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KEY STAGE

3

TIERS

3–5

2006

Mathematics test

Paper 1

Calculator not allowed

Please read this page, but do not open your booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below.

First name _____

Last name _____

School _____

Remember

- The test is 1 hour long.
- You **must not** use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, tracing paper and mirror (optional).
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper. Marks may be awarded for working.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

For marker's
use only

Total marks

Instructions

Answers



This means write down your answer or show your working and write down your answer.

Calculators

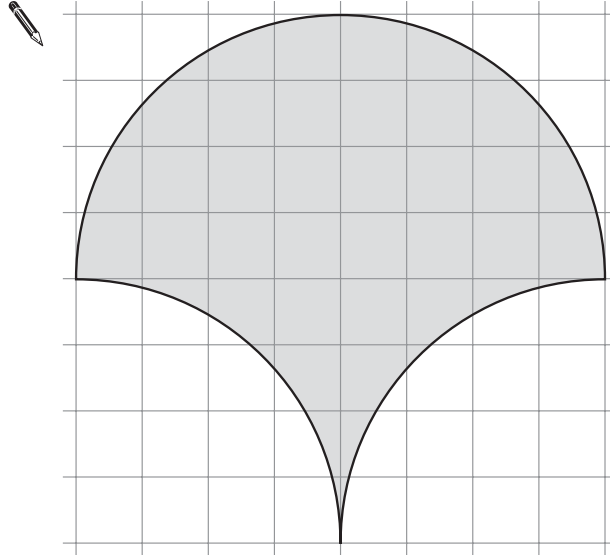


You **must not** use a calculator to answer any question in this test.

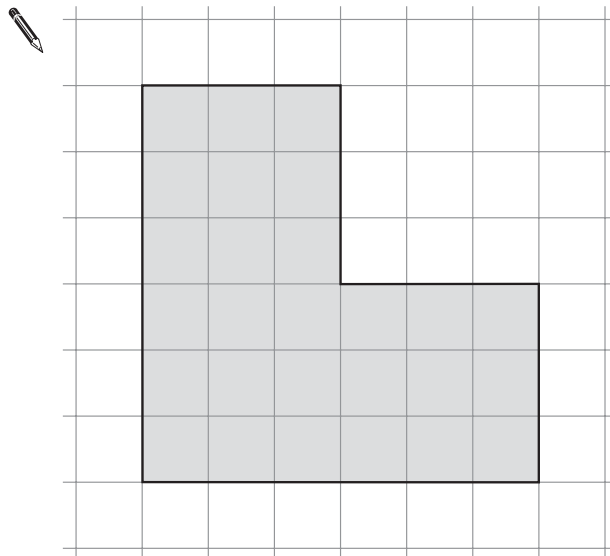
1. The shapes below are drawn on square grids.

Each shape has **one line of symmetry**.

Draw the line of symmetry on each shape.



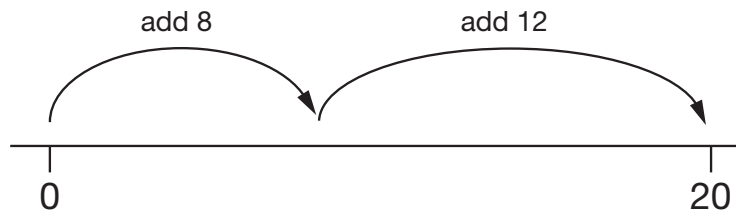
1 mark



1 mark



2. This number line shows one way to use **two steps** to move from 0 to 20

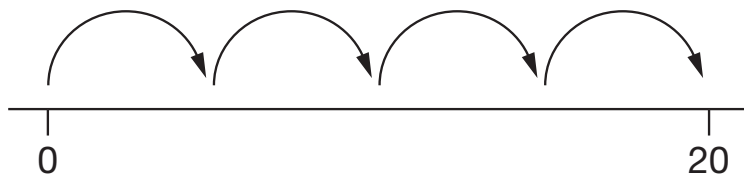


- (a) On the number line below, show a **different** way to use **two steps** to move from 0 to 20



