

GRADE 3

# Multiplication

WORKSHEETS

Mathletics

love learning.

# Multiplication – explore

**You will need:**  24 counters

## What to do:

Chef Charlie has 12 cupcakes on some trays in the oven. There are the same number of cupcakes on each tray. What are some different ways he can put them on the trays?



Use 12 counters to find some different options. Show your solutions below.

**1 tray of 12 = 12**

$$1 \times 12 = 12$$

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## What to do next:

Farmer Jess has planted rows of carrots. She has planted 20 carrots altogether. What are the different ways she could have planted them?



Use 20 counters to find some different options. Show your solutions below.

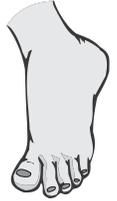
# Multiplication – explore

You will need:  counters

## What to do:

Find solutions for the following problems. Use counters or draw pictures to help.

- a Lisa and her 3 friends painted their toenails. How many toenails did they paint altogether?



- b Here is a bag with 3 gummy worms in it. How many gummy worms would there be if there were 9 bags altogether?



- c Caleb practiced kicking goals every day for a week. If he kicked 5 goals a day, how many goals did he kick altogether?



# Multiplication – multiplying numbers by 0 and 1

Any number multiplied by 1 always equals the same number.

Any number multiplied by 0 always equals zero.

## 1 Practice multiplying by 1:



8 groups of 1 are equal to

$$\square \times 1 = \square$$



6 groups of 1 are equal to

$$\square \times 1 = \square$$



5 groups of 1 are equal to

$$\square \times 1 = \square$$



4 groups of 1 are equal to

$$\square \times 1 = \square$$

## 2 Practice multiplying by 1 and 0:

a  $12 \times 0 = \square$

b  $6 \times 1 = \square$

c  $3 \times 0 = \square$

d  $2 \times 1 = \square$

e  $8 \times 0 = \square$

f  $20 \times 1 = \square$

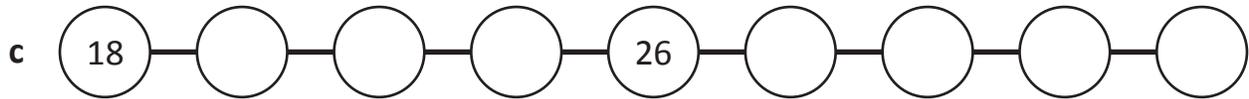
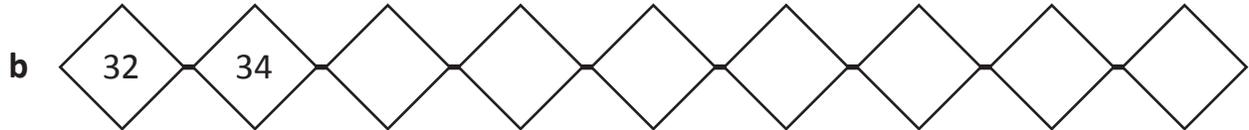
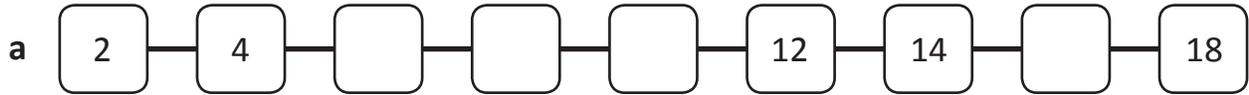
## 3 Complete this grid:

×	9	10	6	1	5	4	7	3	8	2
0										
1										

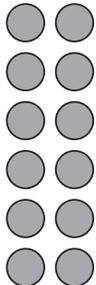
# Multiplication facts – 2 times table

Counting in 2s will help you know many times table facts.

1 Complete each pattern by counting in 2s:

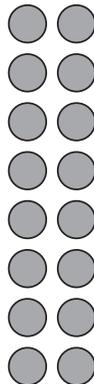


2 Show how many dots there are in each array by counting in 2s. Then write the times table fact below:



a 6 twos

$$\square \times 2 = \square$$



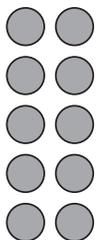
b 8 twos

$$\square \times 2 = \square$$



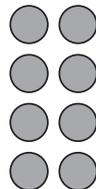
c 3 twos

$$\square \times 2 = \square$$



d 5 twos

$$\square \times 2 = \square$$



e 4 twos

$$\square \times 2 = \square$$



f 9 twos

$$\square \times 2 = \square$$

# Multiplication facts – 2 times table

3 How many straws are in:

a 3 drinks?

$$\square \times 2 = \square$$

b 10 drinks?

$$\square \times 2 = \square$$

c 5 drinks?

$$\square \times 2 = \square$$

d 2 drinks?

$$\square \times 2 = \square$$



4 How many wheels are on:

a 4 bikes?

$$\square \times 2 = \square$$

b 9 bikes?

$$\square \times 2 = \square$$

c 7 bikes?

$$\square \times 2 = \square$$

d 3 bikes?

$$\square \times 2 = \square$$



5 Double each number:

a  $6 \times 2 = \square$

b  $9 \times 2 = \square$

c  $8 \times 2 = \square$

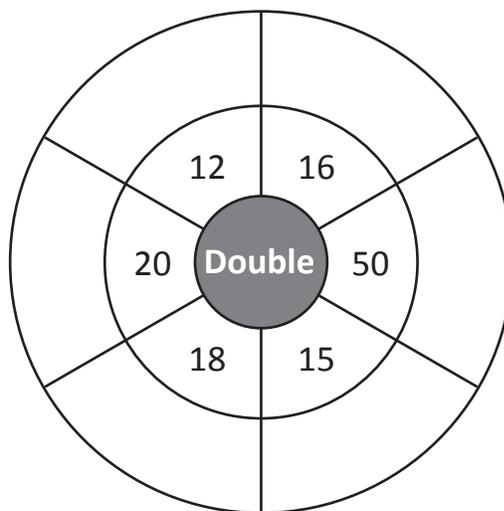
d  $7 \times 2 = \square$

Multiplying by 2 is the same as doubling.



