

2017 national curriculum tests

Key stage 2

Mathematics

Paper 3: reasoning

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						

Completed Paper. Mark the answers and explain what errors have been made.



[BLANK PAGE]

Please do not write on this page.



Instructions

You **must not** use a calculator to answer any questions in this test.

Questions and answers

You have **40 minutes** to complete this test.

Follow the instructions for each question.

Work as quickly and as carefully as you can.

If you need to do working out, you can use the space around the question.

Do not write over any barcodes.

Some questions have a method box like this:

Show your method

For these questions, you may get a mark for showing your method.

If you cannot do a question, **go on to the next one.**

You can come back to it later, if you have time.

If you finish before the end, **go back and check your work.**

Marks

The number under each line at the side of the page tells you the maximum number of marks for each question.



1

Write the missing number to make this **division** correct.

$$75 \div \boxed{100} = 7.5$$

1 mark

2

A group of friends earns £80 by washing cars.

They share the money **equally**.

They get £16 each.

How many friends are in the group?

$$£80 \times 16$$

$$\begin{array}{r} 80 \\ \times 16 \\ \hline 480 \\ 800 \\ \hline 1280 \end{array}$$

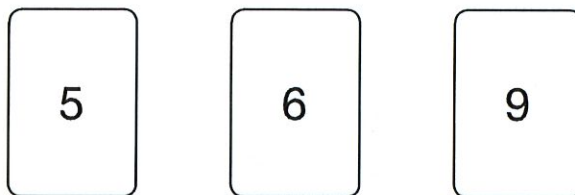
$\boxed{1280}$

1 mark



3

Chen uses these digit cards.



She makes a 2-digit number and a 1-digit number.

She multiplies them together.

Her answer is a **multiple of 10**

What could Chen's multiplication be?

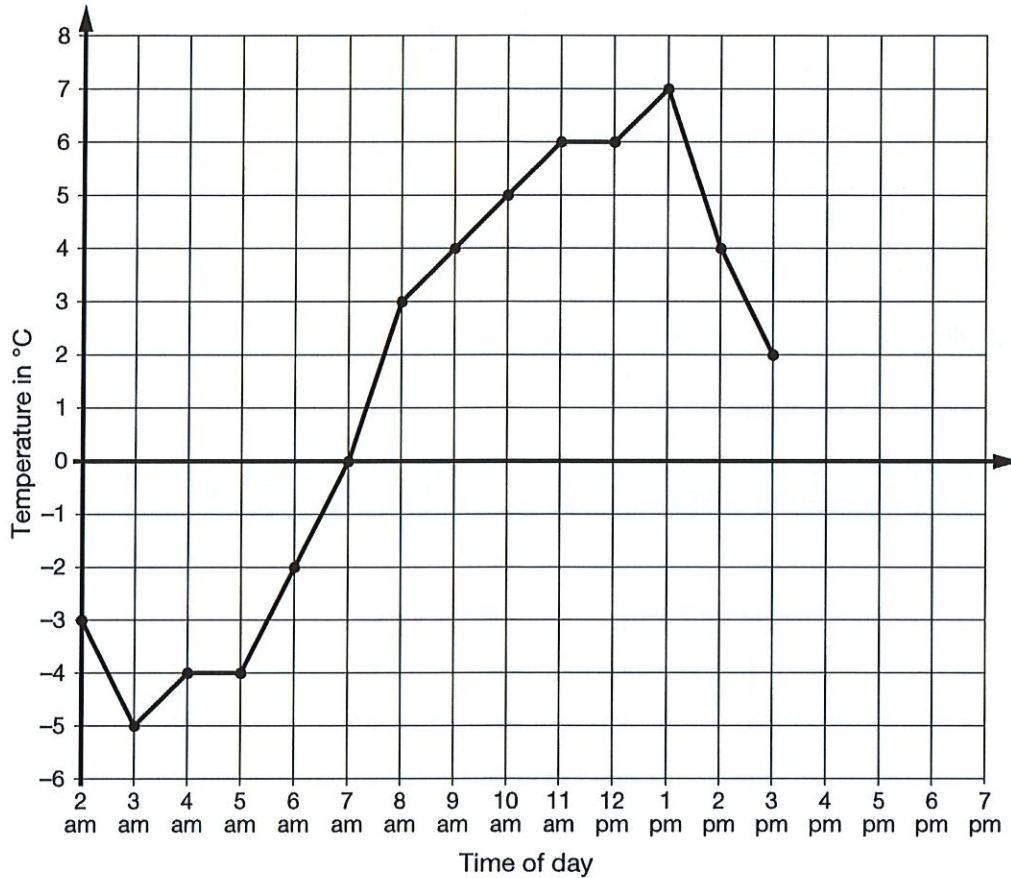
$$\begin{array}{|c|c|} \hline 6 & 9 \\ \hline \end{array} \times \begin{array}{|c|} \hline 5 \\ \hline \end{array}$$

1 mark



4

This graph shows the temperature in °C from 2 am to 3 pm on a cold day.



