The Haberdashers' Aske's Boys' School
Elstree



11+ Entrance Examination 2016

MATHEMATICS

One Hour

Full Name.....

Examination Number .....

INSTRUCTIONS

1. DO NOT OPEN THIS PAPER UNTIL YOU ARE TOLD TO DO SO.

2. There are 30 questions on this paper. DO NOT FORGET TO TURN OVER.

3. Work quickly but accurately. You are recommended to use pencil, but you can use pen or biro if you wish.

Write your answers to the questions in the spaces provided.
You may use the space at the bottom on each page for working. Answer

1. Add: $36+27$ _____

2. Subtract: $53-14$ _____

3. Multiply: 56×8 _____

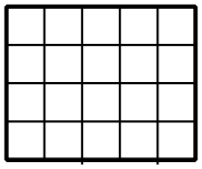
4. Divide: $108\div 4$ _____

5. Find the cost of downloading 5 apps if each one costs £2.98 _____

6. Work out the sum of: 9, 99, 999 and 9999 _____

7. Divide 3 by 0.5 _____

8. Shade 15% of this shape



9. There is an even chance that I will pick a toffee from a large bag of sweets containing toffees, jellies and chocolates.
If the bag contains 17 jellies and 8 chocolates, how many toffees are there? _____

10. The total attendance at Premier League football matches last season was 13,766,753
Round this number to the nearest ten thousand. _____

11 Pens cost 7p each and pencils cost 5p each.
I buy some pens and pencils which cost 55p exactly.
How many of each did I buy? _____ pens and _____ pencils

12. Use the fact that $96,815\times 123=11,908,245$ to work out
$96,816\times 123$ _____

SPACE FOR WORKING

Answer

13. Fill in the spaces with one of $+, -, \times, \div$ to make each statement correct

$$8 ___ 2 = 5 ___ 2$$

$$4 ___ 3 = 60 ___ 5$$

14 The three-digit number shown below can be divided by 3 without a remainder. Fill in the box to show the largest possible value that the last digit could be.

5	3	

15. At a busy railway station trains leave from platform 5 every 6 minutes and from platform 8 every 10 minutes. Trains leave from both platforms at 15:57. When do trains next leave both platforms at the same time?

_____

16. The price of a one-day ticket to a theme park is £37.60. Joe buys a ticket and experiences 8 rides during the day. Work out the average cost per ride. _____

Rishi pays an additional £31 for a special pass which gives front of line access to all rides throughout the day. He experiences 14 rides. Does the special pass provide value for money? Give reasons for your answer.

_____

_____

SPACE FOR WORKING

Answer

17. Draw lines to link each object to its correct height.



Oak Tree



Eiffel Tower



Can of soda



Car

0.324 km

1.41m

2390 cm

122 mm

18. Mrs Catchpole gives the following instructions to her Year 6 class:

> Think of a number.
> Subtract 13 from this number to get the first result.
> Go back to the original number and subtract 5 to get the second result.
> Multiply the first and second results together to get the final answer.

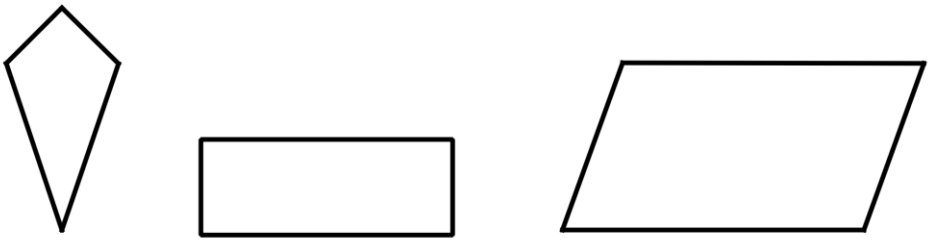
Savan follows Mrs Catchpole's instructions starting with the number 23.
Work out Savan's final answer. _____

Richard obtains a final answer of 0. What number might he have thought of?
Give all possibilities.

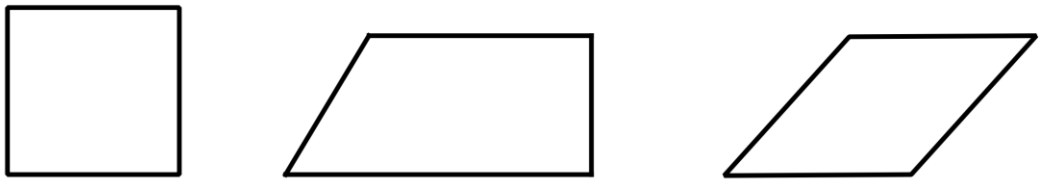
_____

SPACE FOR WORKING

19. Write the words, square, rectangle, parallelogram, trapezium, kite and rhombus in the spaces below.



_____ _____ _____



_____ _____ _____

List all possible quadrilaterals from the list above which have the following properties:

Diagonals are of equal length.

