Sydenham
High School

gdst Girls' Day School Trust

Sample Mathematics Entrance Examination Paper
Time allowed: 1 hour

Name:

Current School:

- Only use a pencil and a rubber
- Do all your rough working in the space near the question
- Do not rub it out
- If you cannot do a question go on to the next one
- NO CALCULATORS OR RULERS ARE ALLOWED
- Maximum marks available = 75

1. Work out 4825 + 1754

Answer: .....(1 mark)

2. Work out 1741 – 968

Answer: .....(1 mark)

3. Work out 418 x 7

Answer: .....(1 mark)

4. Work out 2136 ÷ 8

Answer: .....(1 mark)

5. Work out $\frac{5}{7}$ of 112

Answer: .....(1 mark)

6. Write down the next number in the sequence

15, 21, 27, 33, 39 , ☐

Answer: .....(1 mark)

7. Complete these calculations by writing a number in the box.

(a) 4.92 x 1000 = ☐

(b) ☐ ÷ 100 = 0.279

(2 marks)

8. Using numerals write the number that is *six hundred and thirty* less than *one thousand.*

Answer: .....(1 mark)

9. Think of two integers that have a product of 18 and a difference that is the same as one of the two integers that you are thinking of.

Answer: .....and.....(1 mark)

10. Given that 37 x 56 = 2072, write down the answers to the following calculations:

(a) 370 x 560

Answer: .....(1 mark)

(b) 38 x 56

Answer: .....(1 mark)

(c) 207.2 ÷ 56

Answer: .....(1 mark)

11. A recipe for making 12 cupcakes includes the following ingredients:

Sugar	120g	Eggs	3
Butter	150g	Flour	180g

(a) Calculate the quantities needed to make 16 cupcakes

Answer: Sugar ..... g

Butter ..... g

Eggs ..... g

Flour ..... g

(4 marks)

(b) If you have plenty of all of the other ingredients but only 7 eggs, how many cupcakes can you make?

Answer: .....(1 mark)

12. Write in the missing digits to make this correct.

$$\square 2 \square \times 7 = 896$$

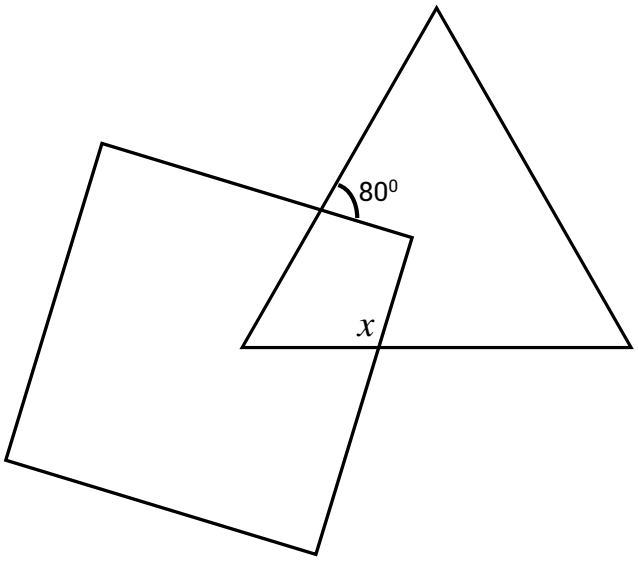
Answer: .....and.....(2 marks)

13. Sam thinks of a number. If you double the number and add 6 you get the same answer as multiplying it by 3 and subtracting 3.

Find the number that Sam was thinking of.

Answer: .....(2 marks)

14. A square and an equilateral triangle are shown in the diagram.



Work out the size of the angle marked x.