1 mark

- (b) This number line shows how to use **four steps** of the **same size** to move from 0 to 20



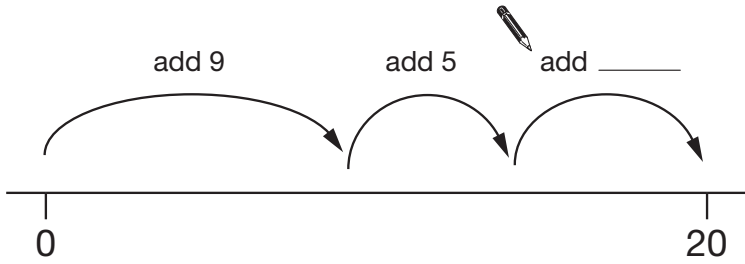
Complete the sentence below.



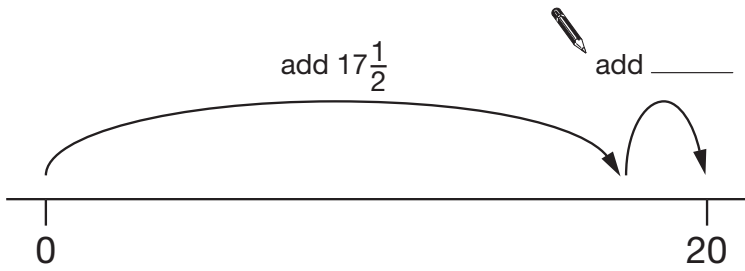
Each step is **add** _____

1 mark

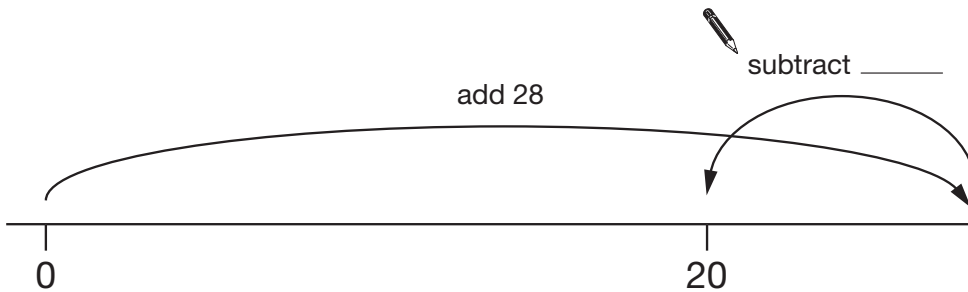
(c) Write the missing number on each number line to show how to move from 0 to 20