_____

There is exactly one pair of parallel sides.

_____

Opposite angles are equal but are not right angles.

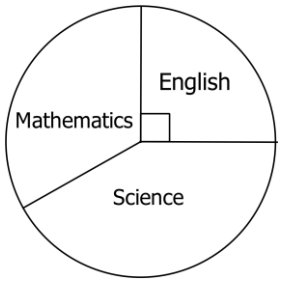
_____

SPACE FOR WORKING

Answer

20. A group of 48 children are asked to choose their favourite subject from a list of three: English, Mathematics and Science.

The results are displayed on a pie chart:



What fraction of the group chose English? _____

If $33\frac{1}{3}\%$ chose Mathematics work out the angle of the Mathematics sector. _____

How many children chose Science? _____

21. If it is a cold rainy day then I wear a raincoat. If it is a warm rainy day then I carry an umbrella. If I wear my raincoat then I also wear either gloves or a hat but not both. If I carry an umbrella I always wear gloves and sometimes wear my hat as well. I never carry an umbrella and wear my raincoat on the same day. For each of the following, state whether it is definitely true, false or uncertain.

It is a warm rainy day. I wear my raincoat and a hat. _____

It is a warm rainy day. I carry my umbrella and wear a hat but no gloves. _____

It is a cold rainy day. I wear my raincoat, hat and no gloves. _____

SPACE FOR WORKING

Answer

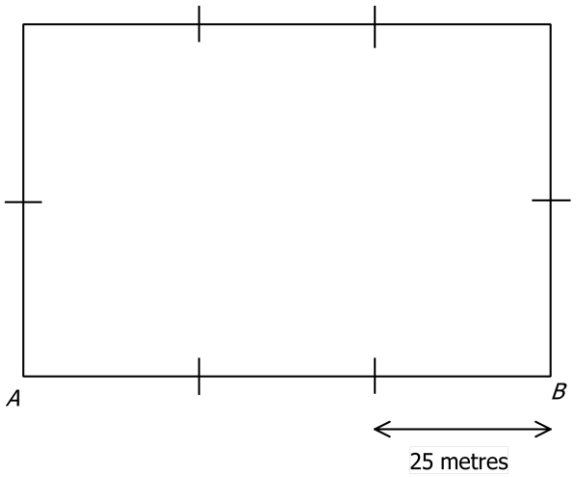
22. A sunflower seed takes a week to germinate after it has been sown in the ground. After germination it grows the same number centimetres each day.

Maya sows a sunflower seed. She measures the height of the plant at midday on the 16th August and again at midday on the 21st August. These two measurements are recorded as 48 cm and 68 cm respectively.

Work out the height of the plant at midday on September 2nd. _____ cm

On what date did Maya sow the seed in the ground? _____

23. The diagram shows a scale drawing of a rectangular school playground. The distance between consecutive marks shown on the diagram is 25 metres.



Work out the distance along the side AB. _____ metres

Work out the perimeter of the playground. _____ metres

Ginny runs round and round the perimeter of the playground in a clockwise direction. She starts at the bottom left-hand corner labelled A on the diagram. Given that she runs a total distance of 1900 m, draw a cross on the diagram to show where she finishes her run.

SPACE FOR WORKING

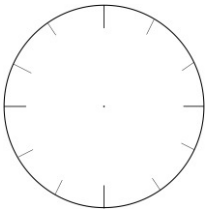
Answer

24. Write down the time shown on this clock.



_____

Alice looks at this clock in a mirror. Draw the hands on the clock face below to show the image that Alice sees.



On another day Alice looks at the clock in the mirror and, without thinking, says that the time is 11:30. What time is it really? _____

25. Once upon a time, in the Ancient Wizarding World of Haberdasher's

One pound = 20 shillings
One shilling = 12 pence

A large Margarine-beer costs 1 pound 4 shillings and 9 pence.
A small Margarine-beer costs 14 shillings and 5 pence.

Work out the difference in price between a small and large beer.
Give your answer in shillings and pence.

_____ shillings _____ pence

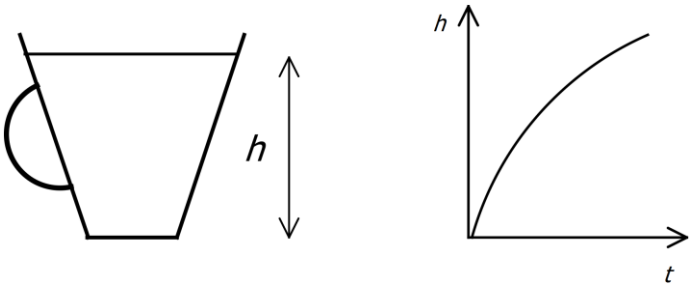
Work out the total cost of one large and two small beers.
Give your answer in pounds, shillings and pence.

