



CITY OF LONDON  
FREEMEN'S SCHOOL

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**SAMPLE ENTRANCE  
EXAMINATION PAPER**

**For pupils currently in Year 8**

# **MATHEMATICS**

**Time: 1½ hours**

Attempt all the questions. Show all your workings.

Marks will be given for working which shows that you know how to solve the problems, even if you get the wrong answer.

Calculators may NOT be used.

|     |       |   |     |
|-----|-------|---|-----|
| RMH | S0908 | ✓ | MAT |
|-----|-------|---|-----|

1.  $\frac{1}{2} + \frac{2}{3} =$

2.  $1\frac{1}{4} \div \frac{5}{6} =$

3.  $3^3 - 4^2 =$

4.  $5 + -4 \times -3 =$

5. Round off to the nearest thousand:

25839 = \_\_\_\_\_

6. Round off to the nearest whole number:

a] 3.49 = \_\_\_\_\_

b] 5.83 = \_\_\_\_\_

7. Correct to 3 significant figures:

a] 2.539 = \_\_\_\_\_

b] 0.03542 = \_\_\_\_\_

8. Correct to 2 decimal places:

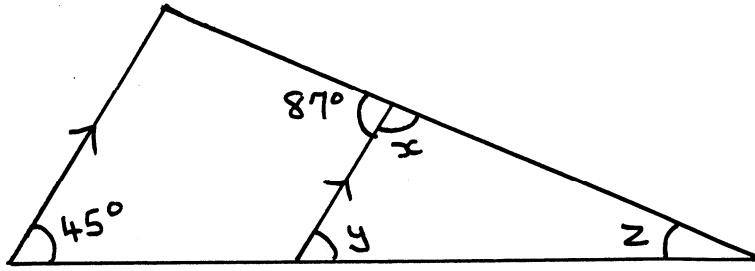
a] 3.142 = \_\_\_\_\_

b] 0.0291 = \_\_\_\_\_

9. Correct each number to 1 significant figure, and hence give a rough estimate of the answer to:

$$\begin{array}{r} 3.75 \times 28.45 \\ \hline 9.99 \end{array}$$

10. Find the sizes of the marked angles. (You need not show your working).



$x =$  \_\_\_\_\_<sup>o</sup>

$y =$  \_\_\_\_\_<sup>o</sup>

$z =$  \_\_\_\_\_<sup>o</sup>

11. Radio Volga broadcasts in English, German and Russian. Half its programme time is in English and one quarter is in German. Gillian tunes in by accident.

What is the probability that the language she hears

a] is not English? \_\_\_\_\_

b] is Russian? \_\_\_\_\_

12. If  $A = \frac{1}{2} (a + b) \times c$ , find the value of

a] A if  $a = 5$ ,  $b = 7$ ,  $c = 9$   
\_\_\_\_\_

b] c if  $A = 96$ ,  $a = 11$ ,  $b = 5$   
\_\_\_\_\_

13. Solve the following equations.

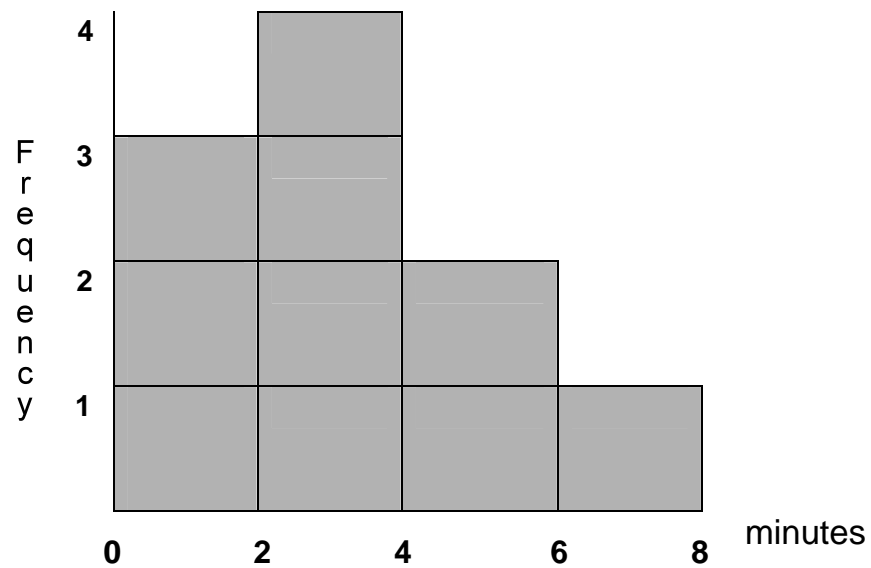
a]  $12 - 4m = 0$  \_\_\_\_\_

b]  $5(t + 1) = 25$  \_\_\_\_\_

c]  $5 + 2y = 8 + y$  \_\_\_\_\_

d]  $4(1 - m) = 2(m - 5) + 8$  \_\_\_\_\_

14. The frequency chart shows the times that Pam had to wait at the Supermarket checkout over a period of 10 shopping days.



