Aldenham School

13+ Sample Paper

Subject: Maths

Time allowed: 60 minutes

Instructions:

- Write your answers in the spaces provided in this booklet
- Show sufficient method to show how you obtained your answers
- Calculators MUST NOT be used in any question.
- Rulers may be used.

Work steadily through the paper doing as much as you can straight away, then go back to work at the more difficult questions.

Mark: _____ / 85 %: _____

Q1.

(a) Work out 17.2 + 25.8

.....

(1)

(b) Work out $\frac{1}{4} \times 60$

.....

(1)

(c) Write down the value of the 3 in 18.35

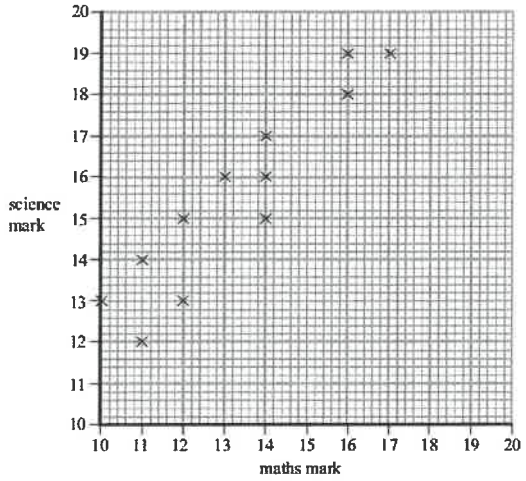
.....

(1)

(Total for question = 3 marks)

Q2.

Mr Kent's students did a maths test and a science test.
The scatter graph shows the marks of 12 of these students.



The table shows the marks of two more students.

Name	Maths	Science
Masood	12	14
Nimer	17	20

(a) Show this information on the scatter graph.

(1)

(b) What type of correlation does this scatter graph show?

.....

(1)

David did the maths test.
He was absent for the science test.

David's mark in the maths test was 15

(c) Estimate a science mark for David.

.....

(2)

(Total for Question is 4 marks)

Q3.

(a) Simplify $5x + 4y + x - 7y$

.....

(2)

(b) Solve $7(x + 2) = 7$

.....

(2)

(Total for Question is 4 marks)

Q4.

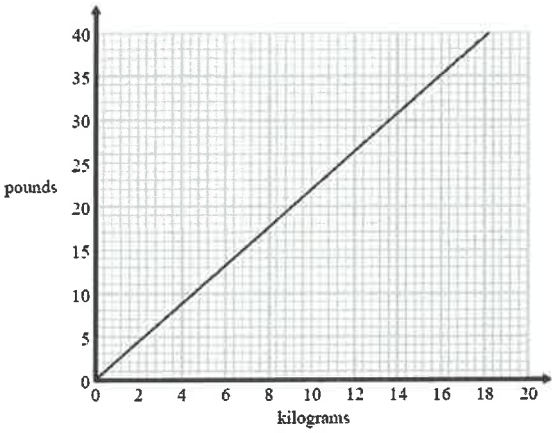
Express 56 as the product of its prime factors.

.....

(Total for question = 2 marks)

Q5.

You can use this graph to change between pounds and kilograms.



(a) Change 13 pounds to kilograms.

..... kilograms

(1)

A trolley can carry a maximum weight of 200 pounds.

Jack has 4 bags of potatoes.
Each bag of potatoes weighs 25 kilograms.

(b) Can the trolley carry the 4 bags of potatoes at the same time?
You must show your working.

(3)

(Total for question = 4 marks)

Q6.

(a) Work out $\frac{2}{7} \div \frac{1}{5}$

.....

(2)

(b) Work out $1\frac{2}{3} \div \frac{3}{4}$

.....

(2)

(Total for question = 4 marks)

Q7.

Ellie makes hats.
She makes at least 17 hats per hour.
She is paid 46p for each hat she makes.

Reaze is a waiter.
He works 35 hours and is paid a total of £266

Show that Ellie's hourly rate of pay is more than Reaze's hourly rate of pay.

(Total for question = 3 marks)

Q8.

A set of tyres normally costs £500
In a sale there is a 30% discount.

Work out the sale price of the set of tyres.

£.....

(Total for Question is 3 marks)

Q9.

There are only blue cubes, red cubes and yellow cubes in a box.