1 mark



1 mark



1 mark

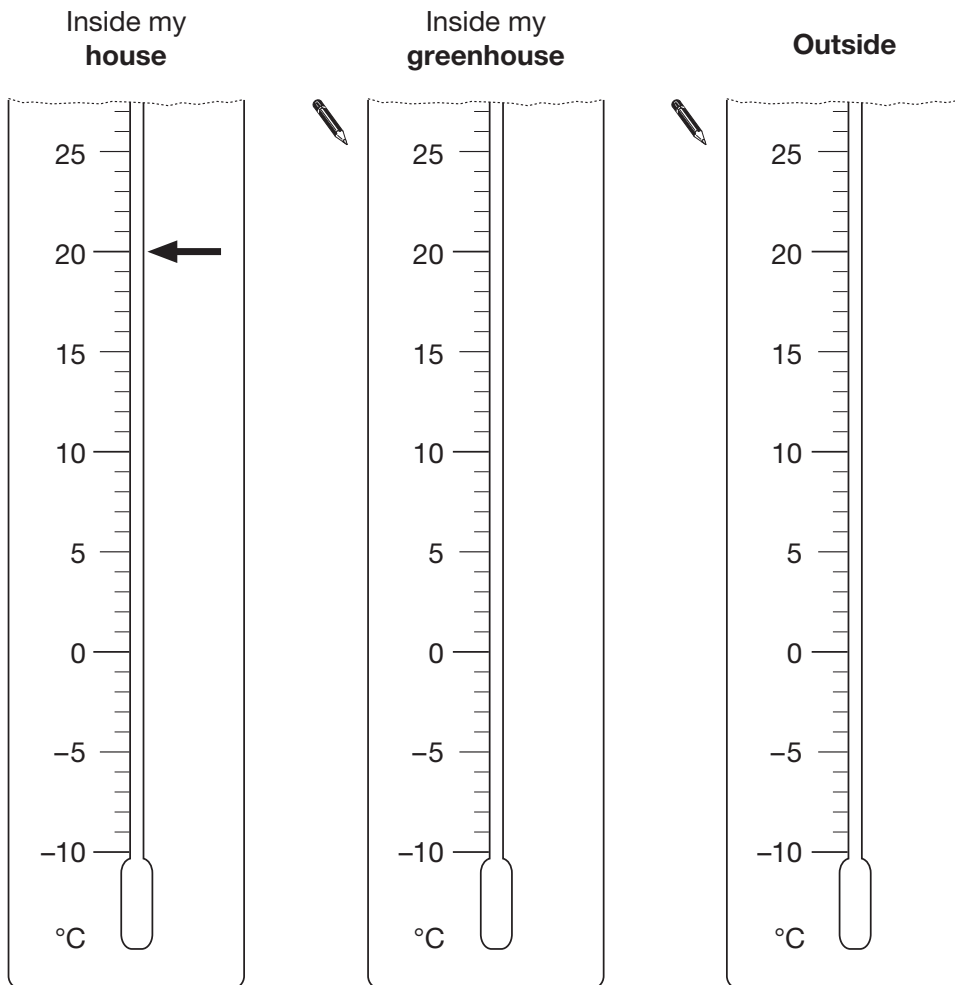


3. The table shows some temperatures for one day in winter.

Place	Temperature
Inside my house	20°C
Inside my greenhouse	8°C
Outside	-2°C

Draw arrows on the diagrams below to show these temperatures.

The first one is done for you.

