Ma

KEY STAGE

TIER **4–**6

2002

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. If you have been given a pupil number, write that also.

First name	
Last name	
School	
Pupil number	

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 and a ruler.
- Some formulae you might need are on page 2.
- 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.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

For marker's	Total marks	
use only	Total Marke	

Instructions

Answers



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

Calculators

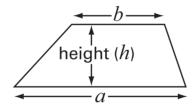


You **must not** use a calculator to answer any question in this test.

Formulae

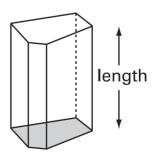
You might need to use these formulae

Trapezium



Area =
$$\frac{1}{2}(a+b)h$$

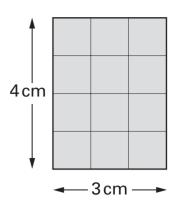
Prism



Volume = area of cross-section \times length

1. (a) What is the area of this rectangle?

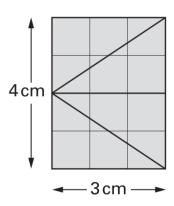




1 mark

(b) I use the rectangle to make four triangles.Each triangle is the same size.

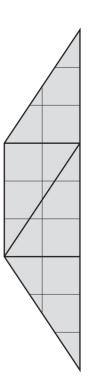
What is the area of one of the triangles?



cm²

(c) I use the four triangles to make a trapezium.

What is the area of the trapezium?



1 mark

. 1 mark

1 mark

1 mark

2. Use +, -, × or + to make each calculation correct.

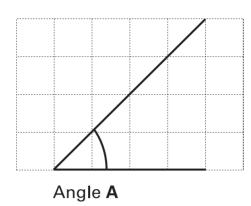
Examples:

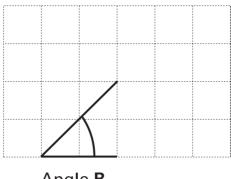
$$2 \dots + \dots + 4 = 7 \dots - 1$$

$$5 \dots \times ... \quad 3 = 3 \dots \times ... \quad 5$$

$$6 \dots 6 = 7 \dots 7$$

3. Two pupils drew angles on square grids.





Angle B

(a) Which word below describes angle A? Tick (\checkmark) the correct box.



acute

obtuse

right-angled

reflex

1 mark

(b) Is angle A bigger than angle B? Tick (✓) Yes or No.



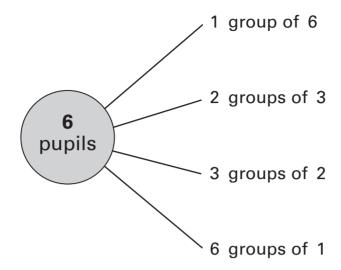
Yes

No

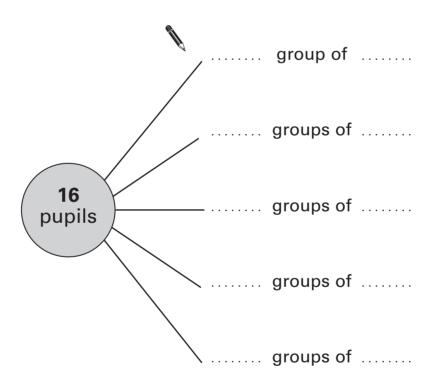
Explain your answer.



4. There are **four** different ways to put 6 pupils into equal size groups.



(a) Show the **five** different ways to put 16 pupils into equal size groups.



(b) Circle the numbers below that are factors of twelve.

1	2	3	4	5	6
7	8	9	10	11	12

2 marks

. 2 marks 5. (a) I can think of three different rules to change 6 to 18



Complete these sentences to show what these rules could be.



firet	rule:	add						
III St	iuic.	auu						

1 mark

(b) Now I think of a new rule.

The new rule changes 10 to 5 and it changes 8 to 4





Write what the new rule could be.



.....

6.

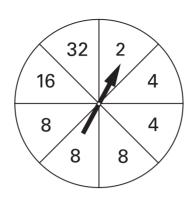


How much does it cost to park for **40 minutes**? Show your working.



7.	(a)	Peter's height is 0.9 m . Lucy is 0.3 m taller than Peter.		
		What is Lucy's height?		
			m	.1 1 mark
	(b)	Lee's height is 1.45 m . Misha is 0.3 m shorter than Lee.		
		What is Misha's height?		
			m	 1 mark
	(c)	Zita's height is 1.7m . What is Zita's height in centimetres ?		
			cm	 1 mark

8. (a) A spinner has eight equal sections.



What is the probability of scoring 4 on the spinner?

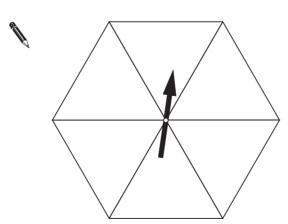
What is the probability of scoring an even number on the spinner?

