BLACKHEATH HIGH SCHOOL GDST

11+ Entrance and Scholarship Examination

Mathematics Practice Paper

Time allowed: **1 hour**

Full name _____

Read these instructions carefully:

- Answer ALL questions in the spaces provided on this paper.
- All work (except diagrams and graphs) must be in blue or black ink.
- SHOW ALL YOUR WORKING.
- Work steadily through the paper.
- Do not spend too long on one question.
- If you cannot answer a question, leave it and attempt the next one. At the end, go back to any you have left out.
- Tippex and ink erasers must NOT be used.
- Calculators MUST NOT be used.

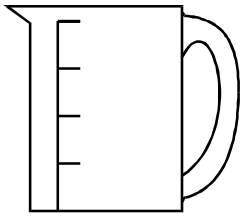
1. The table shows part of a multiplication grid.

Fill in the missing numbers.

×			8
2	8	14	16
	24		48
	28	49	56

2. I need exactly 1 litre of water.

I have a measuring jug that holds **400 ml** when it is full.



Explain how I can use my measuring jug to obtain 1 litre of water.

3. Fill in the **next two** numbers in each of these sequences:

(a) 3, 5, 7, 9, ... , ...

(b) 5.1, 6.3, 7.5, 8.7, ... , ...

(c) 1, 3, 9, 27, ... , ...

(d) 0.3, 0.6, 1.2, 2.4, ... , ...

(e) 15, 11, 7, 3, ... , ...

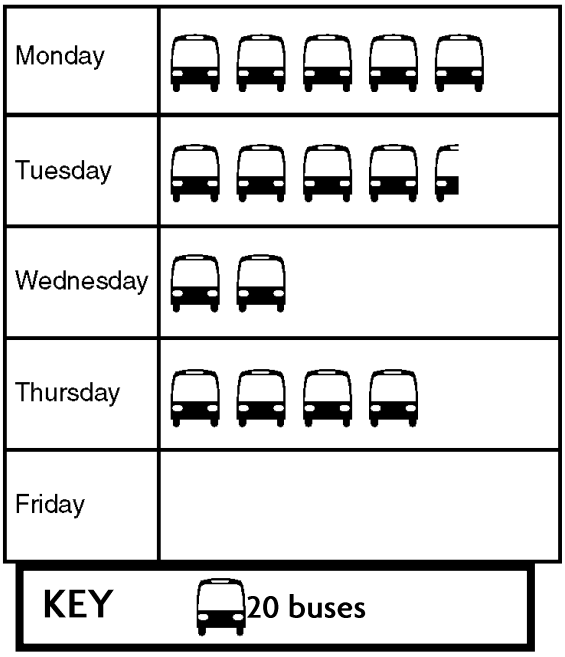
4. (a) Neruka bought a pen costing £4.93, a pencil costing 24p and a ruler costing 58 p. How much did she spend altogether?

£.....

(b) She paid for them with a £20 note.
How much change did she get?

£.....

5. The graph below shows the number of buses passing the school each morning.



(a) What is the name of this type of graph?

.....

(b) How many buses were there on Thursday?

.....

(c) How many buses were there on Tuesday?

.....

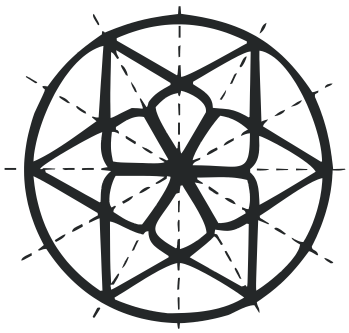
(d) On Friday there were 60 buses. Add this information to the graph.

.....

(e) How many buses were there in total over the whole week?

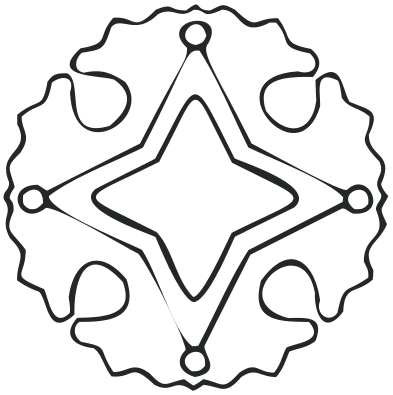
.....