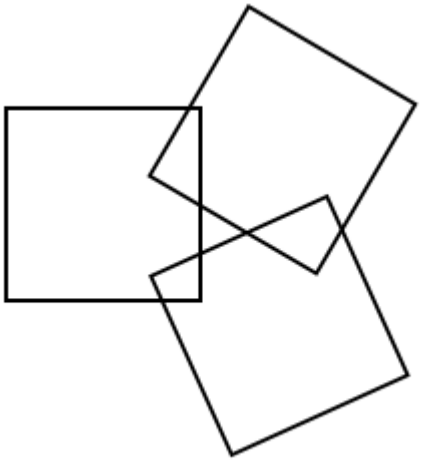
Answer: .....(2 marks)

15. Write the missing sign (= , < or >) in the box.

2^5 ☐ 5^2

(1 mark)

16. Here are three squares that overlap.



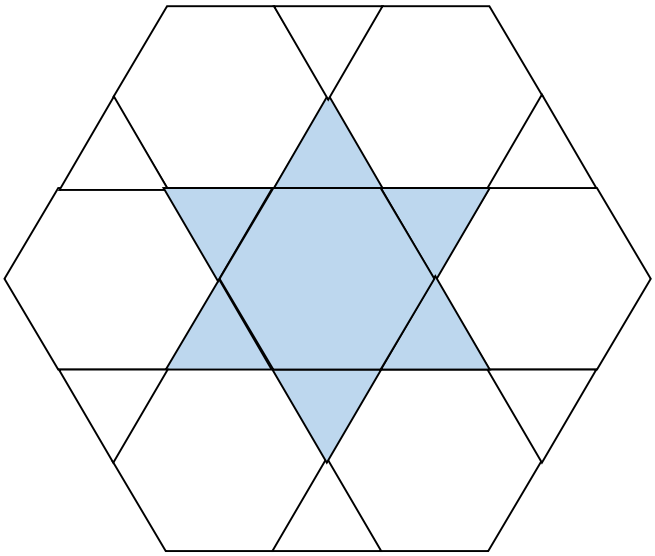
The non-overlapping parts of the squares have a total area of 90cm^2

The areas of overlapping parts are 2cm^2, 3cm^2 and 4cm^2

Work out the area of one of the squares.

Answer: .....(3 marks)

17.



This diagram is made up of 7 identical regular hexagons and 12 identical equilateral triangles.

Note: the sides of the triangles are the same length as the sides of the hexagons.

Find the fraction of the diagram that is shaded.

Answer: .....(3 marks)

18. In Glasgow, the temperature is -7°C and in Exeter the temperature is 12 degrees warmer.

    What is the temperature in Exeter?

Answer: ..... °C (1 mark)

19. What is the difference between 20% of 90 and 90% of 20?

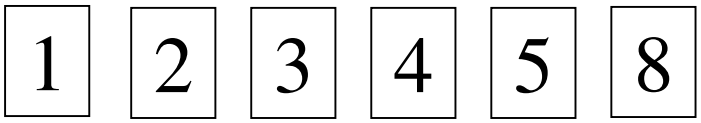
Answer: .....(1 mark)

20. Jamie left school at 3:55pm and arrived home 55 minutes later.

    At what time did Jamie get home?

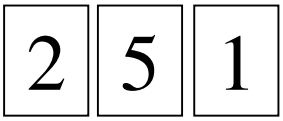
Answer: .....pm (1 mark)

21. Joey has the six number cards shown below



The number cards are to be placed next to each other to form different numbers.

For example using three of the cards you could make two hundred and fifty one like this:



a) What is the largest 4-digit even number that can be made?

Answer .....(1 mark)

b) What is the smallest two-digit prime number that can be made?

Answer .....(1 mark)

c) Using 5 cards, make a multiple of 3.

Answer .....(1 mark)

d) Make a three-digit number that is a multiple of both 3 and 5.

