Multiplication

WORKSHEETS

Mathletics
love learning.

Multiplication facts – 5 and 10 times tables

The 5 and 10 times tables are easier if you learn them together.

1 **Answer the 5 times table:**

$1 \times 5 =$

$2 \times 5 =$

$3 \times 5 =$

$4 \times 5 =$

$5 \times 5 =$

$6 \times 5 =$

$7 \times 5 =$

$8 \times 5 =$

$9 \times 5 =$

$10 \times 5 =$

2 **Count in 5s down the ladders:**

a 5

b 75

c 40
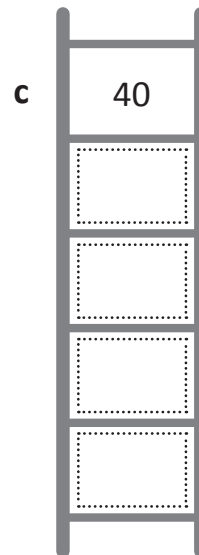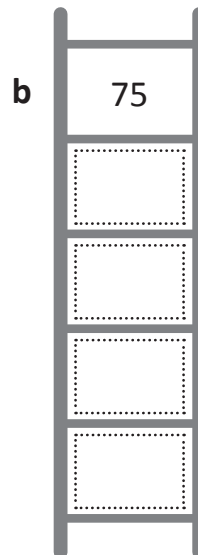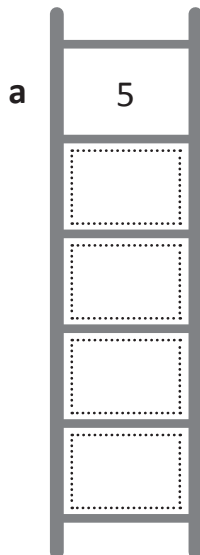
3 **Fill in the missing number for each times table fact:**

a ☐ $\times 5 = 25$ b ☐ $\times 5 = 45$

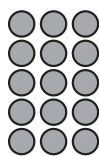c ☐ $\times 5 = 30$ d ☐ $\times 5 = 50$

e ☐ $\times 5 = 35$ f ☐ $\times 5 = 40$
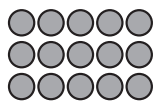
$3 \times 5 = 15$ $5 \times 3 = 15$

Turnaround facts are the times tables turned around!

4 **Complete the 5 times table turnarounds.**

a $5 \times 8 =$

b $5 \times 3 =$

c $5 \times 10 =$

d $5 \times 4 =$

REMEMBER

Multiplication facts – 5 and 10 times tables

5 Answer the 10 times table:

1 × 10 = ☐

2 × 10 = ☐

3 × 10 = ☐

4 × 10 = ☐

5 × 10 = ☐

6 × 10 = ☐

7 × 10 = ☐

8 × 10 = ☐

9 × 10 = ☐

10 × 10 = ☐

6 Write the missing numbers for these 5 times table facts:

a ☐ × 5 = 35

b 5 × 5 = ☐

c ☐ × 5 = 30

d 5 × ☐ = 45

e ☐ × 5 = 15

f 5 × ☐ = 10

g 5 × ☐ = 20

7 Write the missing numbers for these 10 times table facts:

a ☐ × 10 = 30

b 10 × 5 = ☐

c ☐ × 10 = 20

d 10 × 9 = ☐

e ☐ × 10 = 60

f ☐ × 10 = 70

g 10 × 10 = ☐

8 Follow the arrows by counting up in 10s:

☐	→	☐		☐	→	☐		☐	→	☐		☐	→	☐		☐
☐		☐		☐		☐		☐		☐		☐		☐		☐
10		☐	→	☐		☐	→	☐		☐	→	☐		☐	→	☐

9 Multiply each number in the top row by 5 and then by 10:

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

What do you notice? _____

Multiplication facts – 2 and 4 times tables

The 2 and 4 times tables are good facts to learn together.

