

National Curriculum Tests

# Key Stage 2

## Mathematics

### Paper 3: Reasoning

First Name						
Middle Name						
Last Name						
Date of Birth	Day		Month		Year	
School Name						

Published October 2017

## 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.

**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 one of the questions, **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 pages tells you the maximum number of marks for each question.

1.

Write the missing number to make this division correct.

$$67 \div \boxed{\phantom{000}} = 6.7$$

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1 mark

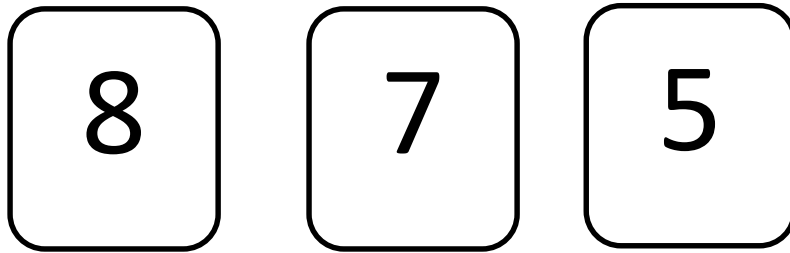
2. A group of friends earns £90 by selling cold drinks on a summer day.  
They share out the money **equally**.  
They get £15 each

How many friends are in the group?

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1 mark

3. Karen 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**

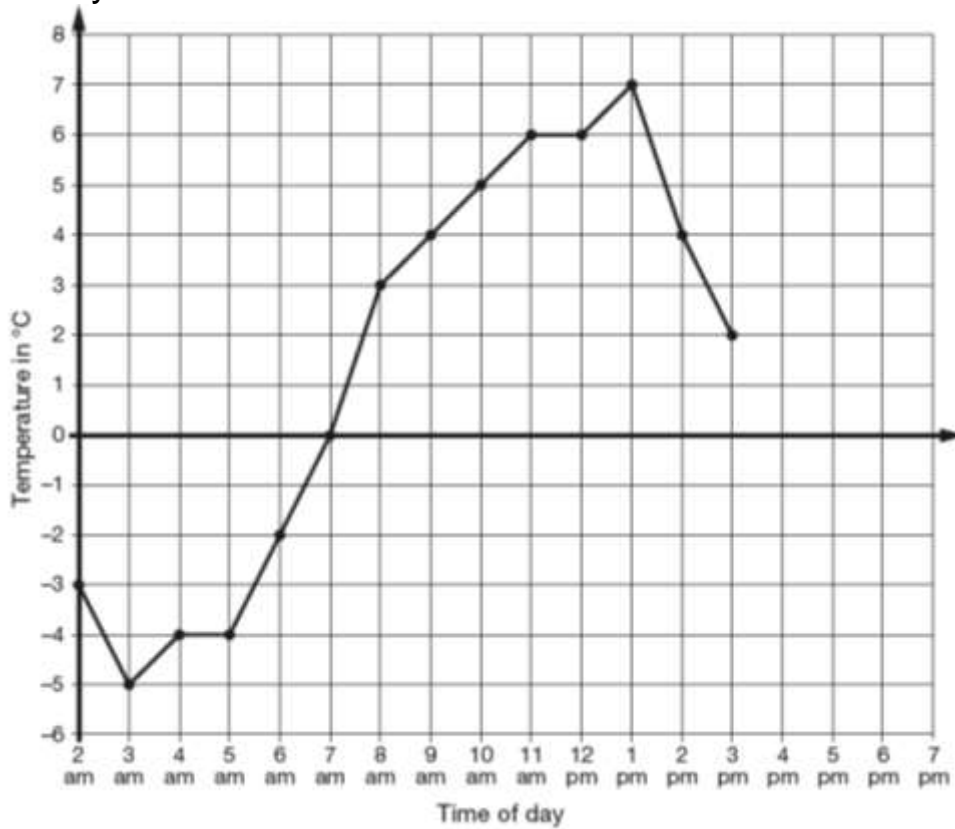
What could Karen's multiplication be?

$$\boxed{\phantom{00}} \times \boxed{\phantom{0}}$$

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1 mark

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



How many degrees **colder** was it at 4am than at 1pm?

°C

1 mark

At 7pm the temperature was 8 degrees lower than at 2pm.

What was the temperature at 7pm?