How often did she have to wait

- a] for at least 2 minutes \_\_\_\_\_
- b] for more than 4 minutes \_\_\_\_\_

15. Look at this sequence 15, 19, 23, 27, 31

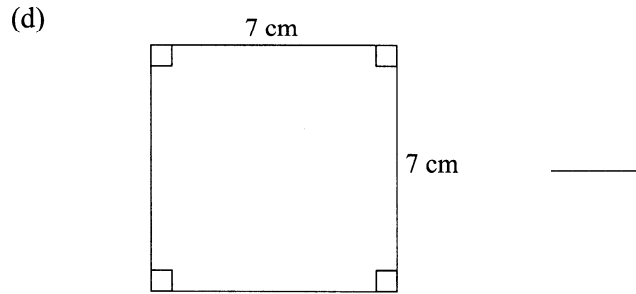
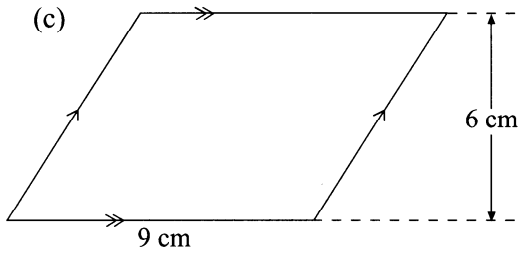
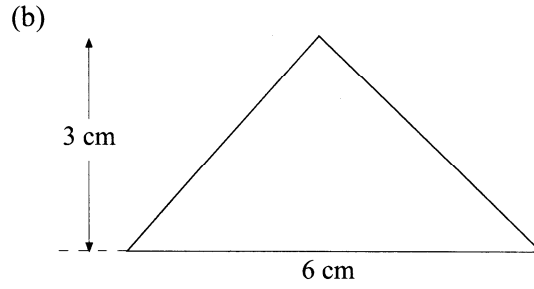
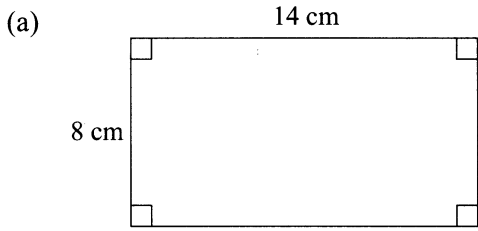
Write down

- a] the 6th term \_\_\_\_\_
- b] the 26th term \_\_\_\_\_

16. Continue the sequence 4, 9, 14, 19, 24, \_\_\_\_\_, \_\_\_\_\_  
There are 'n' terms in the sequence.

What is the nth term? \_\_\_\_\_

17. Calculate the area of each of the following shapes:



Area (a) = \_\_\_\_\_

Area (b) = \_\_\_\_\_

Area (c) = \_\_\_\_\_

Area (d) = \_\_\_\_\_

18. Find by trial and improvement the  $x$  value that satisfies

$$x^2 + x = 19$$

Give your answer to 2dp.