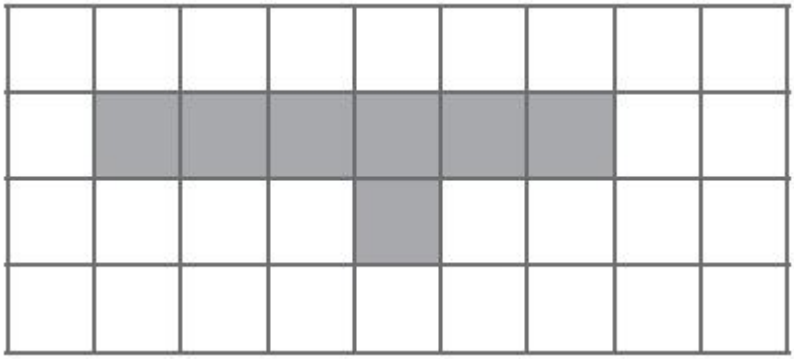
Answer .....(1 mark)

22. Sujatha's marks in 4 tests were 16, 15, 16 and 10.

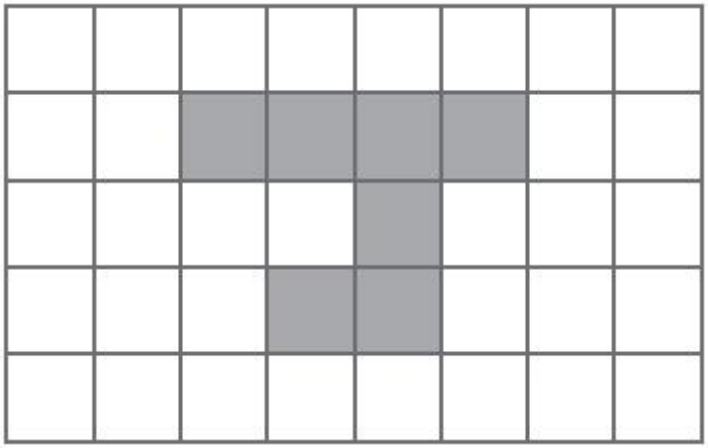
What was her mean score?

Answer .....(1 mark)

23. (a) On the grid, shade in one more square so that the completed shape has one line of symmetry.



(b) On the grid below, shade in three more squares so that the completed shape has a rotational symmetry of order 2



(2 marks)

24. Tom goes to a theme park.
There are 4 activities at the theme park.

The table gives information about these activities.

Activity	Start times	Time taken by activity (minutes)
Penguin feeding	10 45 12 15 13 45	35
Jeep safari	11 00 12 00 14 00	45
Steam train ride	10 15 11 40 14 00	25
Dolphin show	11 40 13 00 14 30	40

Tom wants to do all 4 activities.

He arrives at the theme park at 10 20
He needs to leave the theme park by 14 30

Plan a schedule for Tom's visit to the theme park so he can do all 4 activities.

Activity	Start time	Finish time

(4 marks)

25. Here is a parallelogram.

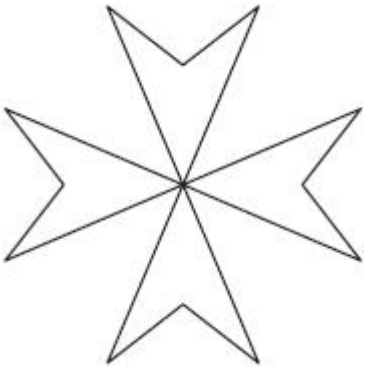


(a) Write down the order of rotational symmetry of this parallelogram.

.....

(1 mark)