How many degrees **warmer** was it at 3 pm than at 3 am?

$$\text{ANS} = -5 - 2 = 3$$

3 °C

1 mark

At 6 pm the temperature was 4 degrees lower than at 3 pm.

What was the temperature at 6 pm?

-4 °C

1 mark



5

The children at Farmfield School are collecting money for charity.

Their target is to collect £360

So far they have collected £57.73

How much **more** money do they need to reach their target?

$$\begin{array}{r} £360.00 \\ 57.73 \\ \hline 317.73 \end{array}$$

£ 317.73

1 mark



6

William wants to travel to Paris by train.

He needs to arrive in Paris by **5:30 pm**.

Circle the **latest time** that William can leave London.

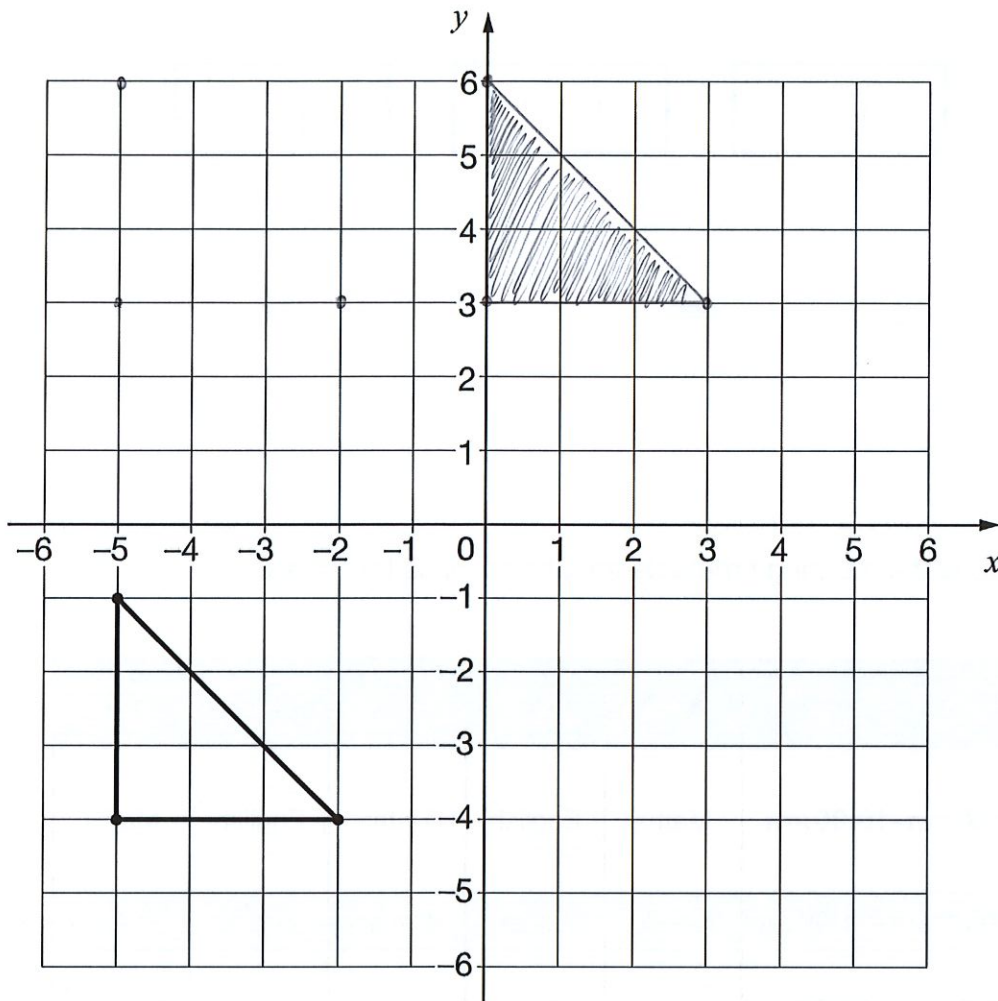
Leaves London	Arrives Paris
12:01	15:22
12:25	15:56
13:31	16:53
14:01	17:26
14:31	17:53
15:31	18:53
16:01	19:20

1 mark



7

Here is a triangle drawn on a coordinate grid.



1 mark

The triangle is translated **7 right** and **5 up**.

Draw the triangle in its new position.



8

Write three factors of 30 that are **not** factors of 15

30

60

90

2 marks

9

Here is the morning timetable for Chen's class this week.