_____ pounds _____ shillings _____ pence

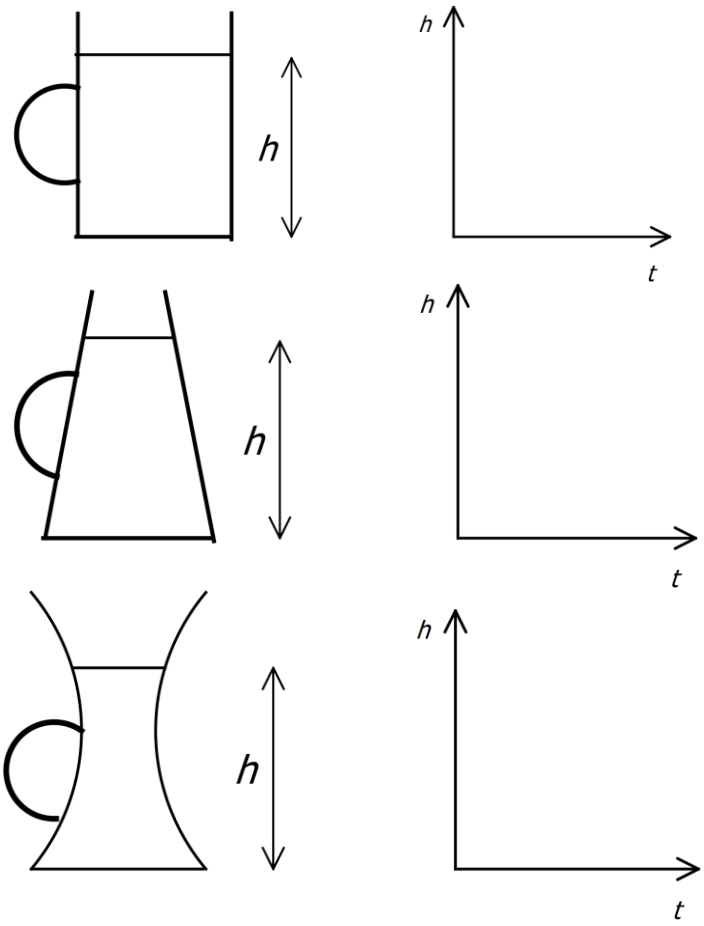
SPACE FOR WORKING

Answer

26. An empty jug is filled with water at a constant rate. The graph shows how the height, *h* of the level of water varies over time, *t*, as the jug fills up.



For each of the following jugs draw the graph which shows how the height of water varies with time.

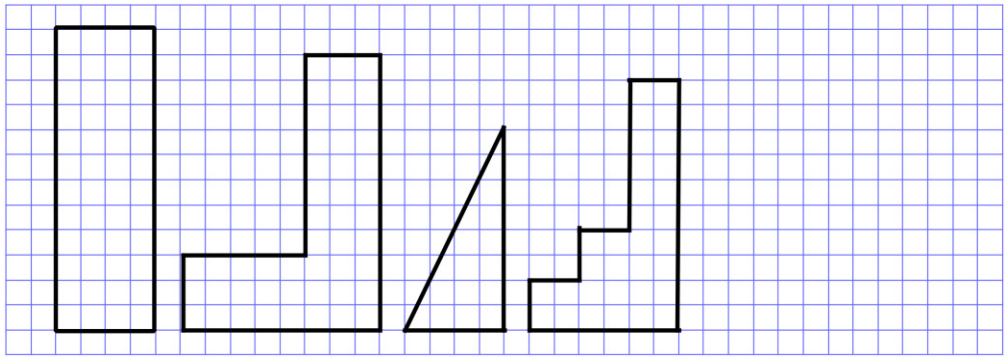


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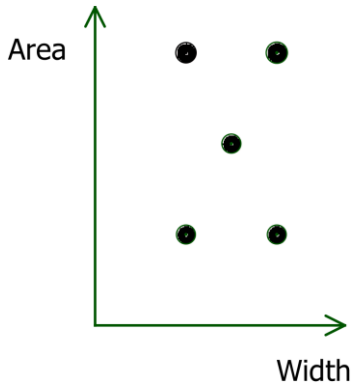
27. Helen works out the width of the base and the area of each of the following four shapes and then draws a corresponding blob showing these measurements on a graph.

Label four of the blobs on the graph with the letters A, B, C and D.