The table shows the probability of taking at random a blue cube from the box.

Colour	blue	red	yellow
Probability	0.2		

The number of red cubes in the box is the same as the number of yellow cubes in the box.

(a) Complete the table.

(2)

There are 12 blue cubes in the box.

(b) Work out the total number of cubes in the box.

.....

(2)

(Total for question = 4 marks)

Q10.

The incomplete two-way table shows information about the nationality of 80 people staying in either a tent or a caravan at a campsite.

	French	British	Dutch	Total
Tent	8		25	44
Caravan		17		
Total			32	80

Complete the two-way table.

(Total for question = 3 marks)

Q11.

Azmol, Ryan and Kim each played a game.

Azmol's score was four times Ryan's score.
Kim's score was half of Azmol's score.

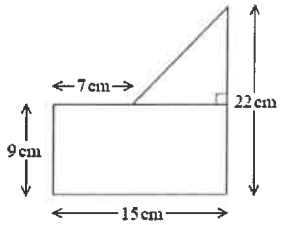
Write down the ratio of Azmol's score to Ryan's score to Kim's score.

.....

(Total for question = 2 marks)

Q12.

Here is a shape made from a rectangle and a triangle.



Work out the total area of the shape.

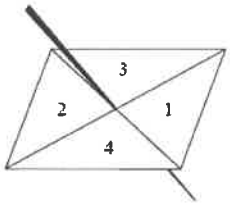
..... cm^2

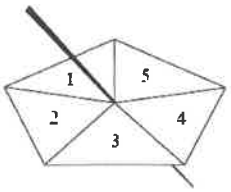
(Total for question = 3 marks)

Q13.

Here are a 4–sided spinner and a 5–sided spinner.

The spinners are fair.





Jeff is going to spin each spinner once.
Each spinner will land on a number.
Jeff will get his score by adding these two numbers together.

(a) Complete the possibility space diagram for each possible score.

4-sided spinner \ 5-sided spinner	1	2	3	4	5
1	2	3	4	5	6
2	3				
3	4				
4	5				

(1)

Jeff spins each spinner once.

(b) Find the probability that Jeff gets

(i) a score of 3

.....

(ii) a score of 5 or more.

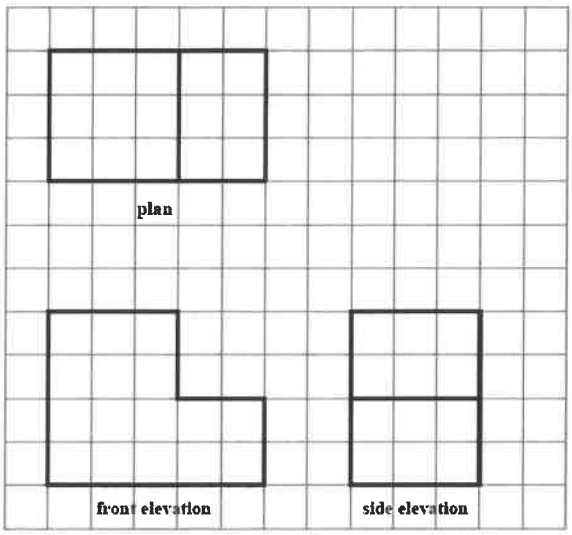
.....

(2)

(Total for question = 3 marks)

Q14.

The plan, front elevation and side elevation of a solid prism are drawn on a centimetre grid.



In the space below, draw a sketch of the solid prism.
Write the dimensions of the prism on your sketch.

(Total for question = 2 marks)

Q15.

Here are nine numbers.

3 2 5 8 2 4 9 1 2

(a) Find the median.

.....

(2)

(b) Find the range.

.....

(2)

(Total for Question is 4 marks)

Q16.

Write 37 cm^3 in mm^3

..... mm^3

(Total for question = 1 mark)

Q17.

The table below shows some information about the number of times each student in a class was late last week.

Lates	Frequency
0	15
1	8
2	3
3	3
4	1

Work out the mean number of lates per student.

.....

(Total for question = 3 marks)

Q18.

Here is a sequence of patterns made with grey squares and with white squares.

pattern number 1 pattern number 2 pattern number 3

(a) In the space below, draw pattern number 4

(1)

A pattern in the sequence has 10 grey squares.

(b) How many white squares does the pattern have?

.....

