Collins

AQA GCSE Mathematics SET A – Paper 3 Higher Tier

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Materials

For this paper you must have:

• calculator



• mathematical instruments

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the space provided.
- In all calculations, show clearly how you work out your answer.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may use additional paper, graph paper and tracing paper.

Name:

Time allowed: 1 hour 30 minutes

Answer all questions in the spaces provided.

1 (a) Find the simple interest earned on an investment of £2500 at 2.5% per year for 2 years. Circle your answer. [1 mark] £125 £156.25 £62.50 £1250 1 (b) Which of the following calculations would decrease £350 by 13%? [1 mark] Circle your answer. 350 × 0.13 350 × 1.13 350 × 0.87 $350 \times (-0.13)$ 2 Give the name of this type of sequence 6, 12, 24, 48, 96 Circle your answer. [1 mark] Geometric Arithmetic Fibonacci Quadratic 3 Which of the following linear equations would give a graph with a negative gradient? Tick two boxes. [1 mark]



4 Which of the following diagrams shows a bearing of A from B as 240°?

Circle your answer.



A rectangle has a length of 8 cm and a width of 5 cm.

A similar rectangle has a length of 10 cm.

Work out the width of the rectangle.

Circle your answer.

[1 mark]

5

7 cm

5.625 cm

6.6 cm

6.25 cm

6 (a) Calculate $\frac{5.3 \times 2.1^2}{\sqrt[3]{5.32+8.9}}$

Write down all the numbers on your calculator display.

[1 mark]

[1 mark]

7 10 people were asked their height and annual income.

The table shows the results.

Income (£)	14 000	21 000	26 500	32 500	28 500
Height (m)	1.59	1.72	1.85	1.65	1.57

Income (£)	15 000	13 000	25 000	33 500	29 000
Height (m)	1.83	1.71	1.65	1.79	1.72

(a) Plot a scatter graph for this data.



[1 mark]

Answer

7 (b) Interpret the scatter graph, stating any correlation found.

[2 marks] 8 Find the highest common factor of 135 and 630. [3 marks] Answer Qahhar writes ' $\frac{1}{x^2} < x$, for any value of x'. 9 Is Qahhar correct? Give a reason for your answer. [2 marks]

- 10 A sports centre has a gym and a swimming pool.
 - On Wednesday, 51 people visited the centre.
 - 13 people who used the gym also went swimming.
 - 21 people did not use the gym and 6 of those did not swim either.

Complete the frequency tree to illustrate this information.



11 26 people start on an evening course in September.

By January there are only 19 people left on the course.

What percentage of people have left the course?

[2 marks]

Answer %

A metal rod for a piece of machinery is $3\frac{4}{5}$ inches long. 12 The designer says that the rod would work better if it was $\frac{1}{3}$ longer. How long should the rod be? Give your answer as a mixed number. [3 marks] inches Answer The interior angle of a regular polygon is 2x. 13 2xShow that the number of sides that the polygon has can be written in the form $\frac{a}{b-x}$ [3 marks] 14 These four shapes are made with different types of metal: iron, silver, copper and zinc.



Use all the information to list the four metals in order from least to highest density.

You **must** show your working.

[7 marks]

Answer

15 An airfield is going to be built near the towns of Brooks, Redding and Dufresne.

It must be closer to Redding than to Brooks.

It must be within 5 miles of Dufresne.

Scale: Redding 1 cm = 1.6 miles× **≻** Dufresne X Brooks Shade on the map, the region where the airfield can be built. [3 marks] Solve the inequality $2x^2 - 5x \le 3$ [4 marks]

Answer

16

17 Jason asks 21 of his friends how many songs they have downloaded in the last month.

The stem and leaf diagram shows the result.

0	00023
1	56678
2	1 3 4 7 9
3	0124
4	1 3

Key: 4|3 means 43 downloads

He says, 'The median is closer to the upper quartile than the lower quartile'.

Is Jason correct?

Justify your answer.

Answer

2.5 litres of water is boiling in a pan, with a constant heat.

The water evaporates at a rate of 3.5% every minute.

How many minutes would it take for 500 ml of water to evaporate?

[3 marks]

[3 marks]

Answer

19 (a) Which graph shows the relationship that *y* is inversely proportional to *x*?

Circle your answer.





[1 mark]

[1 mark]



20 A, B, C and D are points on the circumference of a circle, with centre O.



Find the size of the angle marked x.





Set A = {prime numbers}

Set B = {even numbers}

23 (a) Complete the Venn diagram.



Answer

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25 Solve the simultaneous equations.



Ε

В

F

С

GAF = _____°

END OF QUESTIONS