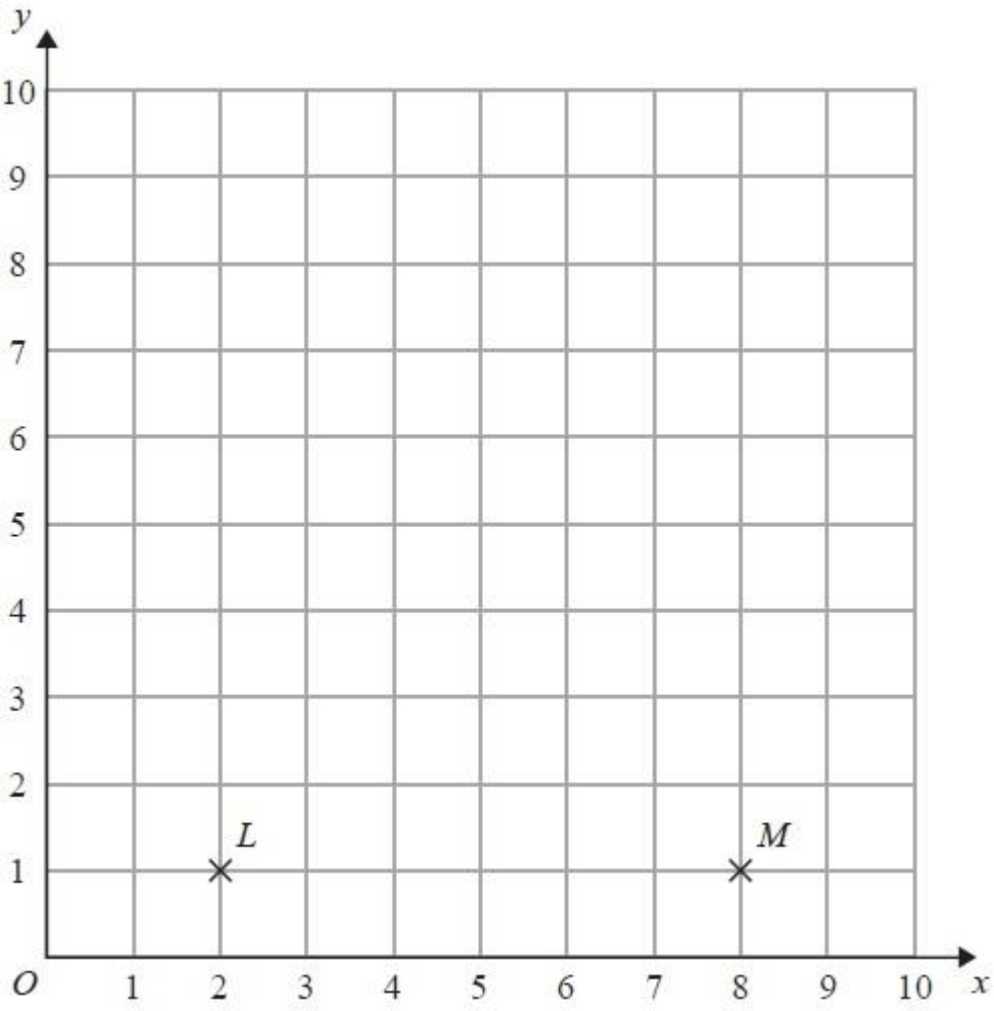
Here is a shape.



(b) Draw all the lines of symmetry on this shape.

(2 marks)

26. Here is a coordinate grid.



(a) Write down the coordinates of the point *M*.

(....., ...)

(1 mark)

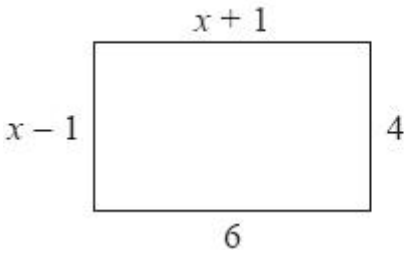
LM is the shortest side of an isosceles triangle.

(b) Mark with a cross (×) a point *N*, so that *LNM* is an isosceles triangle.

(2 marks)

27. Here is a rectangle.

Diagram **NOT** accurately drawn



All measurements on the diagram are in centimetres.

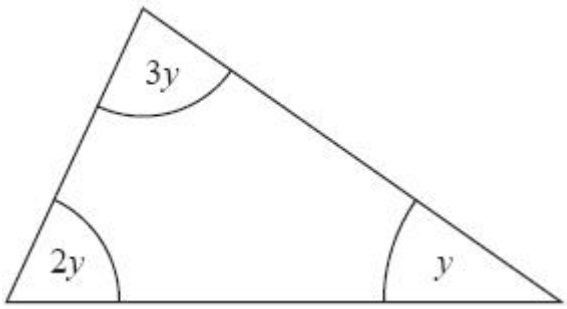
(a) Find the value of *x*.