19. A number machine has a mapping rule  $x \rightarrow \boxed{x^2} \rightarrow y$

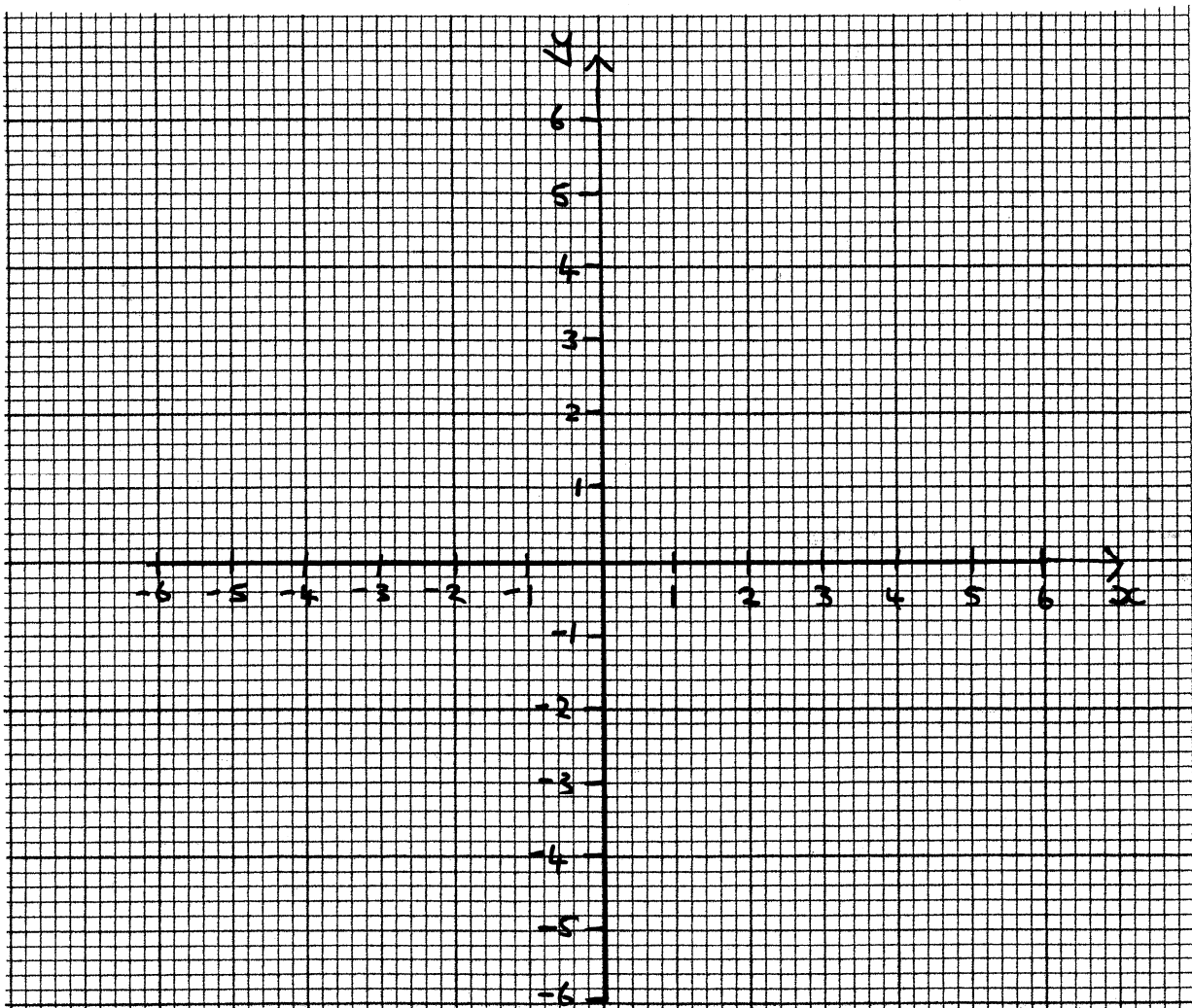
a) Write the rule as an equation.

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b) Fill in the table below with values for this mapping.

| x  | y |
|----|---|
| -3 |   |
| -1 |   |
| 2  |   |
| 3  |   |

c) Plot the points from the table on the graph below and then join them up to form a line.



20. In seven rounds of golf, a golfer returns scores of 72, 87, 73, 72, 86, 72, and 77.

Find the

a] mean score \_\_\_\_\_

b] modal score \_\_\_\_\_

c] median score \_\_\_\_\_

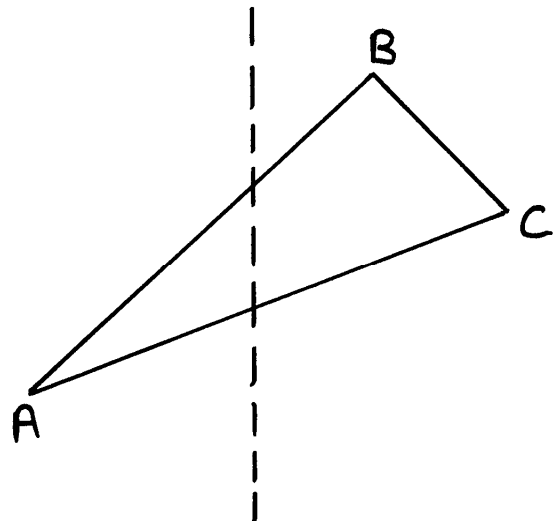
d] range \_\_\_\_\_

21. The map ratio of a map is 1 : 200000. The distance between two towns is 20 km.

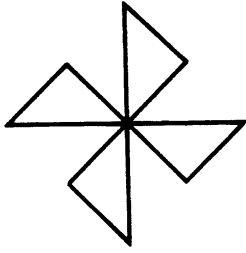
Find the distance on the map between the points representing the towns.