°C

1 mark

5. The children at Stanley Primary School are collecting money for charity.

Their target is to collect £670

So far they have collected £63.89

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

£
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\_\_\_\_\_

1 mark

6. Tom wants to travel to Manchester by train.

He needs to arrive in Manchester by **6:30pm**

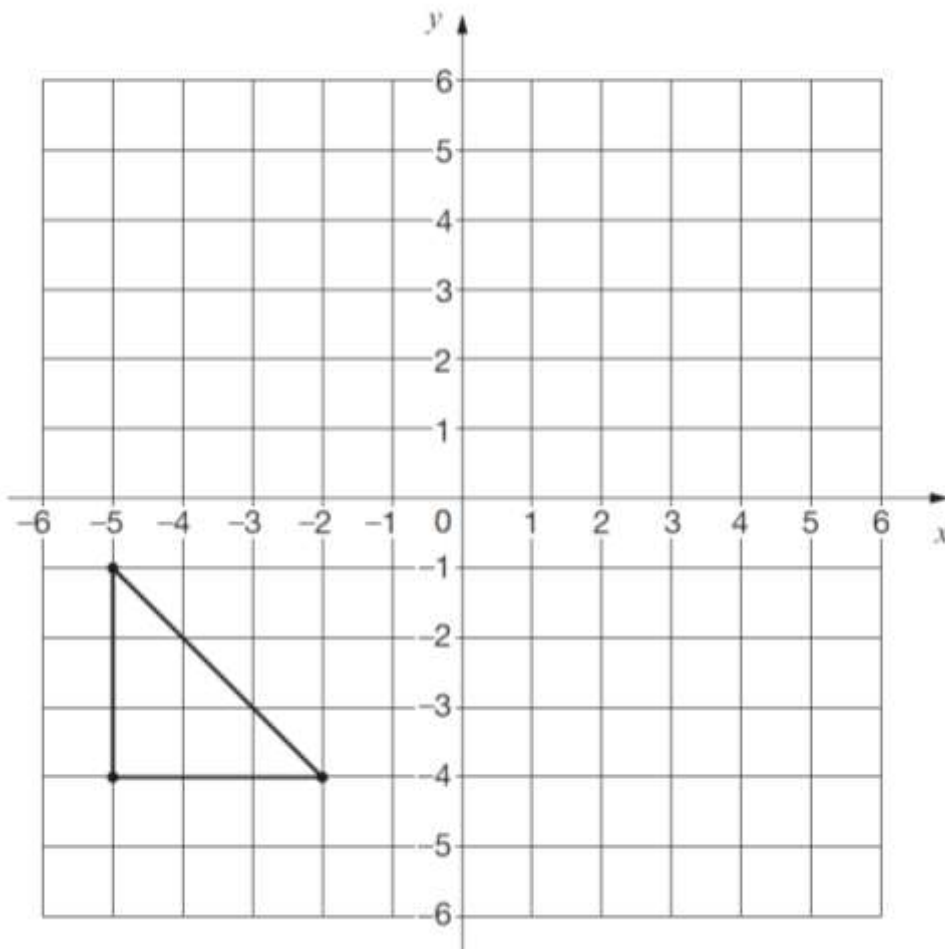
Circle the **latest time** that Tom can leave London.

Leaves London	Arrives Manchester
12:27	15:49
13:37	16:59
14:03	17:24
14:37	17:49
15:05	18:23
15:37	18:49
16:03	19:24

\_\_\_\_\_

1 mark

7. Here is a triangle drawn on a coordinate grid.



The triangle is translated **5 right** and **6 up**.

Draw the triangle in its new position.

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1 mark

8.

Write three factors of 100 that are **not** factors of 50.

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1 mark

9. Here is the morning timetable for Karen'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

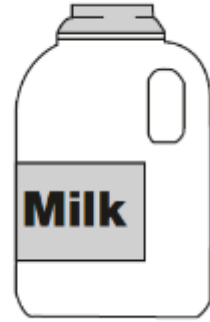
What is the **total** number of hours for **Maths** on the timetable?

**hours**

1 mark



10. A bottle contains 300ml of milk.  
Karen pours out **quarter of a litre**.



How much milk is left?

\_\_\_\_\_

1 mark

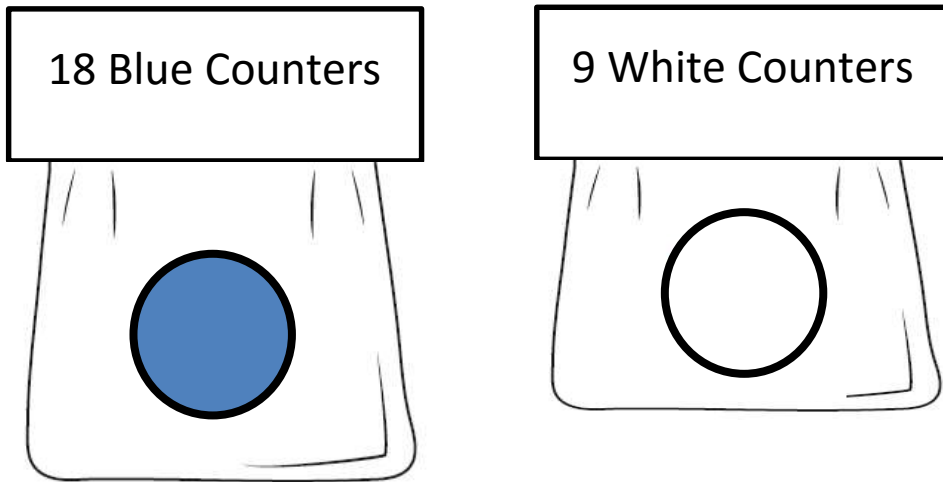
11. A bicycle wheel has a diameter of 78cm.