**REMEMBER**

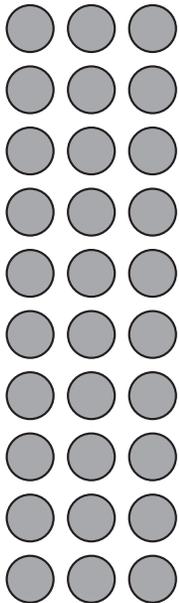
6 Complete this doubling wheel. These facts are not in the 2 times table, but they are facts that are useful to know.



# Multiplication facts – 3 times table

Practice your 3 times table.

**1** Use this array to complete the 3 times table:



- $1 \times 3 = \square$
- $2 \times 3 = \square$
- $3 \times 3 = \square$
- $4 \times 3 = \square$
- $5 \times 3 = \square$
- $6 \times 3 = \square$
- $7 \times 3 = \square$
- $8 \times 3 = \square$
- $9 \times 3 = \square$
- $10 \times 3 = \square$

**2** Now try them mixed up:

- a  $3 \times 3 = \square$
- b  $8 \times 3 = \square$
- c  $7 \times 3 = \square$
- d  $10 \times 3 = \square$
- e  $2 \times 3 = \square$
- f  $4 \times 3 = \square$
- g  $5 \times 3 = \square$
- h  $6 \times 3 = \square$
- i  $9 \times 3 = \square$
- j  $1 \times 3 = \square$

**3** Alfred is an alien from the Planet Trampolon. The surface of Planet Trampolon is like walking on a trampoline. That's why Alfred and all his race of aliens need 3 legs for extra balance. They also have 3 fingers on each hand and 3 eyes.

a How many legs for:

6 aliens?

$$6 \times \square = \square$$

4 aliens?

$$4 \times \square = \square$$

b How many eyes for:

3 aliens?

$$\square \times \square = \square$$

10 aliens?

$$\square \times \square = \square$$

c How many fingers on one hand for:

9 aliens?

$$\square \times \square = \square$$

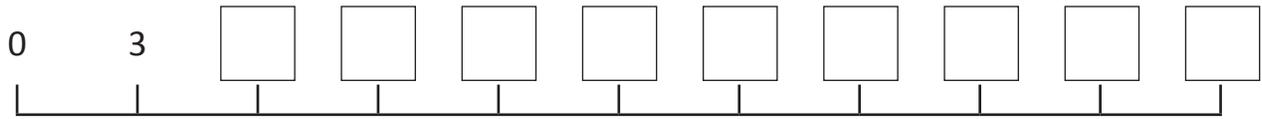
5 aliens?

$$\square \times \square = \square$$

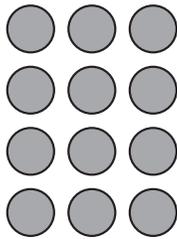


# Multiplication facts – 3 times table

4 Label the number line so it goes up in 3s:

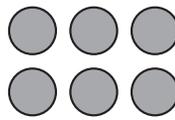


5 Write two turnaround facts for each array. The first one has been done for you.



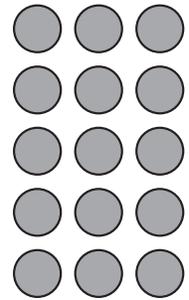
a  $\boxed{4} \times \boxed{3} = \boxed{12}$

$\boxed{3} \times \boxed{4} = \boxed{12}$



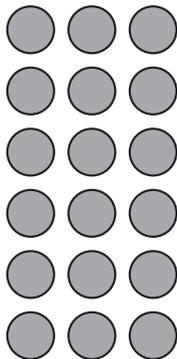
b  $\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$

$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$



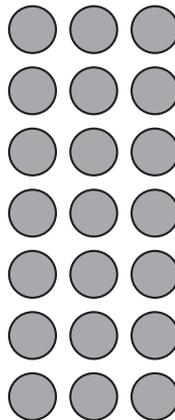
c  $\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$

$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$



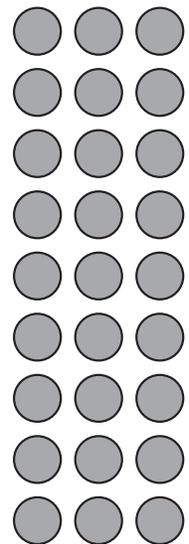
d  $\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$

$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$



e  $\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$

$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$



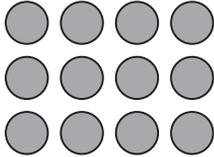
f  $\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$

$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$

# Multiplication facts – 4 times table

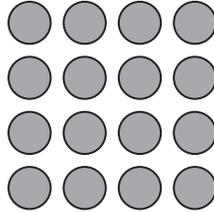
Practice your 4 times table.