\_\_\_\_\_

22. Reflect the triangle ABC in the mirror line.



23.



What is the order of rotational symmetry of this shape? \_\_\_\_\_

24. A cuboid is 6 cm by 12 cm by 12 cm.

a] How many 2 cm cubes can be cut out of the cuboid?

\_\_\_\_\_

b] How many 3 cm cubes can be cut out of the cuboid?

\_\_\_\_\_

25.

trapezium, square, kite, parallelogram, rhombus, rectangle

Choose from the list of quadrilaterals. List those which have

a] All 4 angles equal

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b] 2 pairs of parallel sides

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



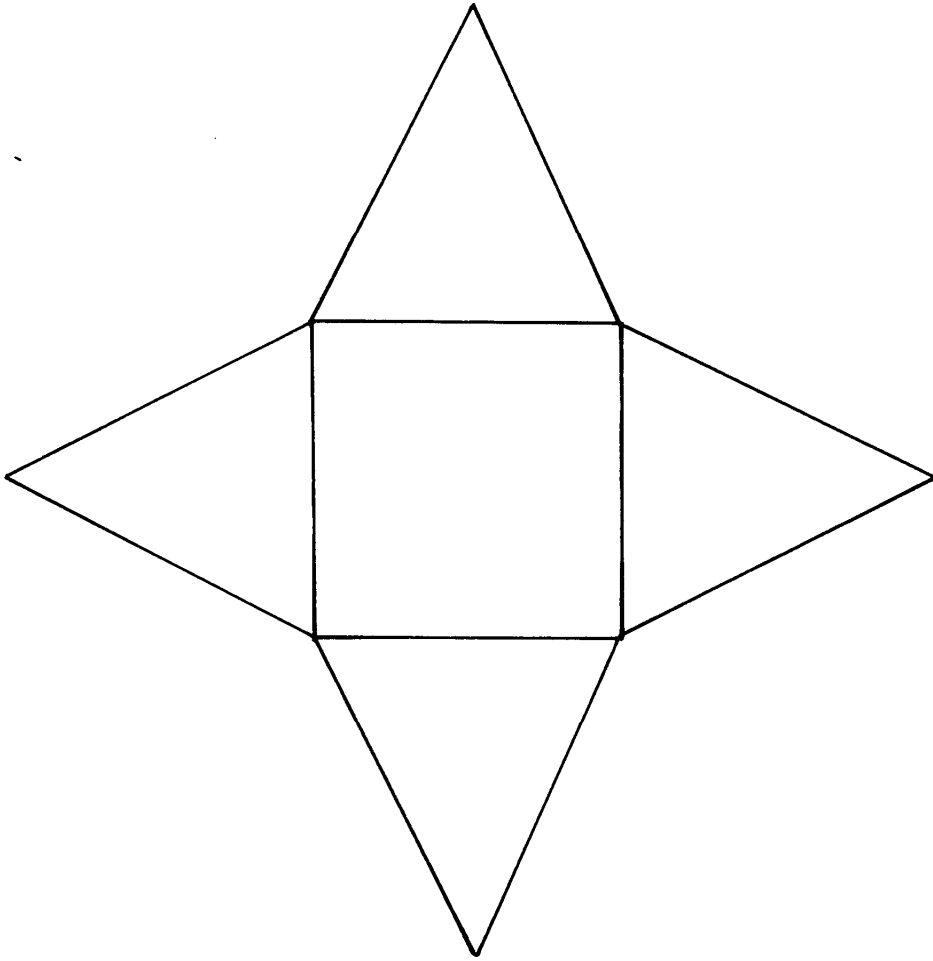
26. These are the masses of 9 plums.

44g 56g 40g 37g 44g 39g 52g 48g 31g

Complete the frequency table.

| Mass (g)         | Frequency |
|------------------|-----------|
| $30 \leq m < 40$ |           |
| $40 \leq m < 50$ |           |
| $50 \leq m < 60$ |           |

27. Sketch the solid which you could make from this net.



a] What is the name of the solid? \_\_\_\_\_

b] How many faces does it have? \_\_\_\_\_

c] How many edges does it have? \_\_\_\_\_