1 Complete the skip counting pattern of 2:

(2) (4) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

2 Answer the 2 times tables. One is in order, the other is mixed up.

$1 \times 2 =$ ____ $7 \times 2 =$ ____

$2 \times 2 =$ ____ $10 \times 2 =$ ____

$3 \times 2 =$ ____ $6 \times 2 =$ ____

$4 \times 2 =$ ____ $8 \times 2 =$ ____

$5 \times 2 =$ ____ $1 \times 2 =$ ____

$6 \times 2 =$ ____ $9 \times 2 =$ ____

$7 \times 2 =$ ____ $4 \times 2 =$ ____

$8 \times 2 =$ ____ $3 \times 2 =$ ____

$9 \times 2 =$ ____ $2 \times 2 =$ ____

$10 \times 2 =$ ____ $5 \times 2 =$ ____

3 It is useful to be able to multiply numbers above 10 by 2. Try these:

$11 \times 2 =$ ____

$12 \times 2 =$ ____

$13 \times 2 =$ ____

$14 \times 2 =$ ____

$15 \times 2 =$ ____

$16 \times 2 =$ ____

$17 \times 2 =$ ____

$18 \times 2 =$ ____

$19 \times 2 =$ ____

$20 \times 2 =$ ____

4 Complete these doubling wheels as quickly as you can. Multiplying by 2 is the same as doubling.

a Double: 12, 16, 13, 15, 18, 20

b Double: 50, 14, 100, 24, 17, 19
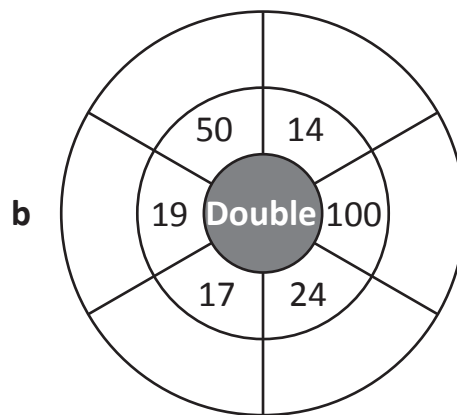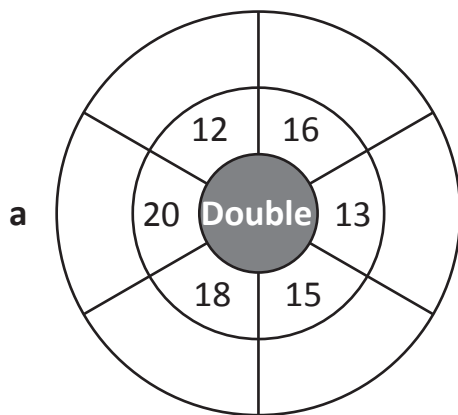
Multiplication facts – 2 and 4 times tables

Now for the 4 times table. The 4 times table is just double the 2 times table. This is helpful to remember if you forget a 4 times table fact.

5 The 2 times table should be easier, so complete it first. Then double each of the 2 times table facts to get the 4 times table facts:

$1 \times 2 =$ ☐ $1 \times 4 =$ ☐

$2 \times 2 =$ ☐ $2 \times 4 =$ ☐

$3 \times 2 =$ ☐ $3 \times 4 =$ ☐

$4 \times 2 =$ ☐ $4 \times 4 =$ ☐

$5 \times 2 =$ ☐ $5 \times 4 =$ ☐

$6 \times 2 =$ ☐ $6 \times 4 =$ ☐

$7 \times 2 =$ ☐ $7 \times 4 =$ ☐

$8 \times 2 =$ ☐ $8 \times 4 =$ ☐

$9 \times 2 =$ ☐ $9 \times 4 =$ ☐

$10 \times 2 =$ ☐ $10 \times 4 =$ ☐

6 Write the missing numbers for these 4 times table facts:

a ☐ $\times 4 = 8$

b ☐ $\times 4 = 16$

c ☐ $\times 4 = 40$

d ☐ $\times 4 = 24$

e ☐ $\times 4 = 12$

f ☐ $\times 4 = 36$

g ☐ $\times 4 = 20$

h ☐ $\times 4 = 28$

7 Use the hint to get the answer. Then fill in the missing digit to make the 4 times table fact complete:

a **Hint: Double 16**

☐ $\times 4 =$ ☐

b **Hint: Double 12**

☐ $\times 4 =$ ☐

c **Hint: Double 18**

☐ $\times 4 =$ ☐

8 Look at the numbers in the grid and circle 3 numbers that would make a multiplication fact. Look for $\times 2$ and $\times 4$ facts. They are either left to right or top to bottom. The first one has been done for you. There are 10 to find.

4	3	12	4	8	32
4	1	3	2	7	1
16	5	3	8	2	9
3	4	6	24	14	4
2	8	16	7	9	36
9	2	18	10	2	20

Multiplication facts – 8 times table

Here is the 8 times table. You can double the 4 times table to get the 8 times table.