1 Write the multiplication fact for each array:



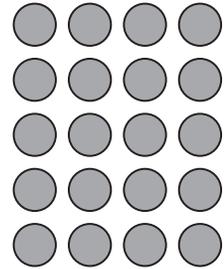
a 3 fours

$$\square \times 4 = \square$$



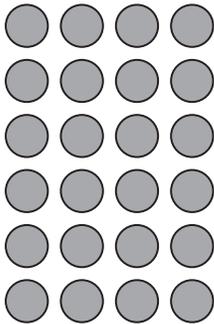
b 4 fours

$$\square \times 4 = \square$$



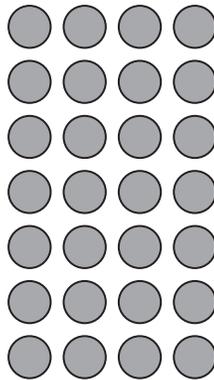
c 5 fours

$$\square \times 4 = \square$$



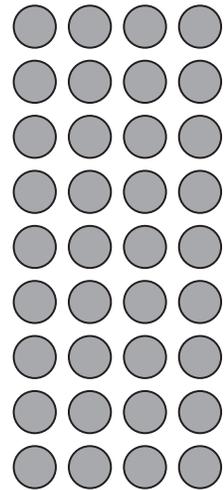
d 6 fours

$$\square \times 4 = \square$$



e 7 fours

$$\square \times 4 = \square$$



f 9 fours

$$\square \times 4 = \square$$

2 How many cupcakes are there on:

a 4 plates?

$$\square \times 4 = \square$$

b 3 plates?

$$\square \times 4 = \square$$



c 7 plates?

$$\square \times 4 = \square$$

d 9 plates?

$$\square \times 4 = \square$$

e 2 plates?

$$\square \times 4 = \square$$

# Multiplication facts – 4 times table

3 Here is a half of a hundred grid:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

a Circle the counting pattern of 2s.  
Cross out the counting pattern of 4s.

b What do you notice?

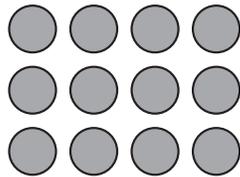
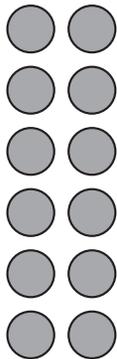
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4 Complete the matching  $\times 2$  and  $\times 4$  facts:

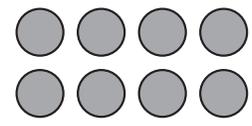
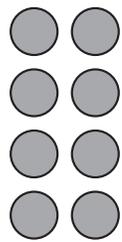
a  $6 \times 2 = 12$  and  $3 \times 4 = 12$



So,   $\times 2 =$    $\times 4$

Can you see that the  $\times 4$  arrays have half the rows and double the columns of the  $\times 2$ ? This means there is the same total, but the array is arranged differently.

b   $\times 2 =$   and   $\times 4 =$



So,   $\times 2 =$    $\times 4$



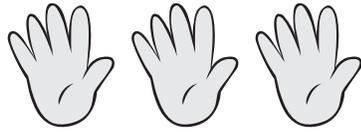
**THINK**

c  $8 \times 2 =$    $\times 4$

d  $10 \times 2 =$    $\times 4$

# Multiplication – groups of 5

Use repeated addition to find the total number of fingers.

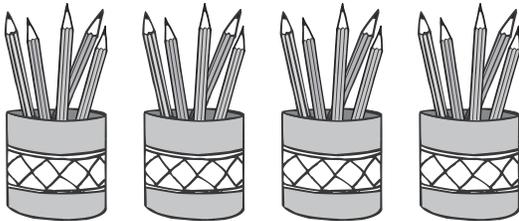


$$5 + 5 + 5 = 15$$

3 groups of 5 is equal to 15.

1 Find the total of each group by using repeated addition.

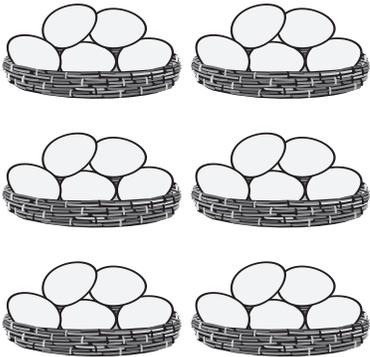
a How many pencils?



$$\square + \square + \square + \square = \square$$

$\square$  groups of  $\square$  is equal to  $\square$

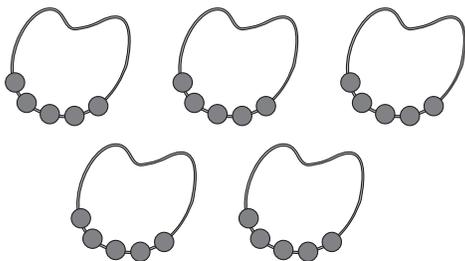
b How many eggs?



$$\square + \square + \square + \square + \square + \square = \square$$

$\square$  groups of  $\square$  is equal to  $\square$

c How many beads?



$$\square + \square + \square + \square + \square = \square$$

$\square$  groups of  $\square$  is equal to  $\square$

# Multiplication – groups of 5

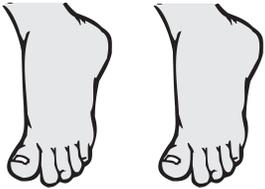
This is a multiplication symbol  $\times$  and it means “groups of.”

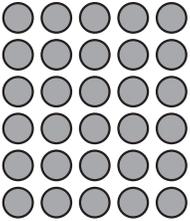
So instead of repeated addition, we can use a multiplication symbol.

$$5 + 5 + 5 + 5 + 5 = 25$$

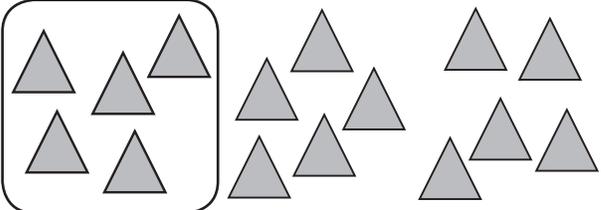
$$5 \times 5 = 25$$

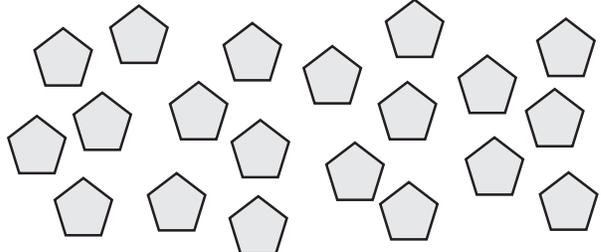
## 2 Find the total of each group by using repeated addition:

