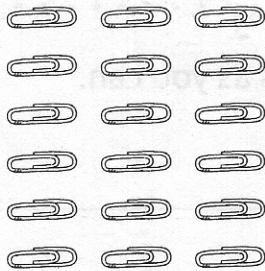
$$6 \div 6 = 1$$

6 rows of
1 stool

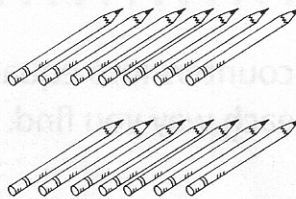
Try These

1. Use the array to complete the sentence.

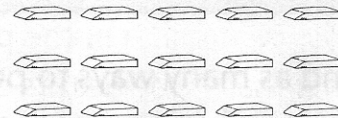
a) $18 \div 6 =$ 3



b) $14 \div 2 =$ 7

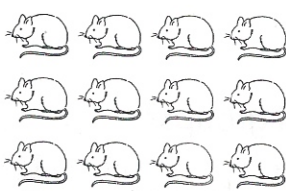
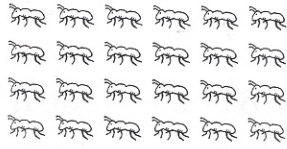
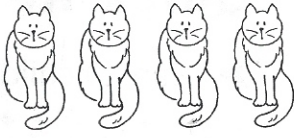


c) $15 \div 3 =$ 5



Practice

1. Write a division sentence for each array.

| | | |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <p>a)</p>  <p>_____</p> | <p>b)</p>  <p>_____</p> | <p>c)</p>  <p>_____</p> |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|

2. Draw an array for each division sentence.

| | | |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| <p>a) $15 \div 5 =$ _____</p> | <p>b) $12 \div 2 =$ _____</p> | <p>c) $24 \div 6 =$ _____</p> |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|

3. Use counters. Make an array to find each answer.

- a)** $20 \div 4 =$ _____
 b) $16 \div 2 =$ _____
 c) $6 \div 1 =$ _____
d) $18 \div 9 =$ _____
 e) $30 \div 5 =$ _____
 f) $28 \div 7 =$ _____

Stretch Your Thinking

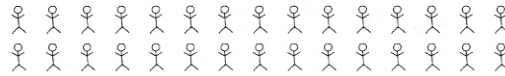
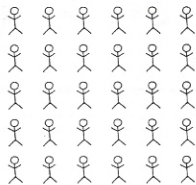
There are 24 members in the Boy Scout troop.
 They will march in the parade in equal rows.
 How many Boy Scouts could be in each row?
 Find as many answers as you can.

Dividing by 2, by 5, and by 10



Quick Review

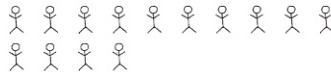
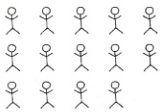
- Can 30 children form 5 equal groups? 2 equal groups?



30 children form
5 groups of 6.
30 is **divisible** by 5.
30 is also divisible by 6.

30 children form
2 groups of 15 children.
30 is divisible by 2.
30 is also divisible by 15.

- Can 14 children form groups of 5? Groups of 10?



14 is 2 groups of 5,
with 4 left over.
14 is not divisible by 5.
Groups of 5 cannot be formed.

14 is 1 group of 10,
with 4 left over.
14 is not divisible by 10.
Groups of 10 cannot be formed.

Try These

- Use the array to help you divide.

a) $24 \div 2 = \underline{\hspace{2cm}}$



b) $10 \div 5 = \underline{\hspace{2cm}}$



Practice

1. Play this game with a partner.

You will need:

2 markers

1 number cube labelled 1 to 6

| | | | | | | | | | |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|----|
| Start | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| Finish | | | | | | | | | 9 |
| 36 | <ul style="list-style-type: none">➤ Take turns rolling the number cube. Move your marker that many spaces.➤ If you land on a number that is:<ul style="list-style-type: none">• divisible by 2, move to the next number that is divisible by 2• divisible by 5, move to the next number that is divisible by 5• divisible by 2 and 5, stay where you are until your next turn➤ The winner is the first person to reach Finish. | | | | | | | | 10 |
| 35 | | | | | | | | | 11 |
| 34 | | | | | | | | | 12 |
| 33 | | | | | | | | | 13 |
| 32 | | | | | | | | | 14 |
| 31 | | | | | | | | | 15 |
| 30 | | | | | | | | | 16 |
| 29 | | | | | | | | | 17 |
| 28 | | | | | | | | | 18 |
| 27 | | | | | | | | | 26 |

Stretch Your Thinking

Name five numbers that are divisible by 2, by 5, and by 10.

Relating Multiplication and Division

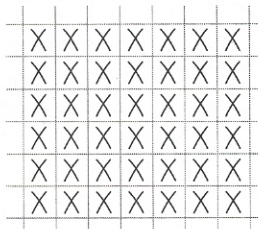


Quick Review

This array has 6 rows of 7.

The multiplication sentence is: $6 \times 7 = 42$

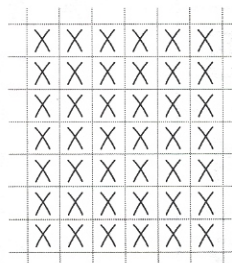
The division sentence is: $42 \div 6 = 7$



Turn the array to show 7 rows of 6.

The multiplication sentence is: $7 \times 6 = 42$

The division sentence is: $42 \div 7 = 6$



These four number sentences are **related facts**.



$$6 \times 7 = 42$$

$$7 \times 6 = 42$$

$$42 \div 6 = 7$$

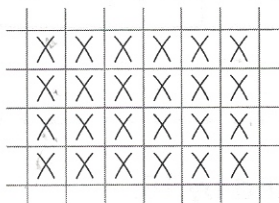
$$42 \div 7 = 6$$

When you know one number fact, you can write related facts.

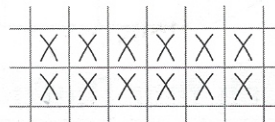
Try These

1. Write a multiplication sentence and a division sentence for each.

a)


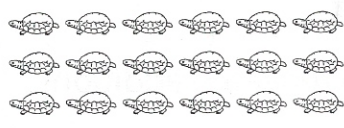



b)



Practice

1. Write a multiplication sentence and a division sentence for each.

| | | |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <p>a)</p>  <p>_____</p> <p>_____</p> | <p>b)</p>  <p>_____</p> <p>_____</p> | <p>c)</p>  <p>_____</p> <p>_____</p> |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|

2. Write the related facts for each set of numbers.

- a) 4, 6, 24 _____
- b) 3, 4, 12 _____
- c) 4, 7, 28 _____
- d) 7, 7, 49 _____
- e) 7, 1, 7 _____

3. Divide. Use multiplication facts to help you.

- a) $12 \div 6 =$ _____ b) $30 \div 5 =$ _____ c) $21 \div 3 =$ _____
- d) $35 \div 7 =$ _____ e) $16 \div 4 =$ _____ f) $7 \div 7 =$ _____

Stretch Your Thinking

Berta has a collection of antique dolls.

If Berta puts her dolls into groups of 4 or 7, she has 2 dolls left over.

How many dolls might Berta have?