Time	Mon	Tue	Wed	Thu	Fri
9:00 am–10:30 am	Maths	English	Maths	English	Maths
10:30 am–11:00 am	Break	Break	Break	Break	Break
11:00 am–12:00 pm	English	Maths	Science	Maths	English

What is the **total** number of hours for **English** on this timetable?

4 hours

1 mark



10

A bottle contains 568 millilitres of milk.

Jack pours out **half a litre**.



How much milk is left?

$$\begin{array}{r} 568 \\ - 50 \\ \hline 518 \end{array}$$

518 ml

1 mark

11

A bicycle wheel has a diameter of 64 cm.

What is the **radius** of the bicycle wheel?

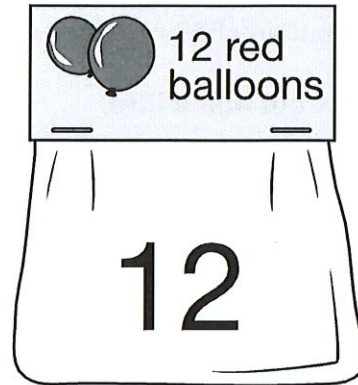
$$64 \times 2$$

128 cm

1 mark



12



Adam buys **6** bags of white balloons.

Chen buys **3** bags of red balloons.

Adam says,

'I have four times as many balloons as Chen.'

Explain why Adam is correct.

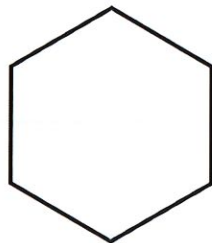
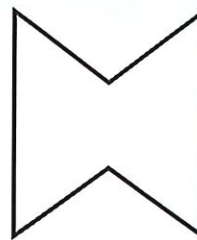
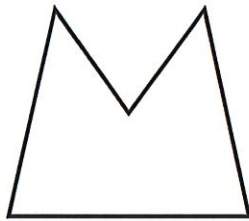
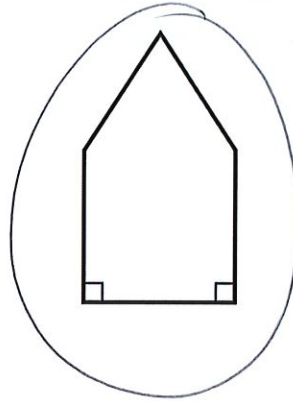
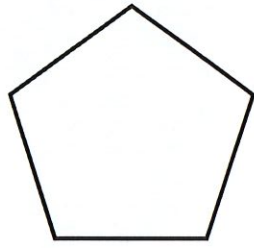
Adam is correct because I calculated it and he was right.

1 mark



13

Circle the **pentagon** with exactly **four acute angles**.



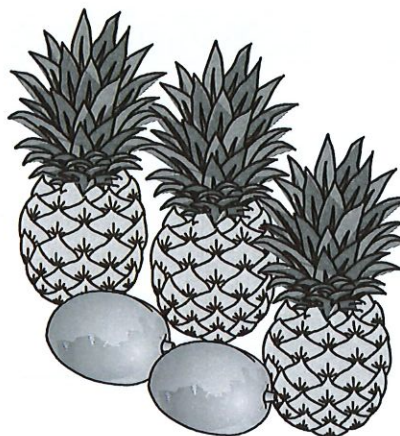
1 mark



14

3 pineapples cost the same as 2 mangoes.

One mango costs £1.35



How much does **one** pineapple cost?

Show
your
method

	£	1	.	3	5																
	x				2																
	£	2	.	7	0																
				1																	

£ 2.70

2 marks



15

Look at the letters below.

Circle the letter below that has both parallel **and** perpendicular lines.

A

C

E

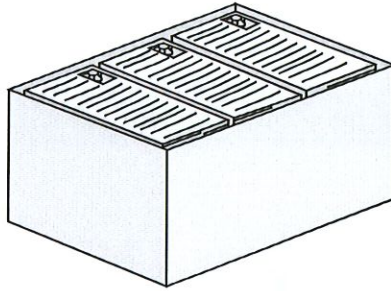
~~L~~

Z

1 mark



F 0 0 0 8 0 A 0 1 5 2 4



There are 2,400 leaflets in a box.

William and Ally take 450 leaflets each.

Adam and Chen share the rest of the leaflets equally.

How many leaflets does Adam get?

Show
your
method

		1	2	0	0																
		1 2 0 0																			
	2	2	4	0	0																
		2	2	0	0																
		-	4	5	0																
		7	5	0																	

750

2 marks



17

In each box, circle the number that is **greater**.