a   groups of  is equal to   
  $\times$   =

b   rows of  is equal to   
  $\times$   =

## 3 Ring the shapes in groups of 5. One group is ringed for you. Then complete the multiplication fact.

a   groups of  is equal to   
  $\times$  5 =

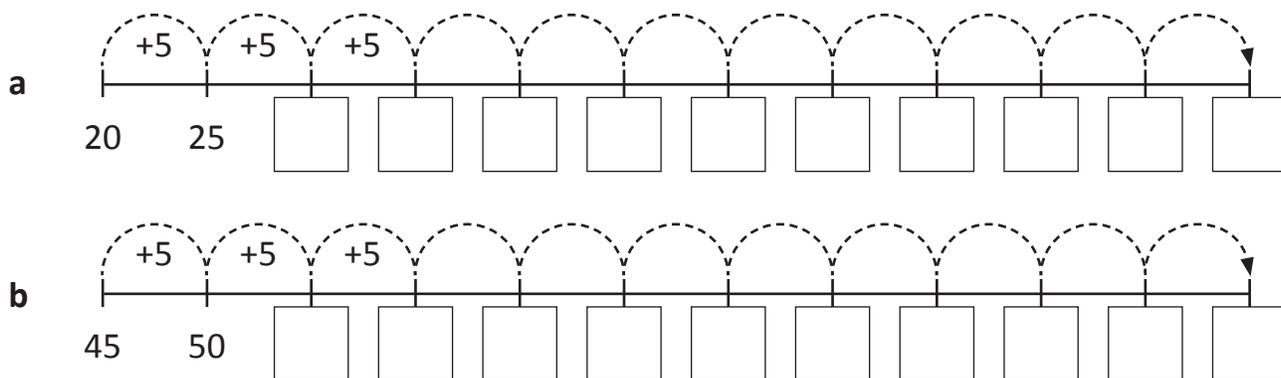
b   groups of  is equal to   
  $\times$  5 =

# Multiplication – 5 times table

Here is a skip counting pattern on a hundred grid. It shows a counting pattern of 5.

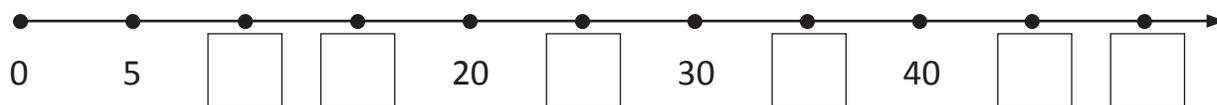
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

## 1 Finish each pattern by counting in 5s:



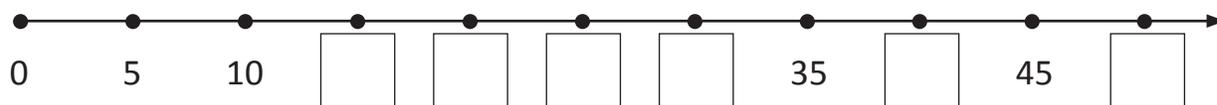
## 2 Show $\times 5$ multiplication facts on each number line.

a Finish labeling this number line and then show 5 jumps starting from 0:



This is the same as   $\times$  5 =

b Finish labeling this number line and then show 7 jumps starting from 0:



This is the same as   $\times$  5 =

# Multiplication – 5 times table

**3** Write a 5 times table fact for each set of 5 cent coins. The first one has been done for you.



$$\boxed{4} \times \boxed{5\text{¢}} = \boxed{20\text{¢}}$$



$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$



$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

**4** Times tables are a set of multiplication facts from 1 to 10 based on multiplying by the same number each time. Write the answers for the 5 times table.

$1 \times 5 = \boxed{\phantom{00}}$

$2 \times 5 = \boxed{\phantom{00}}$

$3 \times 5 = \boxed{\phantom{00}}$

$4 \times 5 = \boxed{\phantom{00}}$

$5 \times 5 = \boxed{\phantom{00}}$

$6 \times 5 = \boxed{\phantom{00}}$

$7 \times 5 = \boxed{\phantom{00}}$

$8 \times 5 = \boxed{\phantom{00}}$

$9 \times 5 = \boxed{\phantom{00}}$

$10 \times 5 = \boxed{\phantom{00}}$

**5** Now answer the mixed up 5 times table.

**a**  $2 \times 5 = \boxed{\phantom{00}}$

**b**  $8 \times 5 = \boxed{\phantom{00}}$

**c**  $9 \times 5 = \boxed{\phantom{00}}$

**d**  $10 \times 5 = \boxed{\phantom{00}}$

**e**  $3 \times 5 = \boxed{\phantom{00}}$

**f**  $6 \times 5 = \boxed{\phantom{00}}$

**g**  $7 \times 5 = \boxed{\phantom{00}}$

**h**  $5 \times 5 = \boxed{\phantom{00}}$

**i**  $1 \times 5 = \boxed{\phantom{00}}$

**j**  $4 \times 5 = \boxed{\phantom{00}}$

**6** Write the missing number in each 5 times table fact.

**a**  $\boxed{\phantom{00}} \times 5 = 35$

**b**  $\boxed{\phantom{00}} \times 5 = 20$

**c**  $\boxed{\phantom{00}} \times 5 = 50$

**d**  $\boxed{\phantom{00}} \times 5 = 15$

**e**  $\boxed{\phantom{00}} \times 5 = 40$

**f**  $\boxed{\phantom{00}} \times 5 = 10$

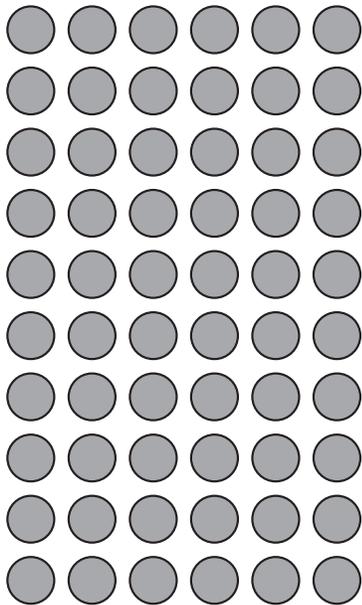
**g**  $\boxed{\phantom{00}} \times 5 = 30$