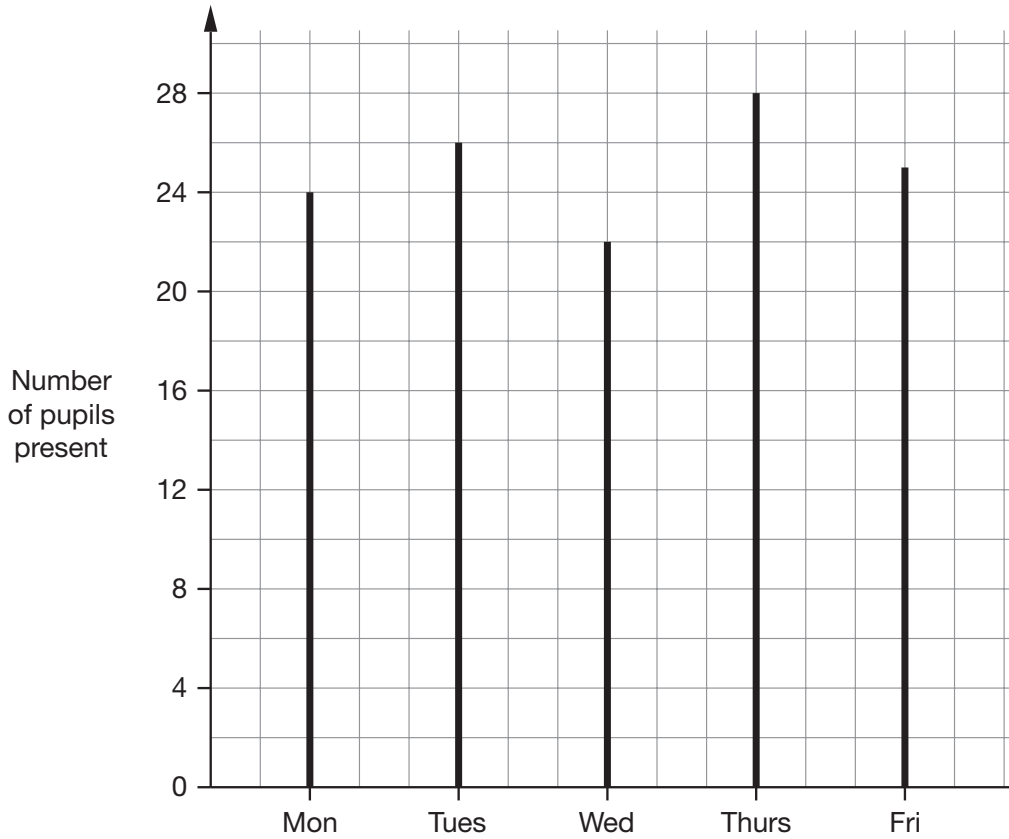


1 mark

1 mark

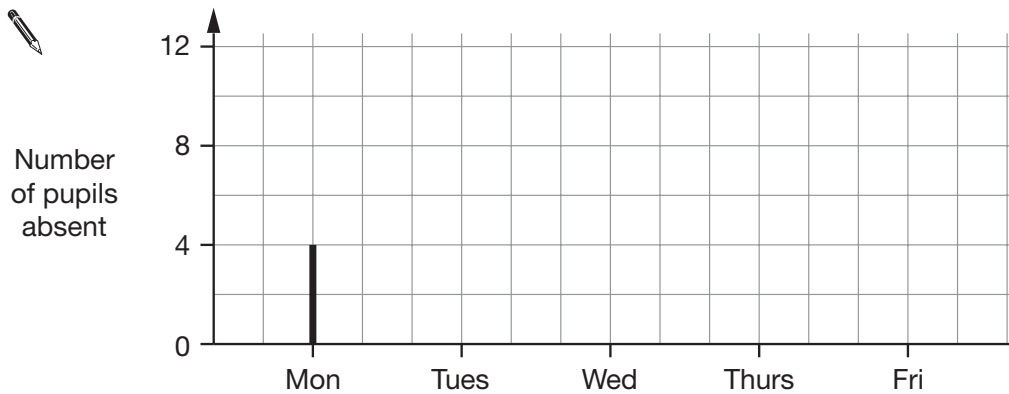
4. There are **28 pupils** in class 9K.

The chart shows the number of pupils **present** each day, in class 9K.



Four pupils were absent on Monday.

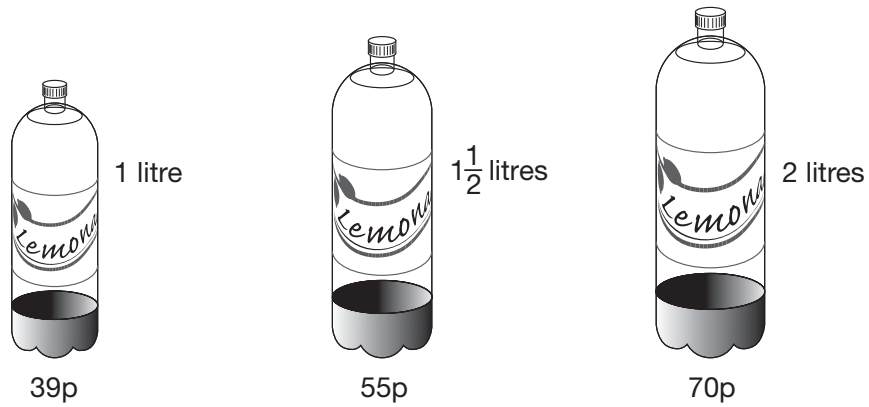
Complete the chart below to show the number of pupils **absent** each day, in class 9K.