1 **Complete the 4 times table as quickly as you can. Then after you have checked your answers, double them to complete the 8 times table facts:**

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

2 **Use double, double, and double again for these problems:**

a 6 × 8 = ☐

b 4 × 8 = ☐

c 9 × 8 = ☐

> If you get stuck on the 8s, think double, double, and double again.
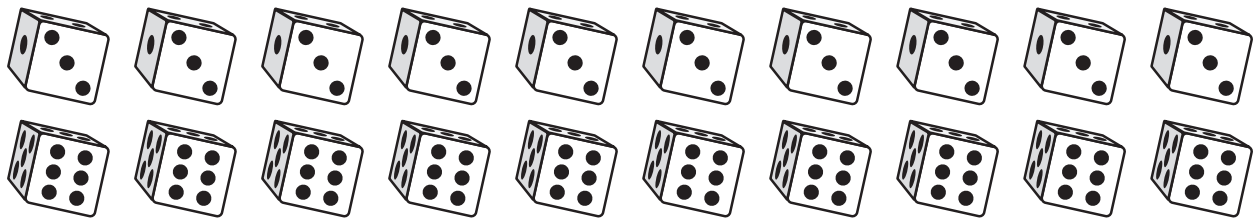> For example, 3 × 8
> Think: double 3 is 6
> double 6 is 12
> double 12 is 24

3 **On Mia's calculator, the 8 key is broken. Show her the steps she could follow to find the answer to 16 × 8. Use a calculator to test the steps.**

Multiplication facts – 3 and 6 times tables

Here are the 3 times and 6 times tables together. Can you think of why it's better to learn these facts together?

1 Use the picture of the dice above to complete both the 3 times table and the 6 times table:

1 × 3 = ☐   1 × 6 = ☐

2 × 3 = ☐   2 × 6 = ☐

3 × 3 = ☐   3 × 6 = ☐

4 × 3 = ☐   4 × 6 = ☐

5 × 3 = ☐   5 × 6 = ☐

6 × 3 = ☐   6 × 6 = ☐

7 × 3 = ☐   7 × 6 = ☐

8 × 3 = ☐   8 × 6 = ☐

9 × 3 = ☐   9 × 6 = ☐

10 × 3 = ☐   10 × 6 = ☐

2 Now try these mixed up:

a 3 × 6 = ☐

b 4 × 3 = ☐

c 8 × 3 = ☐

d 9 × 6 = ☐

e 4 × 6 = ☐

f 5 × 3 = ☐

g 8 × 6 = ☐

h 9 × 3 = ☐

i 5 × 6 = ☐

3 Fill in the missing digits to make these times table facts complete:

a 3 × 3 = ☐   **b** ☐ × 2 = 6   **c** ☐ × 3 = 18

d 6 × ☐ = 36   **e** 3 × ☐ = 24   **f** ☐ × 6 = 60

g ☐ × 9 = 27   **h** 6 × ☐ = 42   **i** 9 × ☐ = 54

j 5 × ☐ = 30   **k** ☐ × 6 = 48   **l** 7 × ☐ = 21

Multiplication facts – 3 and 6 times tables

4 **Match the answers to the questions. Each answer has two matching questions.**

| 4 × 6 | 16 × 3 | 3 × 8 | 3 × 10 | 8 × 6 |

30 **48** **12** **6** **24**

| 3 × 4 | 2 × 3 | 5 × 6 | 6 × 2 | 1 × 6 |

....

5 **Complete the cross number puzzle:**
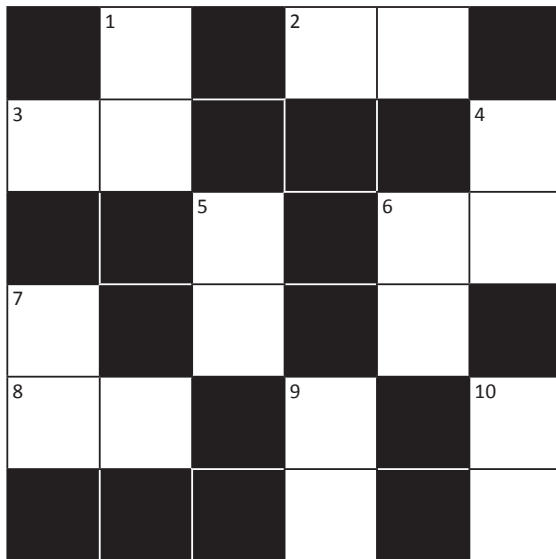
Across
2. 9 × 3
3. 3 × 6
6. 5 × 6
8. 7 × 6

Down
1. 8 × 6
4. 10 × 6
5. 9 × 6
6. 6 × 6
7. 4 × 6
9. 6 × 3
10. 7 × 3

....