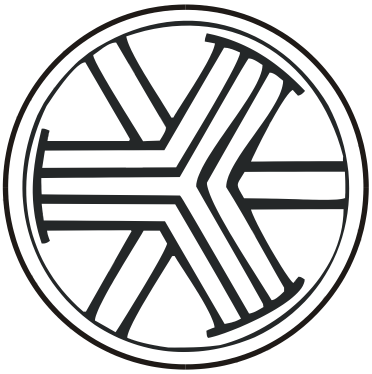
6. These patterns are from Islamic designs. Example



Each pattern has one or more lines of symmetry.

Draw **all** the lines of symmetry in each pattern.





7. Lola buys as many first-class stamps as she can with a £5 note.
First-class stamps cost 27p each.

(a) How many stamps did she get?

.....stamps

(b) How much money did she have left?

..... p

(c) Explain why your last answer **must** be less than 27 p.

8. From the numbers **21, 22, 23, 25, 27, 29**, choose one which is:

(a) **even**

.....

(b) a **multiple** of 9

.....

(c) **square**

.....

(d) a **factor** of 87

.....

(e) a **prime** number

.....

(f) a **triangle** number

.....

9. Fill in the spaces to make all these fractions equal:

$$\frac{\quad}{3} = \frac{2}{6} = \frac{\quad}{18} = \frac{7}{\quad} = \frac{\quad}{60}$$

10. (a) Use your ruler to measure the length and width of this rectangle **as accurately as you can.**

width = ... cm

length = ... cm

(b) Use your answers to work out the **perimeter** of the rectangle.

..... cm

11. Put rings round **all** the numbers which are equal to 75%

$\frac{6}{8}$ 34% 0.75 $\frac{75}{100}$

$\frac{3}{4}$ 0.34 0.3

12. In her examination, Manreet got 16 marks out of 20. What was her mark as a percentage?

.....%

13. This is the sign in a shop:

(a) Explain why 25% is one-quarter.

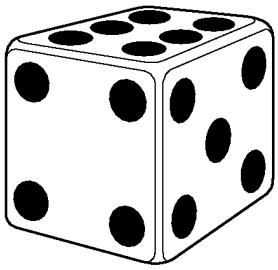
(b) Sandra chooses a pair of jeans marked £48. How much did Sandra **save** by buying them in the sale?

£.....

(c) How much will she actually have to pay for them in the sale?

£.....

14. (a) If you throw a fair die 36 times, how many 3's would you expect to get?



.....

(b) Natasha took another die and threw it 30 times. She got these results:

3 4 1 6 1 3 4 5 1 4 4

5 6 3 1 4 1 5 1 6 3 1

5 4 1 6 3 5 6 4

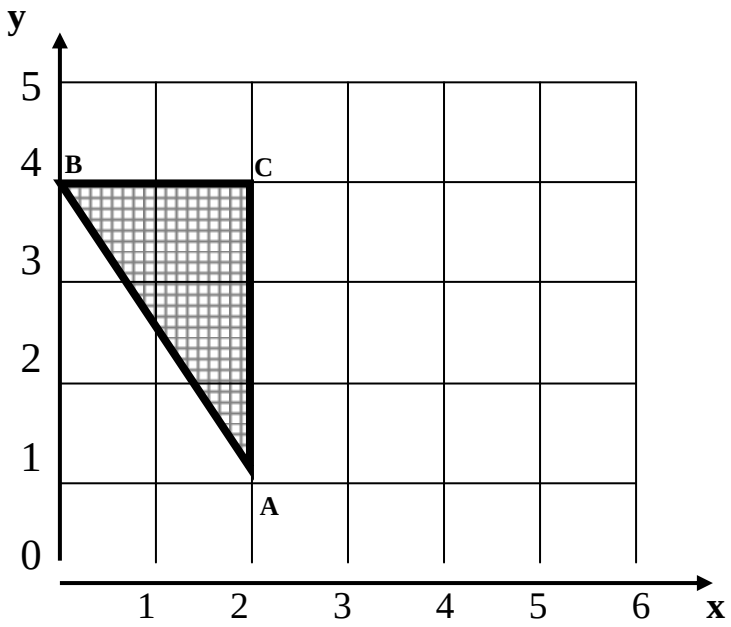
Fill in this tally chart and work out the frequencies (how many times she got each number).

Score	Tally	Frequency
1		
2		
3		
4		
5		
6		

Do you think her die was fair?