2 marks



5. A shop sells three different sized bottles of lemonade.



- (a) I want **3 litres** of lemonade.

I could buy **three** bottles of size **1 litre**.

How much would that cost?

 £

1 mark

- (b) Write a **different way** I could buy exactly 3 litres of lemonade.



Now work out how much it would cost.

 £

1 mark

(c) Write another **different way** I could buy exactly 3 litres of lemonade.



Now work out how much it would cost.



£

1 mark

(d) My friend buys seven bottles of lemonade.

Two of the bottles are of size $1\frac{1}{2}$ litres.

Five of the bottles are of size **2 litres**.

How many litres is that altogether?

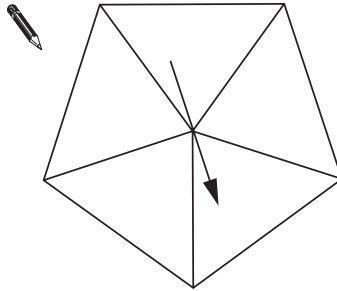


_____ litres

2 marks

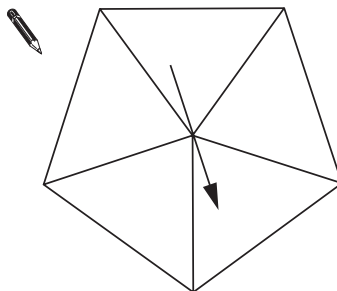
7. On each spinner **write five numbers** to make the statements correct.

It is **certain** that you will get a number **less than 6**



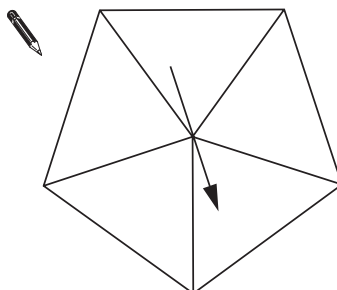
1 mark

It is **more likely** that you will get an **even** number than an **odd** number.



1 mark

It is **impossible** that you will get a **multiple of 3**

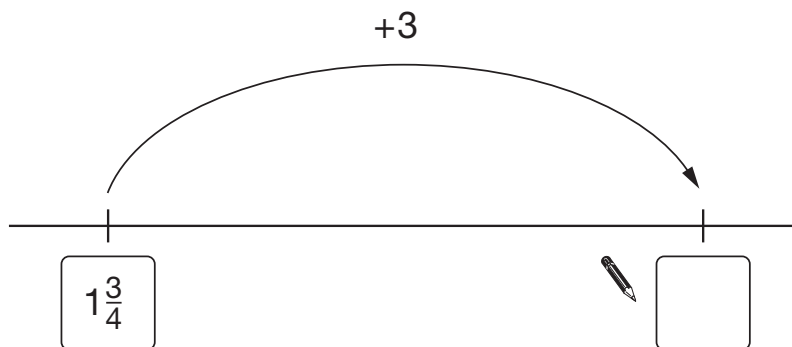
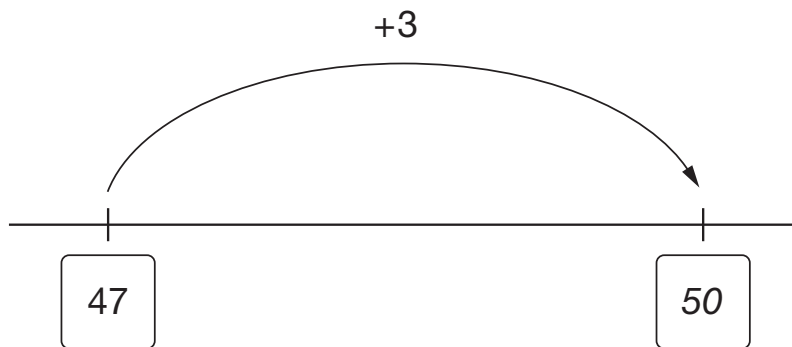