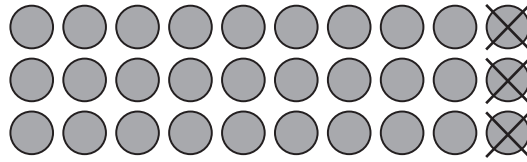**6** **What number am I? I am in the 3 times table, 4 times table, and 6 times table. I'm not 12.**

I am ☐

Using known facts – 9 times table

If you get stuck on a 9 times table fact, you can use the 10 times table facts and then build down.

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

$$3 \times 10 = 30 - 3 \longrightarrow \text{So, } 3 \times 9 = 27$$

1 Think of the × 10 facts and build down to get the × 9 facts. The first one is done for you.

× 10 table	Build down by	× 9 table
1 × 10 = 10	1	1 × 9 = 9
2 × 10 = 20		
3 × 10 = 30		
4 × 10 = 40		
5 × 10 = 50		
6 × 10 = 60		
7 × 10 = 70		
8 × 10 = 80		
9 × 10 = 90		
10 × 10 = 100		

2 Complete the × 9:

×	2	6	4	8	3	9	10	5	7
9									

Using known facts – 7 times table

If you get stuck on a 7 times table fact, remember the 8 times table fact and build down.

1 **Think of the × 8 table fact and build down to get the × 7 table fact.**

× 8 table	Build down by	× 7 table
1 × 8 = 8	1	1 × 7 =
2 × 8 = 16	2	2 × 7 =
3 × 8 = 24	3	3 × 7 =
4 × 8 = 32		4 × 7 =
5 × 8 = 40		5 × 7 =
6 × 8 = 48		6 × 7 =
7 × 8 = 56		7 × 7 =
8 × 8 = 64		8 × 7 =
9 × 8 = 72		9 × 7 =
10 × 8 = 80		10 × 7 =

2 **Add the missing numbers to each fact:**

a [ ] × 7 = 28   b [ ] × 7 = 35   c [ ] × 7 = 21

d [ ] × 7 = 42   e [ ] × 7 = 49   f [ ] × 7 = 14

3 **Use the × 8 to complete the × 7:**

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

Using known facts – factors and multiples

When 2 numbers are multipled together, the answer is called a multiple.
The first 3 multiples of 2 are 2, 4, 6.

$$1 \times 2 = 2 \qquad\qquad 2 \times 2 = 4 \qquad\qquad 3 \times 2 = 6$$
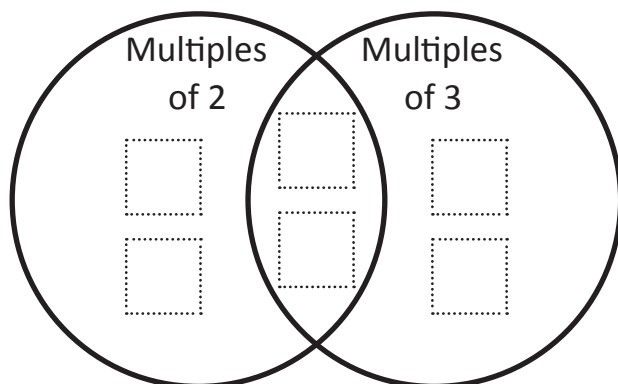
5, 10, 15, 20, 25, 30, 35, 40, 45, 50 are the first 10 multiples of 5.

1 **List the first ten multiples of each number:**

a 6 | 6 | | | | | | | | | |

b 2 | 2 | | | | | | | | | |

c 10 | | | | | | | | | | |

d 3 | | | | | | | | | | |

e 4 | | | | | | | | | | |

2 **Write these numbers in the correct spots on the Venn diagram:**

8   4   9   6   12   3

The space in the diagram where the circles overlap is where you put numbers that are multiples of *both* 2 and 3.

Multiples of 2   Multiples of 3

THINK

3 **Can you think of any other numbers up to 60 that could go into the overlapping space in the Venn diagram above?**

Using known facts – factors and multiples

Factors are numbers that you multiply together to give a multiple.
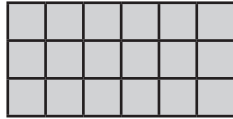
3 × 6 = 18

2 × 9 = 18

These arrays show some of the factors of 18: 3, 6, 2, and 9.
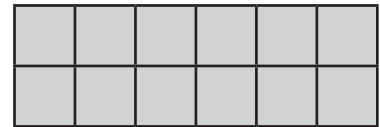
Can you think of any other factors of 18?