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

\_\_\_\_\_

1 mark

12. Tom buys 8 bags of blue counters.  
Karen buys 4 bags of white counters.



Karen says "I have a quarter of the counters that Tom has."

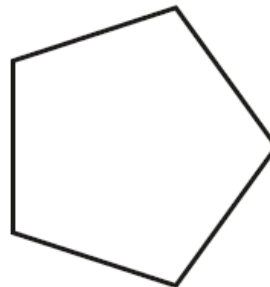
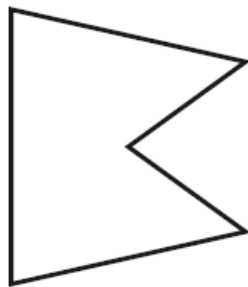
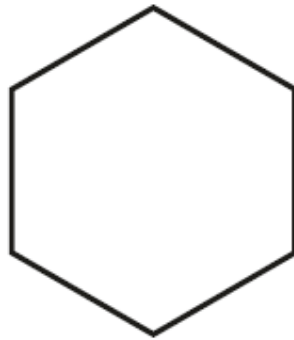
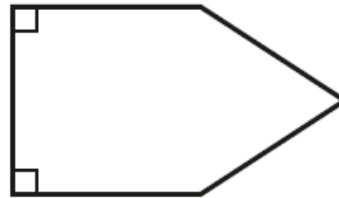
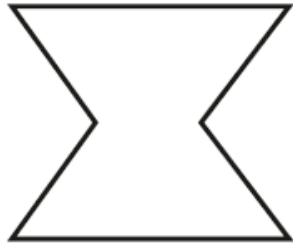
Explain why Karen is correct.

A large, empty, cloud-shaped box for writing an explanation.

1 mark

13.

Circle the **pentagon** with exactly **two obtuse angles**



\_\_\_\_\_   
 1 mark



16. There is a collection of 3,600 comics.



Tom and Karen are given 350 comics each.  
Chen and Tracey share the rest of the comics equally.

How many comics does Tracey get?

Show your method																			

2 marks

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

1.4	$\frac{1}{4}$
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$1 \frac{4}{5}$	1.45
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1.8	$1 \frac{9}{10}$
-----	------------------

1.1	$1 \frac{1}{100}$
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2 marks

18. A **prime** number and a **square** number have a total of 33

What are the two numbers?

$$\boxed{\phantom{00}} + \boxed{\phantom{00}} = 33$$

prime number                      square number

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1 mark

19. Chen thinks of a **whole** number  
He multiplies it by 3.  
He rounds the answer to the nearest 10.  
The result is 50

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

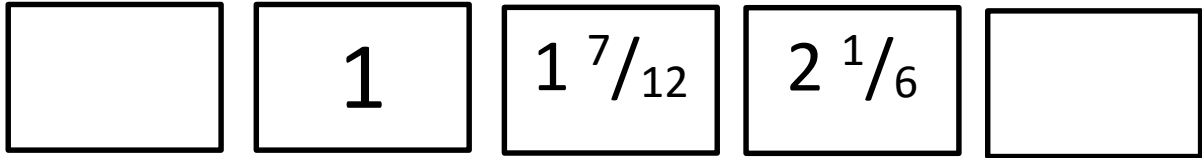
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2 marks



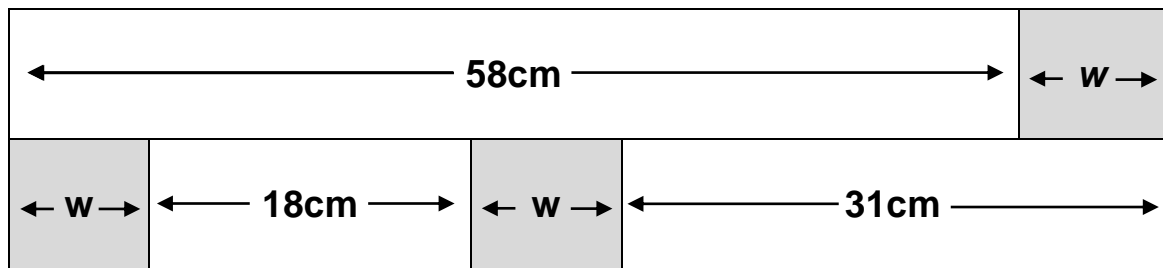
21. The numbers in this sequence increase by the same amount each time.

Write the missing numbers.



\_\_\_\_\_   
 2 marks

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



**Not to scale**

Calculate the width ( $w$ ) of one shaded rectangle.

Show your method

A grid for showing the method. A small rectangle is drawn on the grid, labeled "cm".

\_\_\_\_\_   
 2 marks



23. Here is a pattern of number pairs.

a	b
1	9
2	21
3	33
4	45

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

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

\_\_\_\_\_

1 mark