1 mark

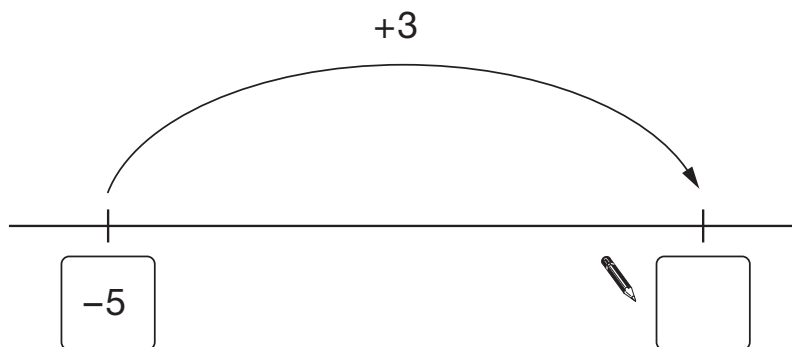


8. Add three to the number on each number line.

The first one is done for you.



1 mark



1 mark

9. Work out the missing numbers.

In each part, you can use the first line to help you.

(a)

$$\begin{array}{r} 16 \times 15 = 240 \\ \text{pencil} \quad 16 \times \underline{\quad\quad} = 480 \end{array}$$

1 mark

(b)

$$\begin{array}{r} 46 \times 44 = 2024 \\ \text{pencil} \quad 46 \times 22 = \underline{\quad\quad} \end{array}$$

1 mark

(c)

$$\begin{array}{r} 600 \div 24 = 25 \\ \text{pencil} \quad 600 \div \underline{\quad\quad} = 50 \end{array}$$

1 mark



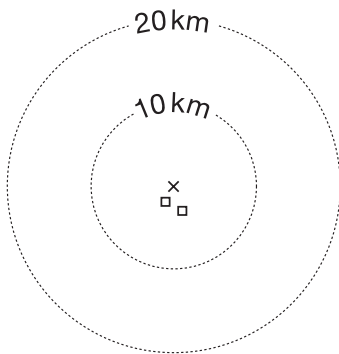
10. Red Kites are large birds that were very rare in England.

Scientists set free some Red Kites in 1989 and hoped they would build nests.

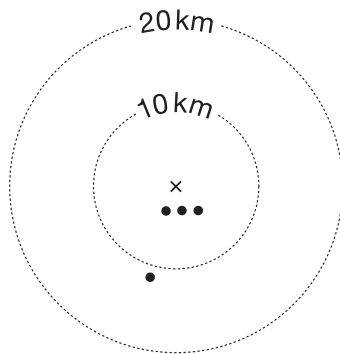
The diagrams show how many nests the birds built from 1991 to 1996.

Key:

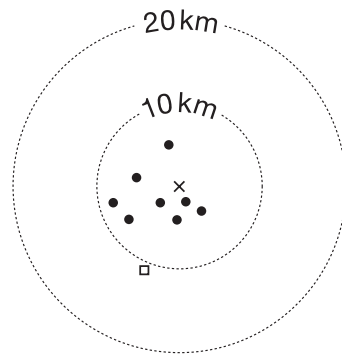
- × shows where the birds were set free.
- represents a nest without eggs.
- represents a nest with eggs.