1 **Complete the number sentence for each set of arrays and then list the factors.**
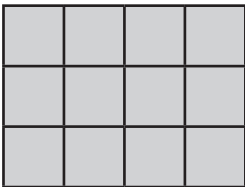
a

☐ × ☐ = ☐

b

☐ × ☐ = ☐

c

☐ × ☐ = ☐

d The factors of 12 are:

_____

....
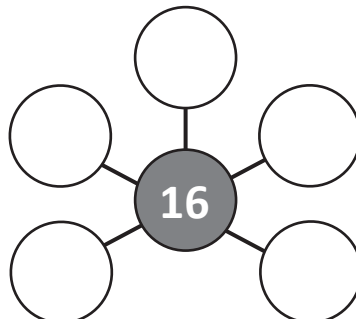
2 **Complete each diagram to show the factors of the number in the middle circle:**
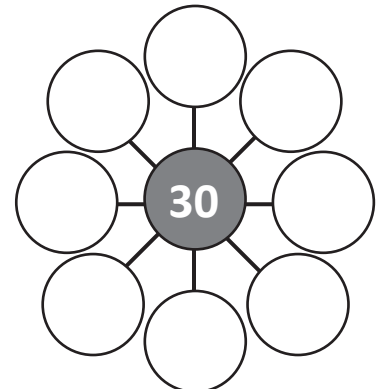
a

12

24

2

b

16

c

30
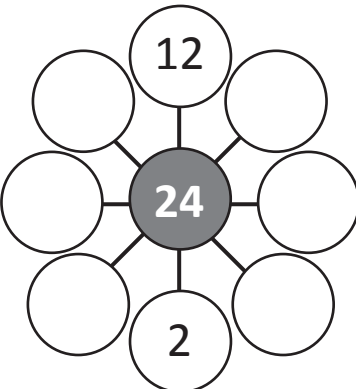
Mental multiplication strategies – multiplying by 10 and 100

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.

When we multiply any number by 100, a zero goes in both the ones and the tens columns and all the digits move two spaces along to the left.

Thousands	Hundreds	Tens	Ones	
		4	5	
	4	5	0	× 10
4	5	0	0	× 100

1 Use the place value tables to multiply these numbers by 10 and 100:

a

Th	H	T	O	
		1	5	
				× 10
				× 100

b

Th	H	T	O	
		4	8	
				× 10
				× 100

c

Th	H	T	O	
		7	2	
				× 10
				× 100

Can you see a pattern in each of the tables?

....

2 Use patterns to solve these:

a 14 × 1 = ☐   14 × 10 = ☐   14 × 100 = ☐

b 25 × 1 = ☐   25 × 10 = ☐   25 × 100 = ☐

c 82 × 1 = ☐   82 × 10 = ☐   82 × 100 = ☐

Mental multiplication strategies – multiplying by 10 and 100

How do you multiply by other multiples of 10? Let's look at 8 × 20.
We can use known times tables facts and write them as place value amounts:

8 × 2 tens = 16 tens So, 8 × 20 = 160

1 **Draw lines from the numbers written as place value amounts to the times tables facts:**

| 10 tens | 14 tens | 36 tens | 27 tens | 12 tens | 16 tens |

| 3 × 4 tens | 4 × 4 tens | 5 × 2 tens | 7 × 2 tens | 6 × 6 tens | 9 × 3 tens |

2 **Write the number that represents each place value amount:**

a 10 tens =

b 36 tens =

c 12 tens =

d 15 tens =

e 22 tens =

f 8 tens =

g 19 tens =

h 16 tens =

i 18 tens =

3 **First complete the hints and then use them to write the facts:**

Hints:

a 4 × 6 tens = tens

b 9 × 2 tens = tens

c 2 × 7 tens = tens

Facts:

4 × 60 =

9 × 20 =

2 × 70 =

4 **Complete the number wheels:**

a × 30   2 4 7 8 5 9 10 3

b × 40   2 6 8 4 5 3 7 9
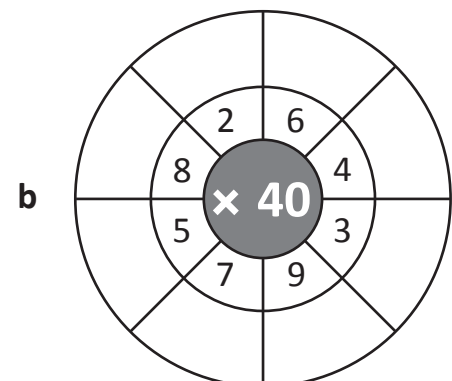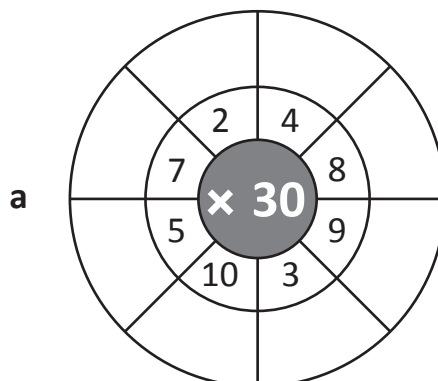
Mental multiplication strategies – doubling strategy

There are many double facts that you should know.

This includes numbers outside the times tables we have been working on.

Here are 2 double facts that are helpful to know:

double 15 is 30   double 50 is 100   Can you think of more?

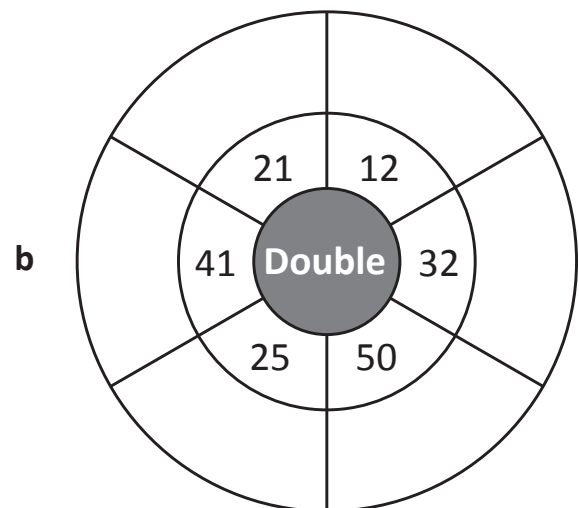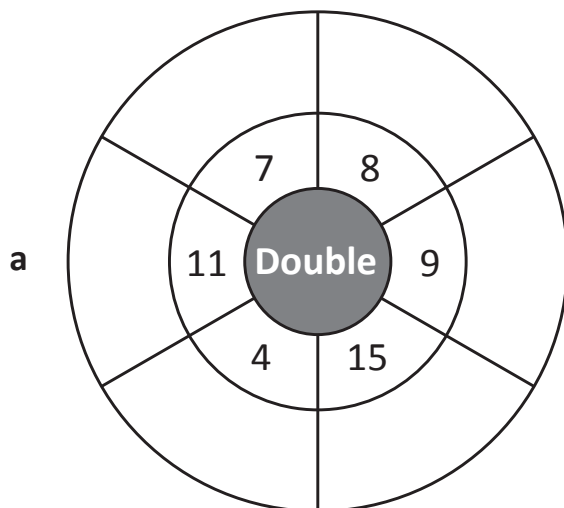**1** **Complete these function machines:**

a

Double	
IN	**OUT**
15	30
24	
30	
45	
18	

b

Double-double	
IN	**OUT**
15	60
24	
30	
45	
50	

Can you see what double-double is the same as? Yes, that's right, it's the same as × 4.

REMEMBER

2 **Complete these doubling wheels:**

a

7   8
11   **Double**   9
4   15

b

21   12
41   **Double**   32
25   50

Mental multiplication strategies – doubling strategy

We also use doubling when we multiply by 4 and by 8.

To multiply a number by 4, double it twice.		To multiply a number by 8, double it 3 times.	
10 × 4 = 40		11 × 8 = 88	
Double 10 once	20	Double 11 once	22
Double 10 twice	40	Double 11 twice	44
		Double 11 three times	88

1 **Keep doubling to get the × 4 and × 8 facts. Here are some tables to help you. The first one has been done for you.**

a

12 × 4 =	48
Double 12 once	24
Double 12 twice	48

b

15 × 4 =	
Double 15 once	
Double 15 twice	

c

18 × 4 =	
Double 18 once	
Double 18 twice	

d

22 × 4 =	
Double 22 once	
Double 22 twice	

e

16 × 8 =	
Double 16 once	
Double 16 twice	
Double 16 three times	

f

35 × 8 =	
Double 35 once	
Double 35 twice	
Double 35 three times	
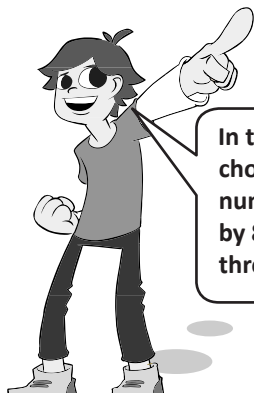
In this last table choose a 2-digit number to multiply by 8 and double it three times.