$1\frac{1}{2}$

1.2

$1\frac{1}{4}$

1.3

$1\frac{5}{100}$

1.4

$1\frac{3}{5}$

1.5

2 marks



F 0 0 0 8 0 A 0 1 7 2 4

18

A **square** number and a **prime** number have a total of 22

What are the two numbers?

$$\boxed{3} + \boxed{13} = 22$$

square
number

prime
number

1 mark

$$3^2 = 9$$

$$22 - 9 = 13$$

19

Dev thinks of a **whole** number.

He multiplies it by 4

He rounds his answer to the nearest 10

The result is 50

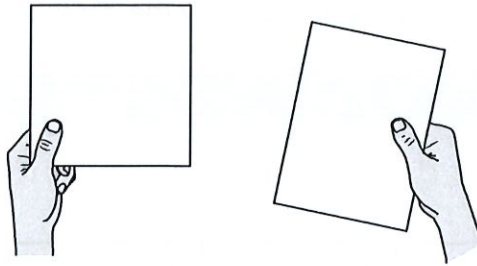
Write **all** the possible numbers that Dev could have started with.

12

2 marks

45, 46, 47, (48), 49, 50, 51, 52, 53, 54
 $\div 4$





A square tile measures 20 cm by 20 cm.

A rectangular tile is 3 cm **longer** and 2 cm **narrower** than the square tile.

What is the **difference in area** between the two tiles?

Show
your
method

$20 \times 20 = 400$	
$23 \times 22 =$	
$\begin{array}{r} 23 \\ \times 22 \\ \hline 46 \\ 460 \\ \hline 506 \end{array}$	$\begin{array}{r} 506 \\ - 400 \\ \hline 106 \end{array}$
	106 cm^2

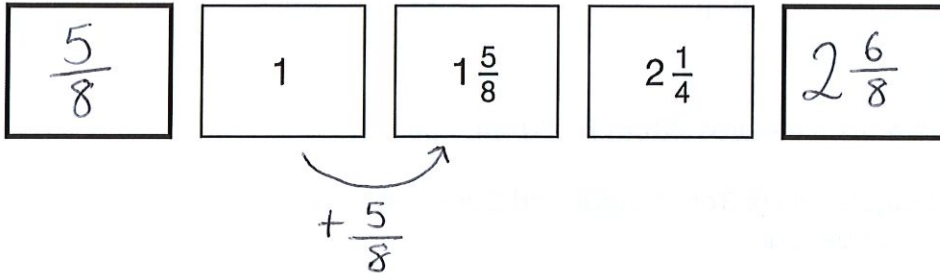
3 marks



21

The numbers in this sequence increase by the same amount each time.

Write the missing numbers.



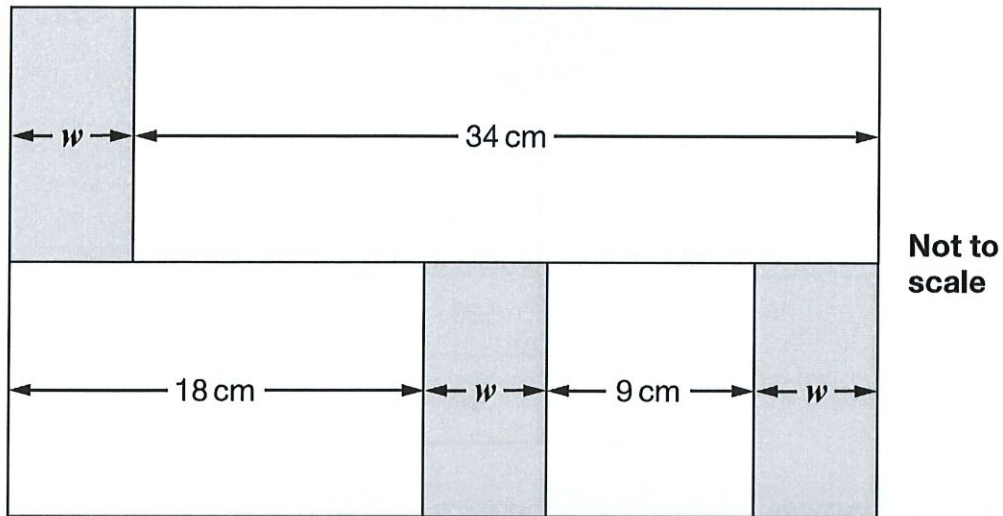
1 mark

1 mark



22

In this diagram, the shaded rectangles are all of equal width (w).



Calculate the width (w) of one shaded rectangle.

Show
your
method

$$18 + 9 = 27$$

$$34 - 27 = 7$$

$$7 \div 2 = 3.5$$

3.5 cm

2 marks



F 0 0 0 8 0 A 0 2 1 2 4

23

Here is a pattern of number pairs.

a	b
1	9
2	19
3	29
4	39

Complete the **rule** for the number pattern.

$$b = \boxed{9} \times a - \boxed{0}$$

1 mark



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