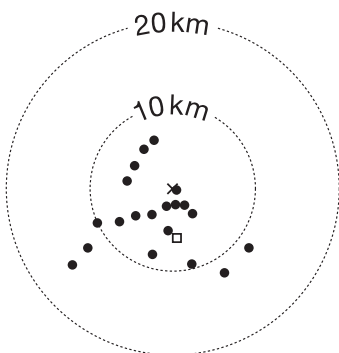
1991



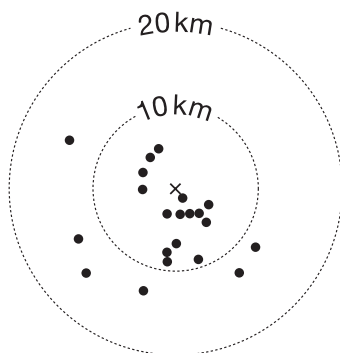
1992



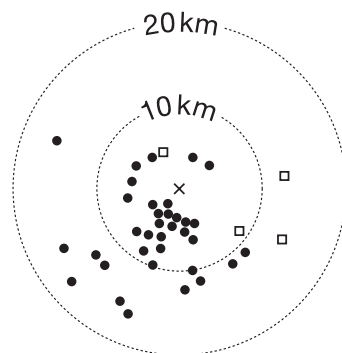
1993



1994



1995



1996

Use the diagrams to answer these questions.

- (a) Which was the first year there were nests **with eggs**?



1 mark

- (b) In **1993**, how many nests were there **without eggs**?



1 mark

- (c) In **1995**, how many nests were **more than 10km** from where the birds were set free?



1 mark

- (d) Explain what happened to the **number** of nests, over the years.



1 mark

Now explain what happened to the **distances** of the nests from where the birds were set free, over the years.



1 mark



11. (a) **Add** together 1740 and 282



1 mark

(b) Now **add** together 17.4 and 2.82

You can use part (a) to help you.



1 mark

(c) $3.5 + 2.35$ is **bigger** than $3.3 + 2.1$

How much bigger?



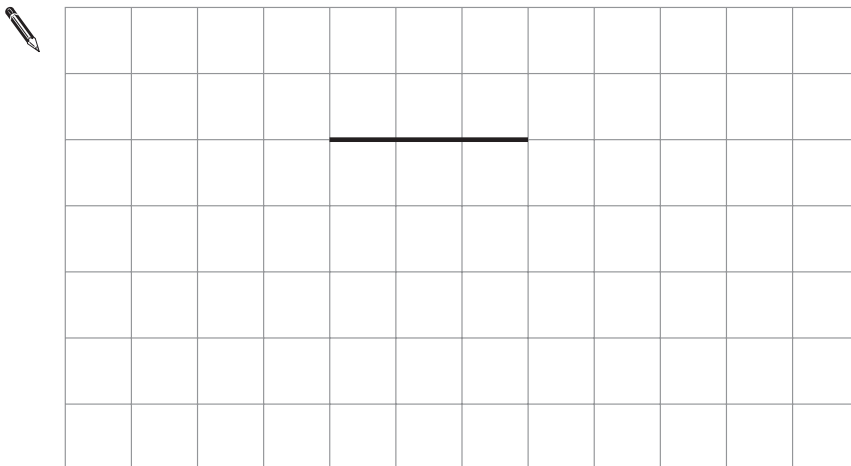
2 marks

12. (a) The line on the square grid below is one side of a **square**.
 Draw 3 more lines to complete the square.



1 mark

- (b) The line on the square grid below is one side of a **quadrilateral**.
 The quadrilateral has **only one pair of parallel sides**.
 Draw 3 more lines to show what the quadrilateral could be.



1 mark



13. (a) Show that 9×28 is 252



1 mark

(b) What is 27×28 ?


You can use part (a) to help you.



2 marks

14. A ruler costs k pence.
A pen costs m pence.

Match each statement with the correct expression for the amount in pence.
The first one is done for you.

Statement	Expression
The total cost of 5 rulers	$5k$
 The total cost of 5 rulers and 5 pens	$5m$
How much more 5 pens cost than 5 rulers	$5 - 5m$
The change from £5, in pence, when you buy 5 pens	$500 - 5m$
	$5k + m$
	$5(k + m)$
	$5m - 5k$
	$5k - 5m$

1 mark

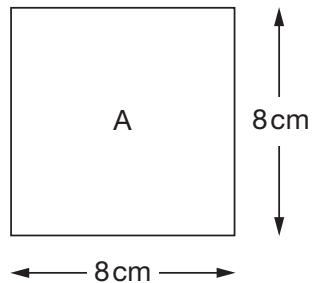
1 mark

1 mark

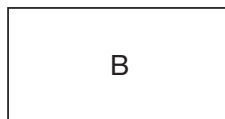


15. (a) I have a square piece of paper.