**h**  $\boxed{\phantom{00}} \times 5 = 45$

# Multiplication facts – 6 times table

Practice your 6 times table. Did you know that we can use  $\times 6$  for short? So  $\times 6$  just means 6 times table, just as  $\times 3$  means 3 times table.

**1 Use this array to complete the 6 times table:**



- $1 \times 6 = \square$
- $2 \times 6 = \square$
- $3 \times 6 = \square$
- $4 \times 6 = \square$
- $5 \times 6 = \square$
- $6 \times 6 = \square$
- $7 \times 6 = \square$
- $8 \times 6 = \square$
- $9 \times 6 = \square$
- $10 \times 6 = \square$

**2 Fill in the missing numbers:**

- a  $\square \times 6 = 54$
- b  $\square \times 6 = 36$
- c  $\square \times 6 = 18$
- d  $\square \times 6 = 24$
- e  $\square \times 6 = 60$
- f  $\square \times 6 = 12$
- g  $\square \times 6 = 48$

**3 Complete this table by recalling the 3 times table. Then complete the 6 times table. Can you see how the 3 times table helps with the 6?**

	3	8	2	5	9	10	6
$\times 3$							
$\times 6$							

**4 Solve these problems.**

a I saved \$7 every week over 6 weeks. How much did I save in total?

$$\square \times \square = \square$$

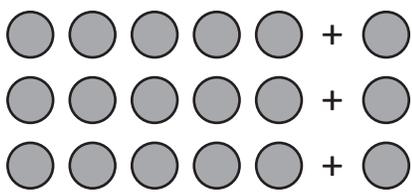
b 8 pencil cases had 3 blue pens in each. How many blue pens are there in total?

$$\square \times \square = \square$$

c 9 classes each baked 6 cakes for the school fundraiser. How many cakes were baked in total?

$$\square \times \square = \square$$

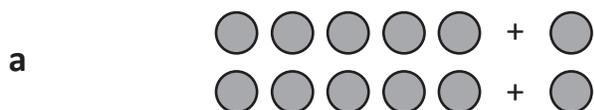
# Multiplication facts – 6 times table



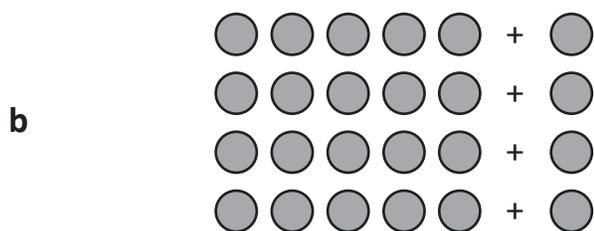
You know more times tables facts than you realize.  
 For example, knowing your  $\times 5$  can help with your  $\times 6$ .  
 The array shows 3 rows of 5. If we add another dot to each row we can change 3 rows of 5 to 3 rows of 6.  
 This is called building up.

$$3 \times 5 = 15 + 3 \longrightarrow 3 \times 6 = 18$$

## 5 Change these $\times 5$ arrays into $\times 6$ arrays.



$$2 \times 5 = \square + \square \longrightarrow 2 \times 6 = \square$$



$$4 \times 5 = \square + \square \longrightarrow 4 \times 6 = \square$$

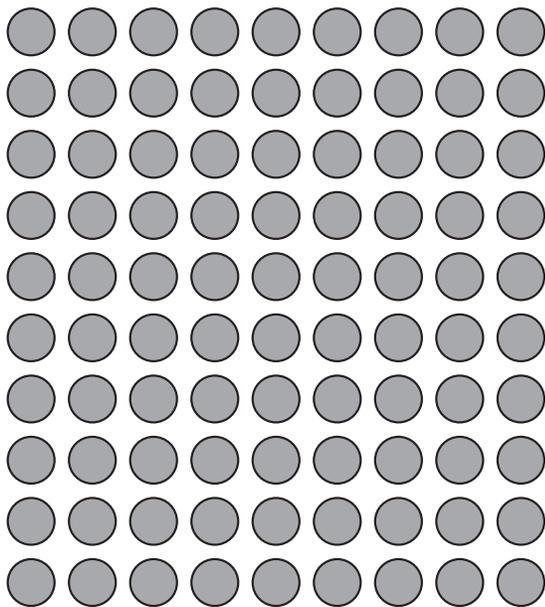
## 6 Complete this table to show how to change a $\times 5$ array to a $\times 6$ array by building up. The first one has been done for you.

	$\times 5$	Build up by	$\times 6$
a	$3 \times 5 = 15$	3	$3 \times 6 = 18$
b	$2 \times 5 = 10$		
c	$7 \times 5 = 35$		
d	$4 \times 5 = 20$		
e	$6 \times 5 = 30$		
f	$9 \times 5 = 45$		

# Multiplication facts – 9 times table

Practice your 9 times table.