1 mark

(b) A different spinner has six equal sections and six numbers.

On this spinner, the probability of scoring an **even** number is $\frac{2}{3}$. The probability of scoring 4 is $\frac{1}{3}$.

Write what numbers could be on this spinner.



. . .

2 marks

9. Look at this table.

	Age (in years)
Ann	а
Ben	b
Cindy	С

Write in words the meaning of each equation below. The first one is done for you.

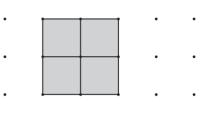
b = 30	Ben is 30 years old
a + b = 69	
b = 2c	
$\frac{a+b+c}{3} = 28$	

. 1 mark

1 mark

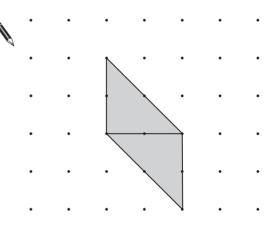
. 1 mark

10. Four squares join together to make a bigger square.



(a) **Four** congruent triangles join together to make a bigger triangle.

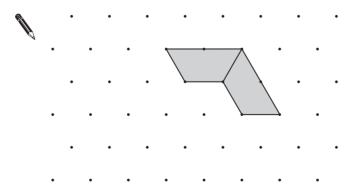
Draw **two more** triangles to complete the drawing of the bigger triangle.



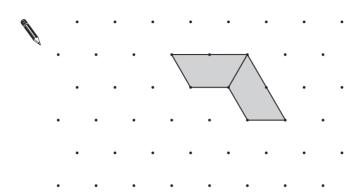
(b) Four congruent trapeziums join to make a bigger trapezium.

Draw **two more** trapeziums to complete the drawing of the

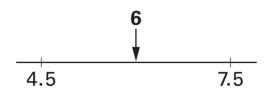
bigger trapezium.



(c) Four congruent trapeziums join together to make a parallelogram.Draw two more trapeziums to complete the drawing of the parallelogram.



11. (a) The number 6 is halfway between 4.5 and 7.5



Fill in the missing numbers below.



The number 6 is halfway between 2.8 and

. 1 mark

The number 6 is halfway between -12 and

1 mark

(b) Work out the number that is halfway between 27×38 and 33×38 Show your working.



.

. 2 marks

12. Hakan asked 30 pupils which subject they liked best.

Subject	Number of boys	Number of girls
Maths	4	7
English	2	4
Science	3	3
History	0	1
French	1	5
	total 10	total 20

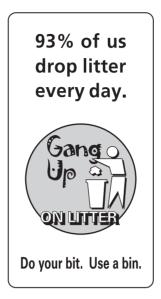
(a)	Which subject did 20% of boys choose?
	1 mark
(b)	Which subject did 35% of girls choose?
	1 mark
(c)	Hakan said:
	'In my survey, Science was equally popular with boys and girls'.
	Explain why Hakan was wrong .

(d) Which subject was equally popular with boys and girls?



1 mark

13. This advert was in a newspaper.



It does not say how the advertisers know that 93% of people drop litter every day.

Some pupils think the percentage of people who drop litter every day is much lower than 93%.

They decide to do a survey.

(a) Jack says:

We can ask 10 people if they drop litter every day.

Give two **different** reasons why Jack's method might not give very good data.

First reason:

1 mark

Second reason:

(b) Lisa says:

We can go into town on Saturday morning.

We can stand outside a shop and record how many people walk past and how many of those drop litter.

Give two **different** reasons why Lisa's method might not give very good data.

First reason:



Second reason:



14. Fill in the missing numbers in the boxes using only negative numbers.



1 mark

. 1 mark **15**. (a) When x = 5, work out the values of the expressions below.



$$2x + 13 = \dots$$

$$5x - 5 = \dots$$

$$3 + 6x = \dots$$

. 2 marks

(b) When 2y + 11 = 17, work out the value of y Show your working.