.....

(2 marks)

Here is a triangle.

Diagram **NOT** accurately drawn



(b) Find the size of the angle marked *y*.

..... °

(2 marks)

28. A cuboid has

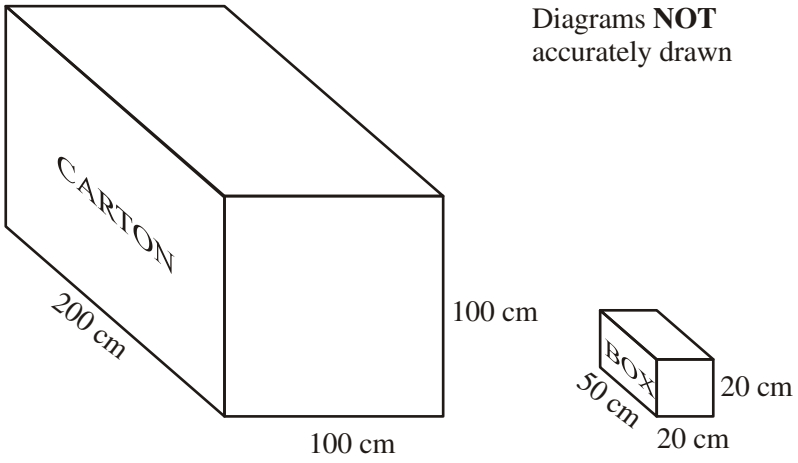
a volume of 40 cm^3
a length of 5 cm
a width of 2 cm

(a) Work out the height of the cuboid.

..... cm

(2 marks)

(b)



A carton measures 200 cm by 100 cm by 100 cm.

The carton is to be completely filled with boxes.

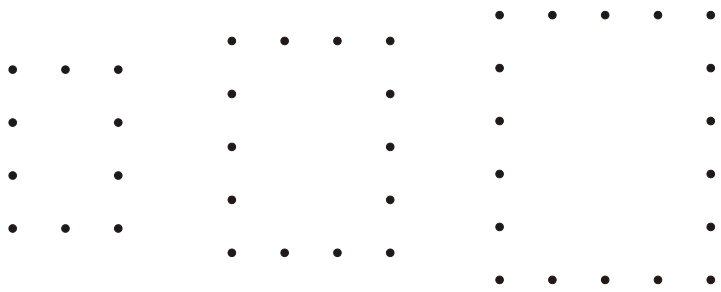
Each box measures 50 cm by 20cm by 20 cm.

Work out the number of boxes which can completely fill the carton.

.....

(2 marks)

29. Here are some patterns made up of dots.



Pattern number 1 Pattern number 2 Pattern number 3

(a) In the space below, draw Pattern number 4.

(1 mark)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of dots	10	14	18		

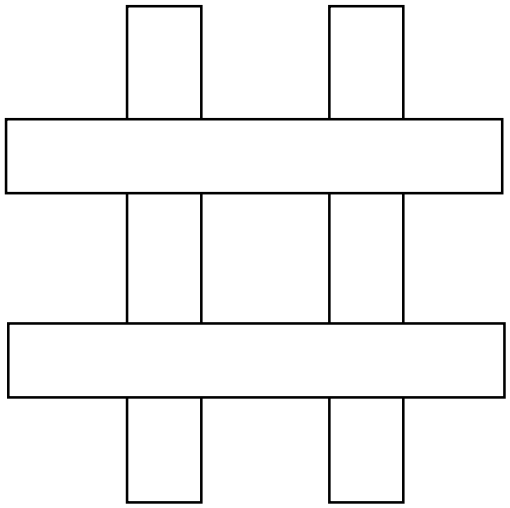
(1 mark)

(c) How many dots are used in Pattern number 10?

.....