1 Use this array to complete the 9 times table:



- 1 × 9 =
- 2 × 9 =
- 3 × 9 =
- 4 × 9 =
- 5 × 9 =
- 6 × 9 =
- 7 × 9 =
- 8 × 9 =
- 9 × 9 =
- 10 × 9 =

2 Complete these × 9 facts. Look out for turnarounds.

a  $3 \times 9 =$

b  $9 \times 4 =$

c  $6 \times 9 =$

d  $2 \times 9 =$

e  $9 \times 5 =$

f  $1 \times 9 =$

3 Find the cost of these items:

a 6 fruit salads =

b 4 banana splits =

c 3 mango juices =

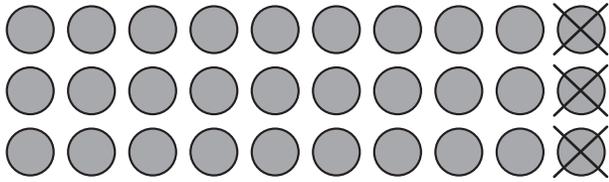
d 5 fruit salads =

e 3 banana splits =

f 7 mango juices =



# Multiplication facts – 9 times table

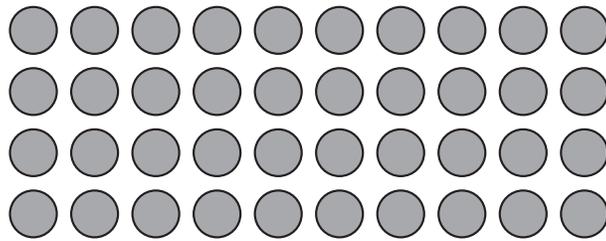


$$3 \times 9 = \boxed{?}$$

If you get stuck on a  $\times 9$ , remember the  $\times 10$  fact and build down.

$$3 \times 10 = 30 - 3 \longrightarrow 3 \times 9 = 27$$

4 Change this  $\times 10$  array into a  $\times 9$  array:



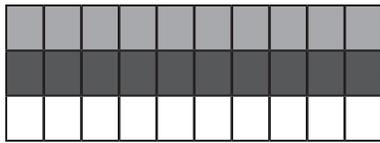
$$4 \times 10 = \boxed{\phantom{00}} - 4 \longrightarrow 4 \times 9 = \boxed{\phantom{00}}$$

5 Complete this table to show how to change a  $\times 10$  array to a  $\times 9$  array by taking 1 from each row.

$\times 10$	Build down by	$\times 9$
$3 \times 10 = 30$	3	$3 \times 9 = 27$
$5 \times 10 = 50$		
$9 \times 10 = 90$		
$6 \times 10 = 60$		
$4 \times 10 = 40$		
$2 \times 10 = 20$		
$8 \times 10 = 80$		
$7 \times 10 = 70$		

# Multiplication – multiplying 10s

When we multiply we make number patterns. Look at this grid.



← This is 1 row of 10. We have colored 10 squares.

$1 \times 10 = 10$

← Now we have colored 2 rows of 10. This is 20 squares.

$2 \times 10 = 20$

- 1 a Color each row a different color and finish the facts.


1	x	10	=	
2	x	10	=	
	x	10	=	
	x		=	
	x		=	
	x		=	
	x		=	
	x		=	
	x		=	
	x		=	
	x		=	

- b Write the answers from question 1a in the boxes below.

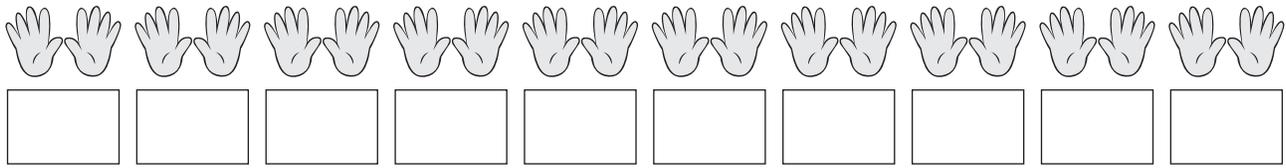
10	20								
----	----	--	--	--	--	--	--	--	--

- c What do you notice?

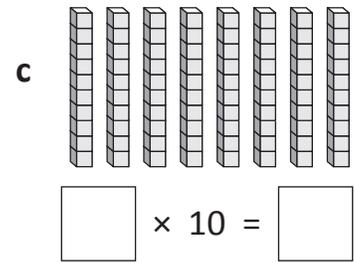
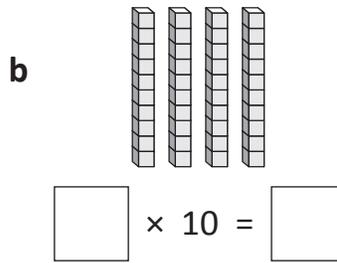
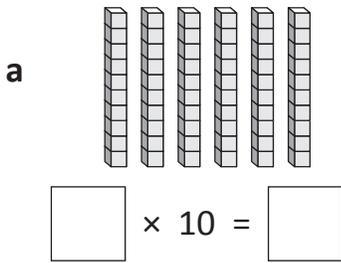
# Multiplication – 10 times table

If you can skip count in 10s, you know your 10 times table.

1 Complete this sequence by counting in 10s:



2 Count the longs and then complete the multiplication fact:



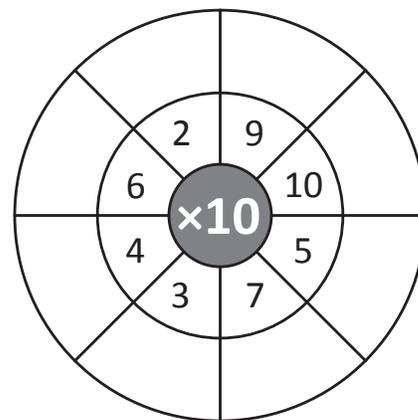
3 Complete the 10 times table:

- 1 × 10 = □
- 2 × 10 = □
- 3 × 10 = □
- 4 × 10 = □
- 5 × 10 = □
- 6 × 10 = □
- 7 × 10 = □
- 8 × 10 = □
- 9 × 10 = □
- 10 × 10 = □

4 Write the missing number in each 10 times table fact:

- a □ × 10 = 50
- b □ × 10 = 80
- c □ × 10 = 70

5 Complete this × 10 wheel:



# Multiplication – multiplying any number by 10

When we multiply any number by 10, a zero goes in the ones column and the digits all move one space along to the left.