$$y = \dots$$

. . . . 2 marks

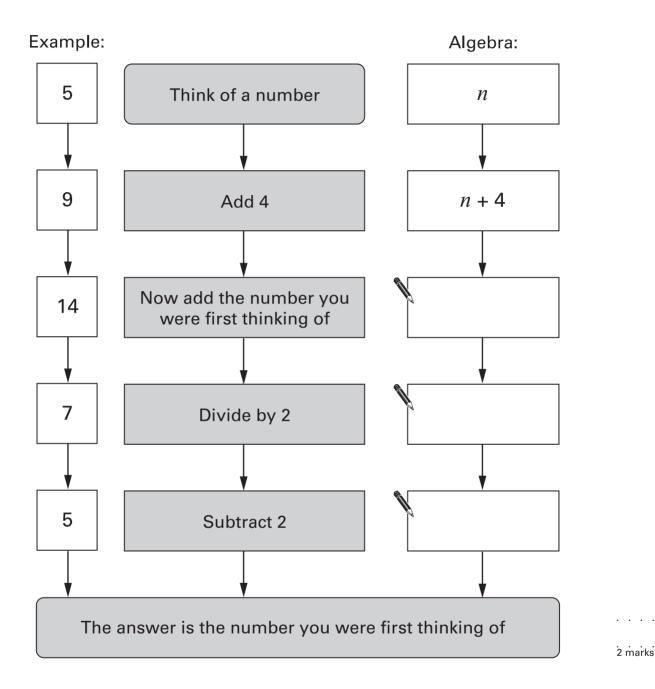
(c) Solve the equation 9y + 3 = 5y + 13Show your working.



 $y = \dots$

. 2 marks

You can often use algebra to show why a number puzzle works.
Fill in the missing expressions.

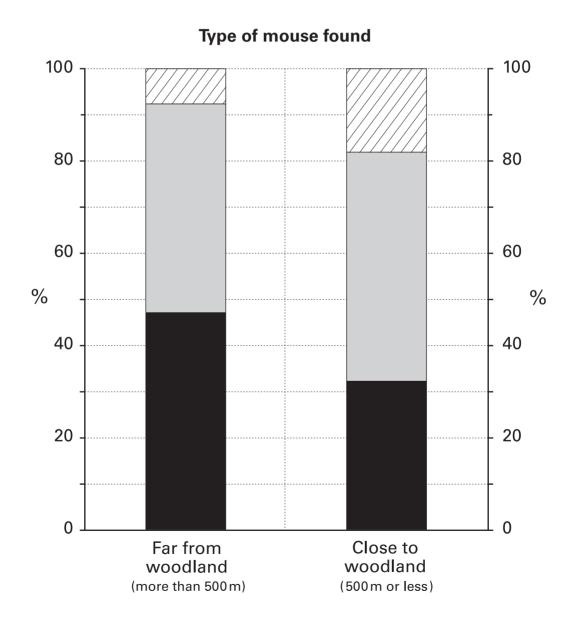


17. Three types of mice might come into our homes.

Some mice are more likely to be found in homes far from woodland. Others are more likely to be found in homes close to woodland.

The bar charts show the **percentages of mice** that are of each type.





Use the bar charts to answer these questions.

(a) About what percentage of mice in homes close to woodland are wood mice?



1 mark

(b) About what percentage of mice in homes far from woodland are not wood mice?



1 mark

(c) The **black** bars show the percentages for house mice. One of the black bars is taller than the other.

Does that mean there **must be more** house mice in homes far from woodland than in homes close to woodland?

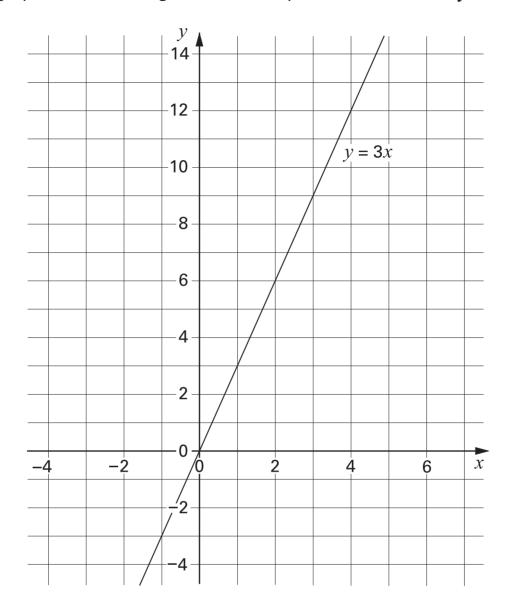
Tick (✓) Yes or No.

Yes

No

Explain your answer.

18. The graph shows a straight line. The equation of the line is y = 3x



Does the point (25, 75) lie on the straight line y = 3x? Tick (\checkmark) Yes or No.

Yes No

Explain how you know.

19. $\frac{1}{3}$, $\frac{1}{8}$, $\frac{1}{5}$ are all examples of unit fractions.

All unit fractions must have

a numerator that is 1

1

a denominator that is an integer greater than 1

The ancient Egyptians used only unit fractions.

For $\frac{3}{4}$, they wrote the sum $\frac{1}{2} + \frac{1}{4}$

(a) For what fraction did they write the sum $\frac{1}{2} + \frac{1}{5}$? Show your working.



.....

1 mark

(b) They wrote $\frac{9}{20}$ as the sum of two unit fractions. One of them was $\frac{1}{4}$

What was the other?

Show your working.

1 mark

END OF TEST