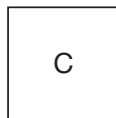
The diagram shows information about this square labelled A.




I fold square A **in half** to make rectangle B.



Then I fold rectangle B **in half** to make square C.

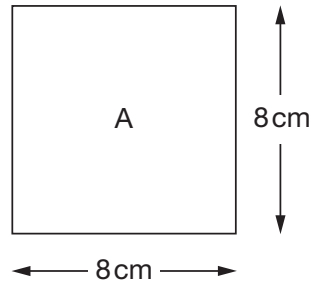


Complete the table below to show the area and perimeter of each shape.

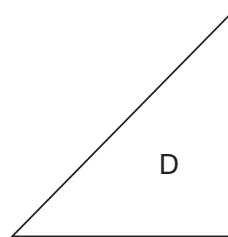
	Area	Perimeter
 Square A	cm ²	cm
Rectangle B	cm ²	cm
Square C	cm ²	cm

3 marks

(b) I start again with square A.



Then I fold it **in half** to make triangle D.



What is the **area** of triangle D?



_____ cm²

1 mark

(c) One of the statements below is true for the **perimeter** of triangle D.

Tick (✓) the correct one.



The perimeter is less than 24 cm.

The perimeter is 24 cm.

The perimeter is greater than 24 cm.

Explain your answer.



1 mark

16. (a) Work out the missing values.



$$10\% \text{ of } 84 = \underline{\hspace{2cm}}$$

$$5\% \text{ of } 84 = \underline{\hspace{2cm}}$$

$$2\frac{1}{2}\% \text{ of } 84 = \underline{\hspace{2cm}}$$

2 marks

(b) The cost of a CD player is £84 **plus** $17\frac{1}{2}\%$ tax.

What is the **total** cost of the CD player?

You can use part (a) to help you.



£

2 marks

17. Solve these equations.

$$2k + 3 = 11$$



$k = \underline{\hspace{2cm}}$

1 mark

$$2t + 3 = -11$$



$t = \underline{\hspace{2cm}}$

1 mark



18. (a) I am thinking of a number.

My number is a **multiple of 4**

Tick (✓) the true statement below.



My number
must be even

My number
must be odd

My number
could be odd or even

Explain how you know.



1 mark

(b) I am thinking of a **different** number.

My number is a **factor of 20**

Tick (✓) the true statement below.



My number
must be even

My number
must be odd

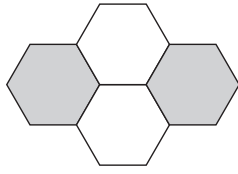
My number
could be odd or even

Explain how you know.

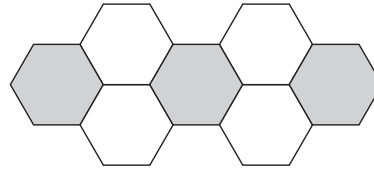


1 mark

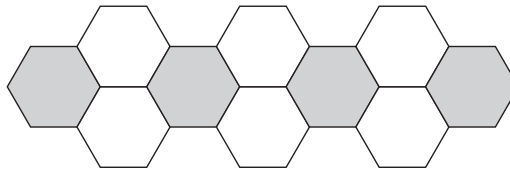
19. Look at this sequence of patterns made with hexagons.



pattern number 1



pattern number 2



pattern number 3

To find the number of hexagons in pattern number n you can use these rules:

$$\text{Number of grey hexagons} = n + 1$$

$$\text{Number of white hexagons} = 2n$$

Altogether, what is the total number of hexagons in **pattern number 20**?



2 marks



END OF TEST

END OF TEST