Hundreds	Tens	Ones
		2
	2	0

$2 \times 10 = 20$

**1** Show how the digits all move along when they are multiplied by 10 and write the answers below:

**a**

Hundreds	Tens	Ones
		7
	7	0

$7 \times 10 = \square$

**b**

Hundreds	Tens	Ones
		3

$3 \times 10 = \square$

**c**

Hundreds	Tens	Ones
	1	5

$15 \times 10 = \square$

**d**

Hundreds	Tens	Ones
	2	2

$22 \times 10 = \square$

**2** Connect these  $\times 10$  facts to the answers:

$16 \times 10$

$62 \times 10$

$93 \times 10$

$99 \times 10$

$13 \times 10$

220

510

930

990

850

160

130

620

720

980

$72 \times 10$

$51 \times 10$

$85 \times 10$

$22 \times 10$

$98 \times 10$

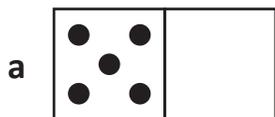
# Multiplication – doubles

When we double, we are multiplying by 2.

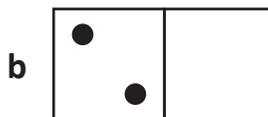
Here is 1 spider.  One spider has 8 legs  $1 \times 8 = 8$

If we double it, we have 2 spiders.   
How many legs do they have?  $8 + 8$   $2 \times 8 = 16$

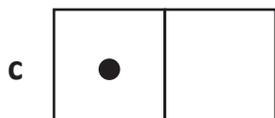
**1** Draw dots on the other side of the dominoes to create doubles. Finish the number facts.



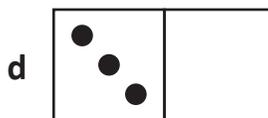
$$\boxed{2} \times \boxed{5} = \boxed{10}$$



$$\boxed{2} \times \boxed{2} = \boxed{\phantom{00}}$$



$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$



$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

**2** Look at the twins. Write the multiplication facts to match.

a How many  ?

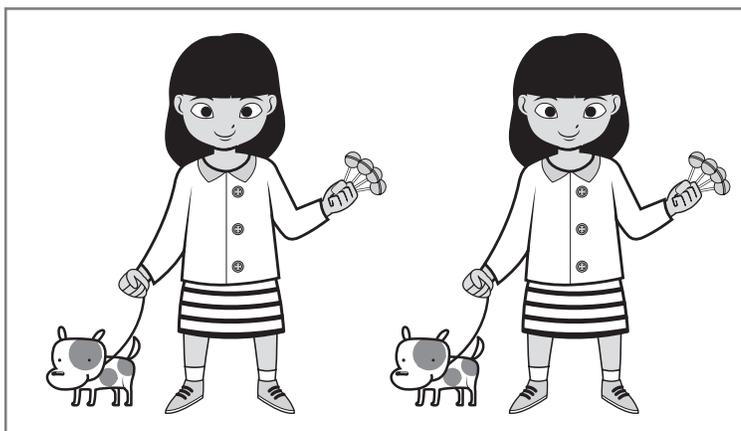
$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

b How many  ?

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

c How many  ?

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$



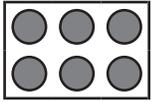
d How many  ?

$$\boxed{\phantom{00}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

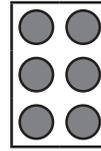
# Multiplication – turnarounds

We can make turnarounds when we multiply.

Look at this array.



We can turn this around to look like:



2 rows of 3 is 6

$$2 \times 3 = 6$$

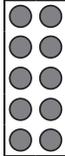
Now we have 3 rows of 2.

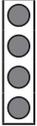
There are still 6 counters.

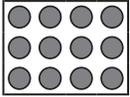
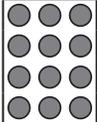
$$3 \times 2 = 6$$

Turnarounds help us learn our multiplication facts. If we know  $2 \times 3$  we also know  $3 \times 2$ . They are both ways of making 6.

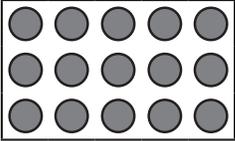
**1** Look at the arrays and their turnarounds. Write the facts to match.

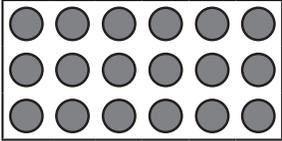
a   $2 \times 5 = 10$    $5 \times \square = \square$

b   $4 \times \square = \square$    $\square \times \square = \square$

c   $\square \times \square = \square$    $\square \times \square = \square$

**2** Can you turn these arrays around in your head? Write both facts.

a   $\square \times \square = \square$   
 $\square \times \square = \square$

b   $\square \times \square = \square$   
 $\square \times \square = \square$

# Mental multiplication strategies – split strategy

The split strategy is when we multiply numbers in 2 parts.

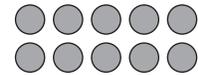
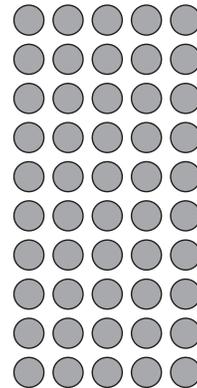
Let's use the split strategy for  $12 \times 5$ .