(1)

A pattern in the sequence has a total of 45 squares.

(c) (i) How many grey squares does the pattern have?

.....

(ii) Explain how you found your answer.

.....
.....

.....
.....

(2)

(Total for question = 4 marks)

Q19.

A teacher asked Tyrese to find the value of $2n^2 - 3n$ when $n = 3$

Here is his working.

$2 \times 3^2 - 3 \times 3$
$= 6^2 - 9$
$= 36 - 9$
$= 27$

(i) What mistake has Tyrese made?

.....

.....

(1)

The teacher then asked Megan to find the value of $2n^2 - 3n$ when $n = -4$

Here is her working.

$2 \times -4^2 - 3 \times -4$
$= 2 \times -16 + 12$
$= -32 + 12$
$= -20$

(ii) What mistake has Megan made?

.....

.....

(1)

(Total for question = 2 marks)

Q20.

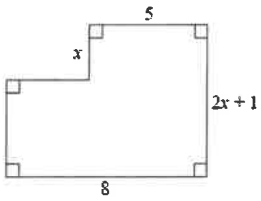


Diagram NOT accurately drawn

Here is a shape.

All the measurements are in metres.

The area of the shape is A m^2.

Find a formula for A in terms of x.

.....

(Total for question = 3 marks)

Q21.

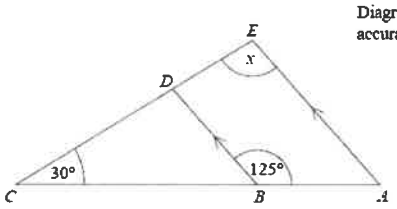


Diagram NOT accurately drawn

ABC and *EDC* are straight lines.
AE and *BD* are parallel.
Angle *ABD* = 125°
Angle *BCD* = 30°

Work out the size of the angle marked *x*.
Give reasons for your answer.

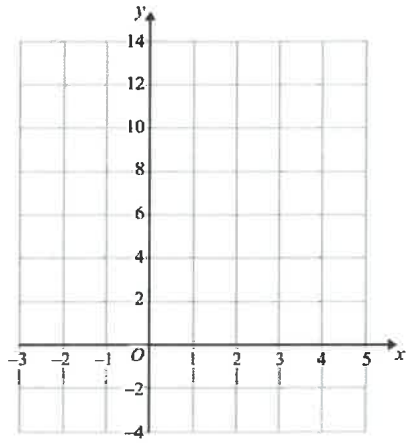
(Total for question = 4 marks)

Q22.

(a) Complete the table of values for $y = 2x + 2$

x	−2	−1	0	1	2	3	4
y	−2				6		

(b) On the grid, draw the graph of $y = 2x + 2$



(2)

(Total for Question is 4 marks)

Q23.

Make t the subject of the formula $y\frac{t}{3} - 2a$

.....

(Total for question = 2 marks)

Q24.

*Redlands School sent x students to a revision day.
St Samuel's School sent twice as many students as Redlands School.
Francis Long School sent 7 fewer students than Redlands School.

Each student paid £15 for the revision day.
The students paid a total of £1155

Work out how many students were sent by each school to the revision day.
You must show all your working.

.....

(Total for question = 5 marks)

Q25.

The diagram shows a circle drawn inside a square.

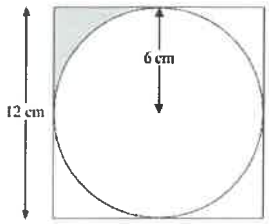


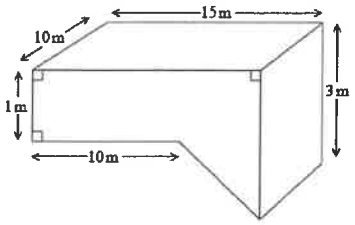
Diagram NOT accurately drawn

The circle has a radius of 6 cm.
The square has a side of length 12 cm.
Work out the shaded area.
Give your answer in terms of π.

.....cm^2

(Total for Question is 3 marks)

Q26.



The diagram shows a swimming pool.
The swimming pool is in the shape of a prism.
The swimming pool is filled with water at a rate of 5 litres per second.

Jeremy has 10 hours to fill the swimming pool.
1 m^3 = 1000 litres.

Will he completely fill the swimming pool in 10 hours?
You must show all your working.

(Total for question = 5 marks)

END OF PAPER