g

☐ × 8 =	
Double ☐ once	
Double ☐ twice	
Double ☐ three times	

Mental multiplication strategies – split strategy

The split strategy means we multiply numbers in 2 pairs and then add the parts.
Let's use the split strategy for 26 × 4.

- Split 26 into 20 and 6.
- Multiply each part.
- Add the answers together.

$$26 \times 4 \longrightarrow 20 \times 4 + 6 \times 4$$

$$80 + 24 = 104$$

$$\text{So, } 26 \times 4 = 104$$

1 **Use the split strategy to answer these:**

a 34 × 3 $\longrightarrow$ 30 × 3 + 4 × 3

90 + ☐ = ☐

So, 34 × 3 = ☐

b 45 × 5 $\longrightarrow$ ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐

So, 45 × 5 = ☐

c 52 × 4 $\longrightarrow$ ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐

So, 52 × 4 = ☐

Mental multiplication strategies – compensation

Use the compensation strategy to make it easier to multiply 2-digit numbers that are close to a ten.

Look at 4 × 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 4.

$$4 \times 19 \longrightarrow 4 \times 20 = 80 - 4$$

$$\text{So, } 19 \times 4 = 76$$

1 **Use the compensation strategy to answer these:**

a 5 × 29 ⟶ 5 × ☐ = ☐ – ☐

So, 5 × 29 = ☐

b 3 × 49 ⟶ 3 × ☐ = ☐ – ☐

So, 3 × 49 = ☐

c 4 × 39 ⟶ 4 × ☐ = ☐ – ☐

So, 4 × 39 = ☐

2 **Use the compensation strategy to answer these questions. This time you need to look for more than one extra group to subtract:**

> We have rounded up to 20. So instead of 4 × 18 we have 4 × 20. This is 2 more groups of 4. So we subtract 8.

a 4 × 18 ⟶ 4 × ☐ = ☐ – ☐

So, 4 × 18 = ☐

b 3 × 17 ⟶ 3 × ☐ = ☐ – ☐

So, 3 × 17 = ☐

THINK

Mental multiplication strategies – doubling and halving

We can change the factors of a multiplication question to make it easier. Look at 16 × 3. If we halve the larger factor and double the smaller factor, we make an array on the grid that is the same size. Both arrays have the same amount of squares. Count the squares. Are they equal to 8 × 6?
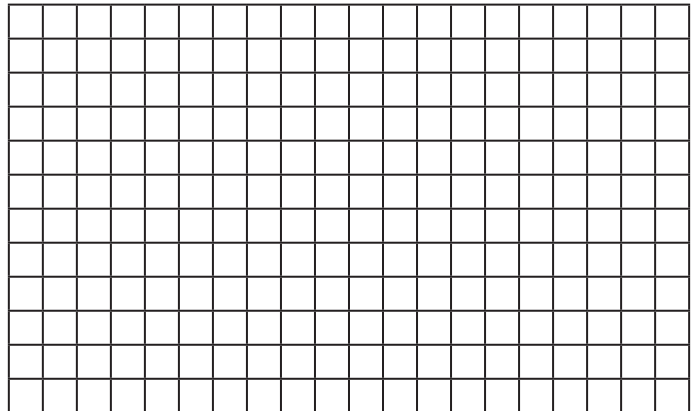
16 × 3

Halve   Double

8 × 6 = 48
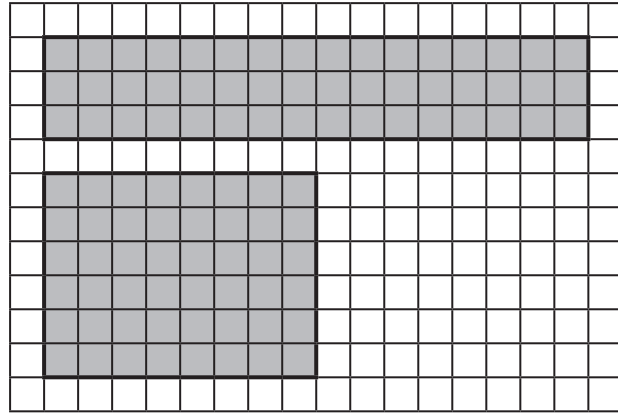
1 **Make these problems easier by using doubling and halving. Shade an array for each:**