Split 12 into 10 and 2. Next multiply each part by 5, then add:

What is  $12 \times 5$ ?

$$10 \times 5 = 50$$

$$2 \times 5 = 10$$



$$50 + 10 = 60$$

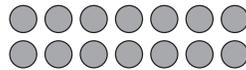
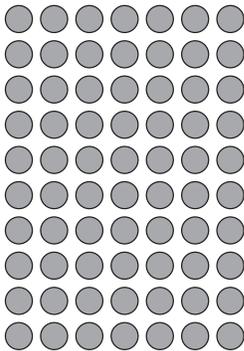
$$\text{So, } 12 \times 5 = 60$$

**1** Try the split strategy with these. Use the arrays if you get stuck.

**a** What is  $12 \times 7$ ?

$$10 \times \square = \square$$

$$2 \times \square = \square$$



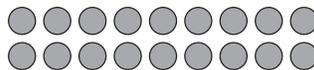
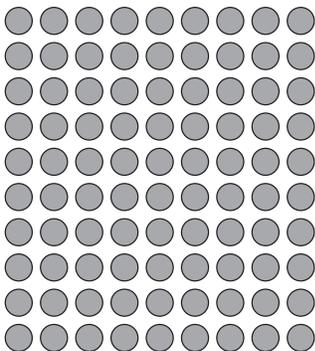
$$\square + \square = \square$$

$$\text{So, } 12 \times 7 = \square$$

**b** What is  $12 \times 9$ ?

$$10 \times \square = \square$$

$$2 \times \square = \square$$



$$\square + \square = \square$$

$$\text{So, } 12 \times 9 = \square$$

# Mental multiplication strategies – split strategy

## 2 Practice the split strategy again, this time without an array to look at.

a What is  $12 \times 3$ ?

$$10 \times \square = \square$$

$$2 \times \square = \square$$

$$\square + \square = \square$$

$$\text{So, } 12 \times 3 = \square$$

b What is  $12 \times 6$ ?

$$10 \times \square = \square$$

$$2 \times \square = \square$$

$$\square + \square = \square$$

$$\text{So, } 12 \times 6 = \square$$

c What is  $12 \times 8$ ?

$$10 \times \square = \square$$

$$2 \times \square = \square$$

$$\square + \square = \square$$

$$\text{So, } 12 \times 8 = \square$$

---

## 3 Use the split strategy to multiply by 13.

13 is \_\_\_\_\_ + \_\_\_\_\_

a  $13 \times 8 = \square$

b  $13 \times 9 = \square$

c  $13 \times 7 = \square$

d  $13 \times 5 = \square$

# Mental multiplication strategies – compensation strategy

Remember how we learned the  $\times 9$  by building down from the  $\times 10$ ?

$$3 \times 10 = 30 - 3 \longrightarrow 3 \times 9 = 27$$

This is the compensation strategy.

Look at  $3 \times 19$ . 19 is close to 20, so we can multiply by the next multiple of ten, which is 20. Then we build down because we have an extra group of 3.

$$3 \times 19 \longrightarrow 3 \times 20 = 60 - 3$$

$$\text{So, } 3 \times 19 = 57$$

- 1** When you are multiplying by a multiple of ten, look for a fact you know, then put a zero on the end. These patterns show you how to do this:

**a**  $3 \times 2 =$

$3 \times 20 =$

**b**  $5 \times 3 =$

$5 \times 30 =$

**c**  $7 \times 2 =$

$7 \times 20 =$

**d**  $4 \times 4 =$

$4 \times 40 =$

- 2** The steps for the compensation strategy are set out for you here. Practice multiplying by the next multiple of ten and then build down.

**a**  $5 \times 29 \longrightarrow 5 \times 30 =$    $- 5$

So,  $5 \times 29 =$

**b**  $3 \times 19 \longrightarrow 3 \times 20 =$    $- 3$

So,  $3 \times 19 =$

**c**  $2 \times 39 \longrightarrow 2 \times 40 =$    $- 2$

So,  $2 \times 39 =$

# Mental multiplication strategies – compensation strategy

**3** Use the compensation strategy. This time you have to think of the next multiple of 10 and what you have to build down by. The first one has been done for you.

$$\text{a } 3 \times 39 \longrightarrow 3 \times \boxed{40} = \boxed{120} - \boxed{3}$$

$$\text{So, } 3 \times 39 = \boxed{117}$$

$$\text{b } 4 \times 29 \longrightarrow 4 \times \boxed{\phantom{00}} = \boxed{\phantom{00}} - \boxed{\phantom{00}}$$

$$\text{So, } 4 \times 29 = \boxed{\phantom{00}}$$

$$\text{c } 6 \times 19 \longrightarrow 6 \times \boxed{\phantom{00}} = \boxed{\phantom{00}} - \boxed{\phantom{00}}$$

$$\text{So, } 6 \times 19 = \boxed{\phantom{00}}$$

$$\text{d } 5 \times 59 \longrightarrow 5 \times \boxed{\phantom{00}} = \boxed{\phantom{00}} - \boxed{\phantom{00}}$$

$$\text{So, } 5 \times 59 = \boxed{\phantom{00}}$$

**4** Roll a die to make your own multiplication questions. Choose the compensation strategy for one column and the split strategy for the other.



$$\text{a } \boxed{\phantom{00}} \times 29 = \boxed{\phantom{00}}$$

$$\text{b } \boxed{\phantom{00}} \times 39 = \boxed{\phantom{00}}$$

$$\text{c } \boxed{\phantom{00}} \times 19 = \boxed{\phantom{00}}$$

Which strategy did you use and why?

$$\text{a } \boxed{\phantom{00}} \times 13 = \boxed{\phantom{00}}$$

$$\text{b } \boxed{\phantom{00}} \times 12 = \boxed{\phantom{00}}$$

$$\text{c } \boxed{\phantom{00}} \times 13 = \boxed{\phantom{00}}$$

Which strategy did you use and why?