(1 mark)

30. Four strips of paper are stuck on a table as shown. Each one is a rectangle that is 12cm long and 2cm wide.



What area of the table is covered?

Answer: .....cm^2 (2 marks)

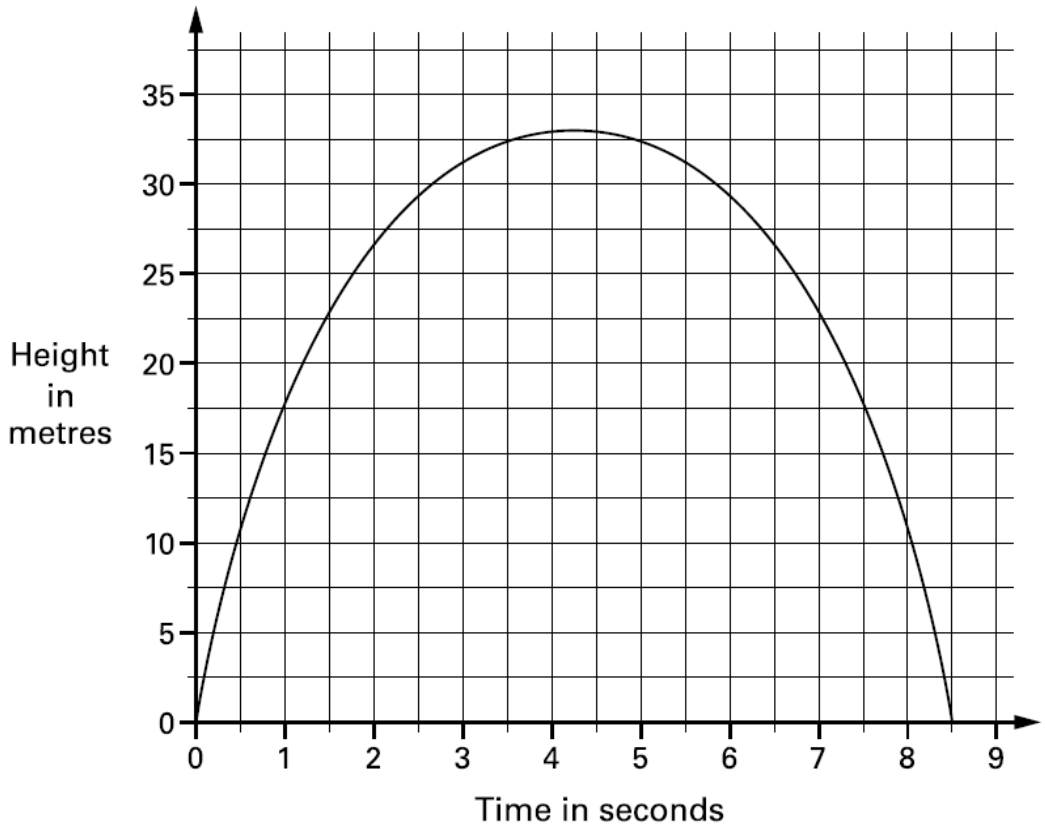
31. A cuboid has faces with areas of $24cm^2$, $32cm^2$ and $48cm^2$

What are the lengths of its edges?

Answer : .....cm ..... cm .....cm

(3 marks)

32. This is the graph of a firework rocket showing its height at different times.



(a) Estimate from the graph how many seconds the rocket is more than 25m above the ground.

Answer.....s (1 mark)

(b) Estimate from the graph how far the rocket climbs between the times of 1s and 2s.

.....m (2 marks)

33. What is the angle between the hands of a clock at 2:30pm. (Remember that the hour hand moves as well)

Answer .....

(2 marks)

34. Three friends went to a burger restaurant.

Tom had a burger and chips and he paid £8.00

Fred had two burgers and a drink. Fred paid £15.00

Jo had a burger and a drink. Jo paid £8.50

Work out the cost of the burger, the chips and the drink.

Burger £.....

Chips £.....

Drink £.....

(3 marks)