Explain your answer:

15. The point A has co-ordinates (2, 1)



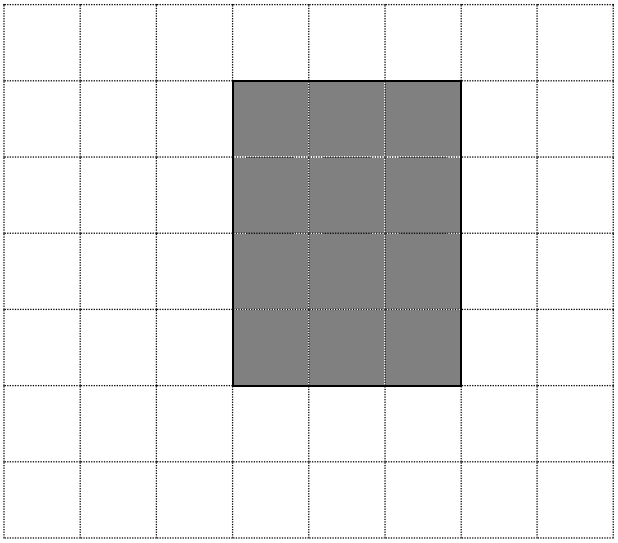
What are the co-ordinates of B and C?

B is (,), C is (,)

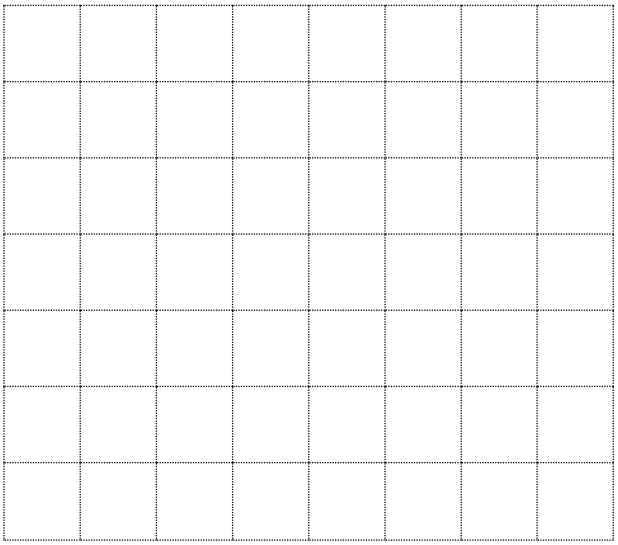
On the graph above, mark the points L (6, 1) and M (6, 5).

Mark a **third point N** so that the three points L, M and N join up to make an **isosceles** triangle.

16. The shaded **rectangle** has **area 12 cm².**



(a) On this grid draw a **different rectangle** with area 12 cm² (rotations are not allowed).



(b) On this grid draw a **triangle** with **area 6 cm².**

17. Polly has these four cards with numbers on:

1	4	9	3

Show how she could arrange them to get:

(a) the **largest** possible number

(b) the **smallest** possible number

(c) the number **nearest to 4000**

(d) Nitharna gives her a card with a decimal point on | . |

Show how Polly can arrange her **five** cards to get the number **nearest to 50**.

18. A ticket inspector counted how many passengers there were in each carriage of a train. The results were:

5, 24, 37, 45, 36, 39, 22 and 16.

(a) Work out the mean (average) number of passengers.

. mean = ...

Show how you worked this out.

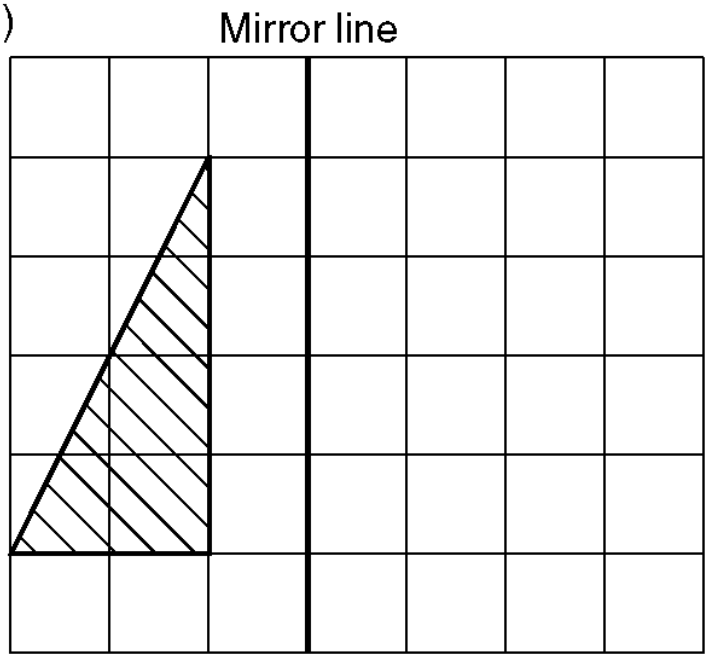
(b) Work out the range of the number of passengers.

