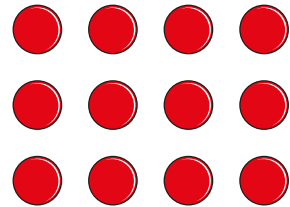


Properties of multiplication and division

1



a) Which two multiplications are represented by the array?

$$3 \times 4 = 12$$

$$4 \times 3 = 12$$

b) Which two divisions are represented by the array?

$$12 \div 3 = 4$$

$$12 \div 4 = 3$$

c) Draw a different array that can be made from the same number of counters.

E.g.

d) Complete the fact family for your array.

$$2 \times 6 = 12$$

$$12 \div 2 = 6$$

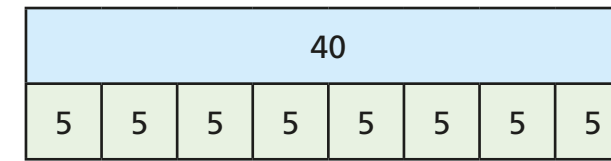
$$6 \times 2 = 12$$

$$12 \div 6 = 2$$

e) Discuss with a partner how the array shows that multiplication is commutative.

2

Write the fact family shown in the bar model.



$$8 \times 5 = 40$$

$$40 \div 8 = 5$$

$$5 \times 8 = 40$$

$$40 \div 5 = 8$$

Scott thinks that $40 \div 8$ is the same as $8 \div 40$

Do you agree with Scott? NO

Discuss your answer with a partner.

3

Write true or false next to each statement.

Statement	True or False
$(5 \times 2) \times 3 = 5 \times (2 \times 3)$	True
$5 \times 2 \times 3 = 2 \times 3 \times 5$	True
$3 \times 10 = 3 \times 2 \times 5$	True

Explain your reasons for each decision.

4

Here are two statements.

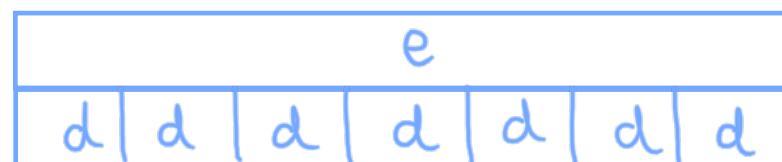
$$(a \times b) \times c = a \times (b \times c)$$

$$g \times m \times b = b \times m \times g$$

Explain why both of these statements are true.

Multiplication is commutative.

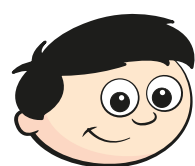
- 5 Draw a bar model to illustrate $7d = e$



What other facts does your bar model show?

$$\frac{e}{7} = d \quad \frac{e}{d} = 7$$

6



Doubling and doubling again is a quick way of multiplying by 4

Use Dexter's method to complete the calculations.

a) $21 \times 4 = 84$ b) $13 \times 4 = 52$ c) $29 \times 4 = 116$

How can Dexter's method be altered to quickly multiply by 8?

Double again



- 7 Aisha wants to use a quick method to divide numbers by 5

Tick each of the methods that will work.

A	$\div 10$ then $\times 2$	<input checked="" type="checkbox"/>	C	$\times 2$ then $\div 10$	<input checked="" type="checkbox"/>
B	$\div 10$ then $\div 2$	<input type="checkbox"/>	D	$\div 2$ then $\times 10$	<input type="checkbox"/>

Use one of the correct methods to complete these calculations.

State which method you used (A, B, C or D).

$120 \div 5 = 24$ I used method ____

$14 \div 5 = 2.8$ I used method ____

$4.8 \div 5 = 0.96$ I used method ____

Which method do you prefer?

- 8 Tick the statements that are in the same fact family as $13 \times 46 = 598$

$46 \div 3 = 598$	$46 \div 598 = 13$	$598 = 46 \times 13$ ✓
$13 \div 598 = 46$	$598 \div 46 = 13$ ✓	$598 \div 13 = 46$ ✓
$46 = 13 \div 598$	$598 = 13 \times 46$ ✓	$13 = 598 \div 46$ ✓

Discuss your answers with a partner. Are they the same?