a 18 × 3

Halve   Double

[ ] × [ ] = [ ]

b 14 × 4

Halve   Double

[ ] × [ ] = [ ]
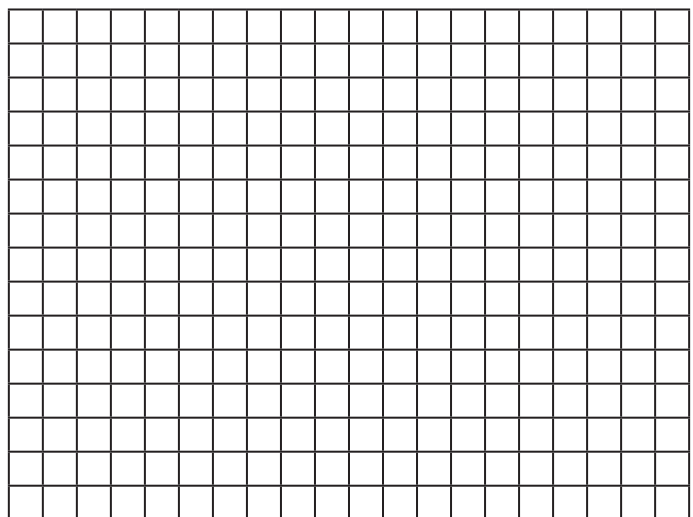
Mental multiplication strategies – doubling and halving

2 Use the doubling and halving strategy to solve these:

a   14   ×   3

Halve	Double

[ ] × [ ] = [ ]

b   48   ×   5

Halve	Double

[ ] × [ ] = [ ]

c   16   ×   5

Halve	Double

[ ] × [ ] = [ ]

d   64   ×   5

Halve	Double

[ ] × [ ] = [ ]

3 Follow this doubling and halving trail through to the bottom:

a Halve   Double

8   ×   56   =   [?]

[ ] × [ ]

[ ] × [ ]

[ ] × [ ]

So, 8 × 56 = [ ]

b Halve   Double

8   ×   35   =   [?]

[ ] × [ ]

[ ] × [ ]

[ ] × [ ]

So, 8 × 35 = [ ]

c Halve   Double

8   ×   45   =   [?]

[ ] × [ ]

[ ] × [ ]

[ ] × [ ]

So, 8 × 45 = [ ]

d   What do you notice?

Multiplication – written methods

H	T	O	
	^{1}5	4	Start with the ones. 4 × 3 = 12 ones.

×   3

1 6 2

Start with the ones. 4 × 3 = 12 ones.

Rename this as 1 ten and 2 ones. Put the 2 in the ones column and regroup the 1 to the tens column.

3 × 5 plus the regrouped 1 is 16 tens.

Rename this as 1 hundred and 6 tens.

1   Practice these problems:

a
H	T	O
	4	2
×		9

b
H	T	O
	3	8
×		7

c
H	T	O
	2	5
×		4

d
H	T	O
	2	6
×		4

e
H	T	O
	5	5
×		8

f
H	T	O
	6	2
×		7

2   Use contracted multiplication to solve these word problems:

a   On a farm, 6 lambs were born every day over 25 days. How many lambs were born in total?

b   For my school party day, I baked 9 trays of cupcakes. If there are 14 cupcakes on each tray, how many did I bake in total?

H	T	O
×		

H	T	O
×		

Multiplication – written methods

	H	T	O	
		3	4	
×			3	
	1	2		← (3 × 4)
	9	0		← (3 × 30)
	1	0	2	

In extended multiplication, we multiply the ones and tens separately, then add the answers together.

1 **Practice these problems:**

a

	H	T	O	
		2	3	
×			4	
				← (4 × 3)
				← (4 × 20)

b

	H	T	O	
		3	6	
×			5	
				← (5 × 6)
				← (5 × 30)

c

	H	T	O	
		7	4	
×			6	
				← (___ × ___)
				← (___ × ___)

d

	H	T	O	
		5	2	
×			7	
				← (___ × ___)
				← (___ × ___)

2 **Use extended multiplication to solve this word problem:**

In a pet store, there are 7 tanks of tropical fish with 14 fish per tank.
How many fish are there altogether?

	H	T	O	
×				
				← (___ × ___)
				← (___ × ___)