Draw a possible right-angled triangle, E, which corresponds to the remaining blob on the graph.



A B C D E



SPACE FOR WORKING

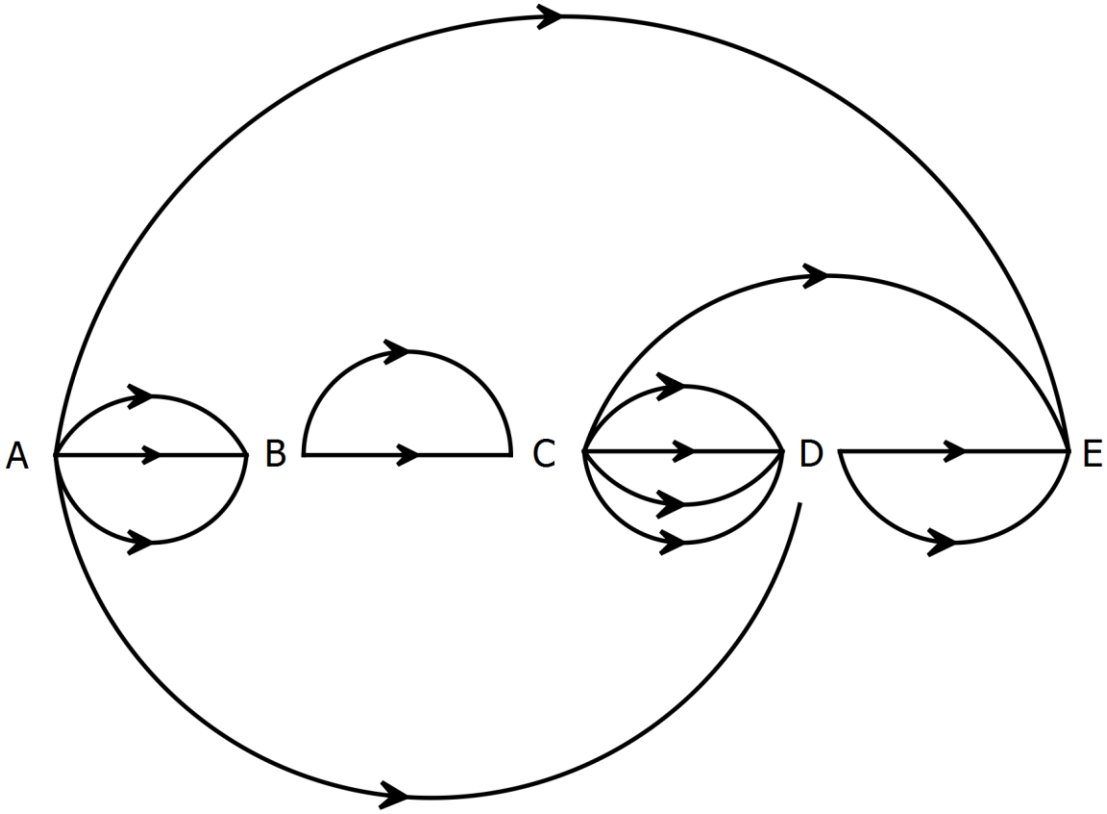
28. The diagram shows the one-way cycle paths in a park.

Work out the total number of possible routes to go

from A to C _____

from A to D _____

from A to E _____



SPACE FOR WORKING

Answer

29. A sequence of numbers which get multiplied (or divided) by a fixed amount each time is called a **geometric progression** (**GP**). For example, the sequence

1^{st} term = 6, 2^{nd} term = 12, 3^{rd} term = 24, 4^{th} term = 48

is a GP because you multiply by 2 to go from one term to the next.

The 1^{st} term of a GP is 8 and the 2^{nd} term is 24. Work out the 3^{rd} term. _____

The 1^{st} term of a GP is 20 million and the 2^{nd} term is 2 million.
Work out the 9^{th} term. _____

The 1^{st} term of a GP is 8 and the 3^{rd} term is 200. Work out the 2^{nd} term. _____

30. Snow White and the seven dwarves work in a mining company. As Chief Executive, Snow White earns as much as all the dwarves put together. Sneezy gets 24 gold galleons a day. Sleepy earns 50% more than Happy. Bashful earns twice as much as Grumpy who earns one more galleon than Sneezy. Doc gets 24 galleons a day more than Dopey and between them they get four times that of Sneezy. Sleepy earns seven-eighths of Sneezy's salary.

Complete the table below to work out how much Snow White earns in a day.

	Gold Galleons
Bashful	
Doc	
Dopey	
Grumpy	
Happy	
Sleepy	
Sneezy	
Snow White	

Snow White earns _____ galleons

SPACE FOR WORKING

Now go back and check all of your answers carefully.