. range = ...

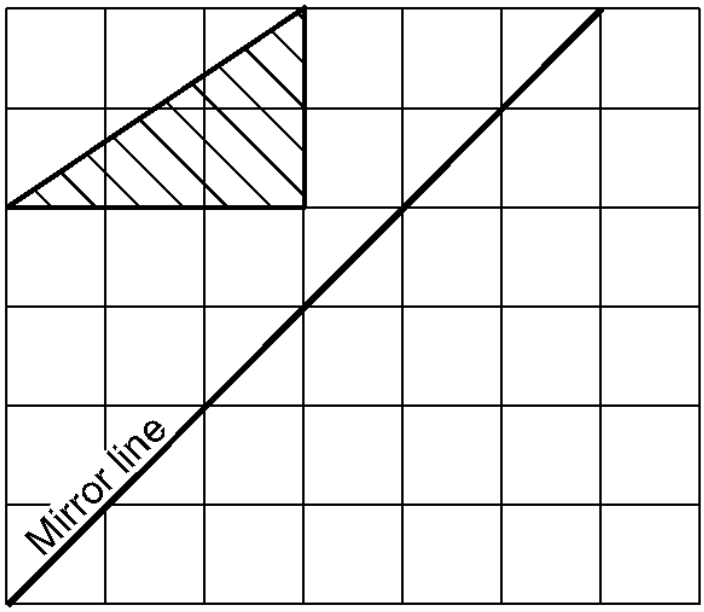
(c) She worked out that the median number of passengers was 30. Show what working she used to get this answer.

19. Reflect these shapes in the Mirror lines.

(i)

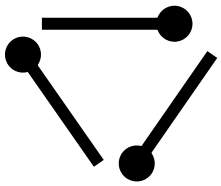


(ii)

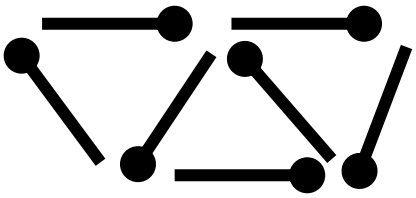


20. Anah is making patterns with matchsticks. Here are her first three:

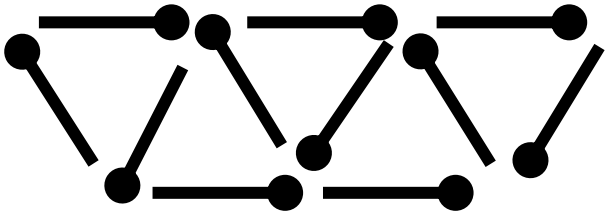
pattern 1



pattern 2



pattern 3



Draw pattern 4 in the space below.

Fill in this table:

Shape	1	2	3	4	5
Number of triangles			5		
Number of matches			11		

There are more questions on these patterns on the next page.

These questions are about the matchstick patterns on the last page.

(a) In shape 6, how many **triangles** will there be?

..... triangles

(b) In shape 6, how many **matches** will there be?

.....matches

(c) In shape 100, how many **triangles** will there be?

Explain how you worked this out.

..... triangles

(d) In shape 100, how many **matches** will there be?

Explain how you worked this out

..... matches

(e) Anah makes a shape with **29 triangles**. How many **matches** did she use?

..... matches

21. Siobhan has lots of 2p stamps and plenty of 5p stamps. Show how she could use them to pay for postage of amounts from 81p to 99p. The first one is done for you.

81 = 15 x 5 + 3 x 2 (fifteen 5p stamps and three 2p stamps)

82 =

83 =

84 =

85 =

86 =

87 =

88 =

89 =

90 =

91 =

92 =

93 =

94 =

95 =

96 =

97 =

98 =

99 =

THE END – NOW GO BACK AND CHECK ALL YOUR WORK