



THIRD SPACE
LEARNING

Mathematics

Paper 1

(Non-Calculator)

Higher Tier

AQA GCSE

SET 1A

Mathematics Paper 1 (Non-Calculator) Higher Tier AQA

GCSE SET 1A

Name

Total marks



Paper length: 1hr 30mins

Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may not be used.

Information

- The total mark for this paper is 80
- The marks for each question are shown in brackets – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

This practice paper is based on the topics from the **advanced information for the Summer 2022 exam series**.

Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers

- 1 Work out 1.4×3.72

Circle your answer

52.08 5.208 0.5208 18.6

[1 mark]

- 2 Write 480 mm as a fraction of 0.3 km in its simplest form.

Circle your answer

$\frac{2}{125}$ $\frac{8}{5}$ $\frac{4}{25}$ $\frac{1}{625}$

[1 mark]

- 3 What multiplier can be used to decrease by 3.5%

Circle your answer

0.975 1.035 0.965 0.035

[1 mark]

- 4 Work out the value of $\sin(30) + \tan(45)$

Circle your answer

$\frac{3}{2}$ 2 $\frac{2 + \sqrt{3}}{2}$ $\frac{\sqrt{2}}{2}$

[1 mark]

- 5 Draw lines to match the pairs. The first one is done for you.

$3x + 5 = 8$ Expression

$(x-2)^2 = x^2 - 4x + 4$ Formula

$A = kp^2$ Equation

$4m^2 - 5d$ Identity

[2 marks]

6 Felicity says that

$$1\frac{2}{7} + 3\frac{1}{4} = 4\frac{3}{11}$$

(a) Explain Felicity's mistake.

[1 mark]

(b) Work out the correct answer to $1\frac{2}{7} + 3\frac{1}{4}$

[2 marks]

Answer _____

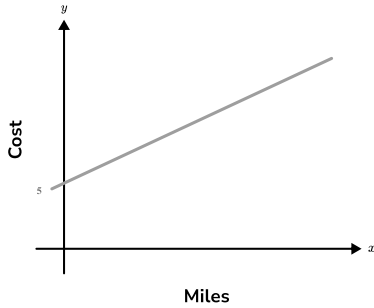
7 Gary has 24 sweets. He eats $\frac{3}{8}$ of them.

Ben has 30 sweets. He eats $\frac{2}{5}$ of them.

Who has the most sweets left? Show your working.

[3 marks]

- 8 The straight line graph shows the cost, in £, of hiring a taxi to travel a distance in miles.

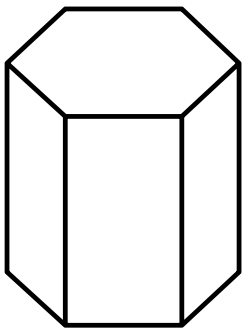


[1 mark]

The y-intercept of the graph is 5.

Give an interpretation of this y-intercept.

- 9 Shown is a hexagonal prism.



Write the ratio of the number of faces to the number of edges. Give your answer in its simplest form.

[2 marks]

Answer _____

- 10 Max, Eloise and Callie have some marbles. Max has twice as many marbles as Eloise. Callie has two less marbles than Eloise. Altogether they have 38 marbles. Work out how many marbles each child has.

[4 marks]

Max _____, Eloise _____ and Callie _____

- 11 (a) Write the number 4 720 000 in standard form

[1 mark]

Answer _____

- (b) Write 7.1×10^{-3} as an ordinary number.

[1 mark]

Answer _____

- (c) Calculate $(4.6 \times 10^4) + (5.12 \times 10^5)$.

Give your answer in standard form.

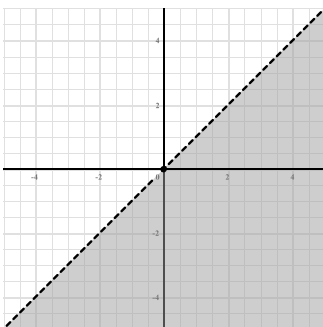
[2 marks]

Answer _____

- 12 Which inequality describes the shaded region shown.

[1 mark]

Circle your answer.



$y > x$

$y \leq x$

$y < x$

$y \geq x$

13 (a) Write down the value of 7^0

[1 mark]

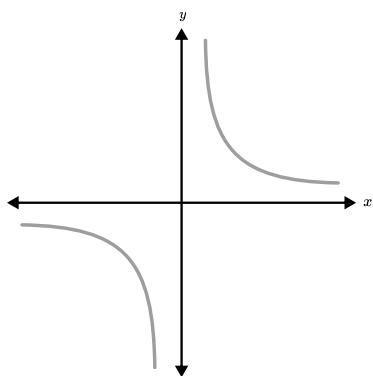
Answer _____

(b) $\frac{5^3 \times 5^5}{5^2} = 5^n$. Find the value of n .

[2 marks]

Answer _____

14 Which equation matches the graph shown?



Circle your answer.

[1 mark]

$y = x^2$ $y = x^3$ $y = \frac{1}{x}$ $y = x$

15 The first three terms of a Fibonacci sequence are shown. Find the expression of the 6th term of the sequence.

[3 marks]

$2a$, $5b$, $2a + 5b$,

Answer _____

- 16** A campsite needs to install a new water tap. It must be closer to reception than the shower block, but within 30 metres of the shower block. Using a scale of 1cm to 5 metres, indicate the region where the water tap can be installed.

[3 marks]

Reception



**Shower
Block**

- 17** 30 students were asked what hot drinks they liked.

16 students liked tea.

5 students liked tea and coffee

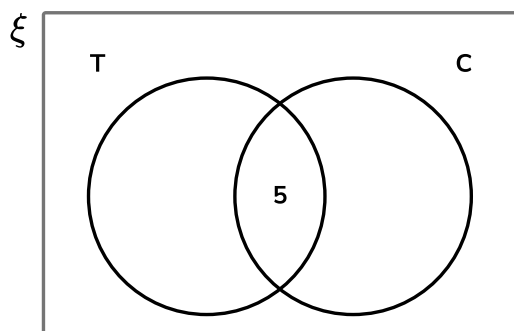
6 students liked neither tea or coffee

T is the set of students who liked drinking Tea.

C is the set of students who liked drinking Coffee.

- (a) Complete the Venn diagram

[2 marks]



- (b) Find $P(T \cup C)$.

[2 marks]

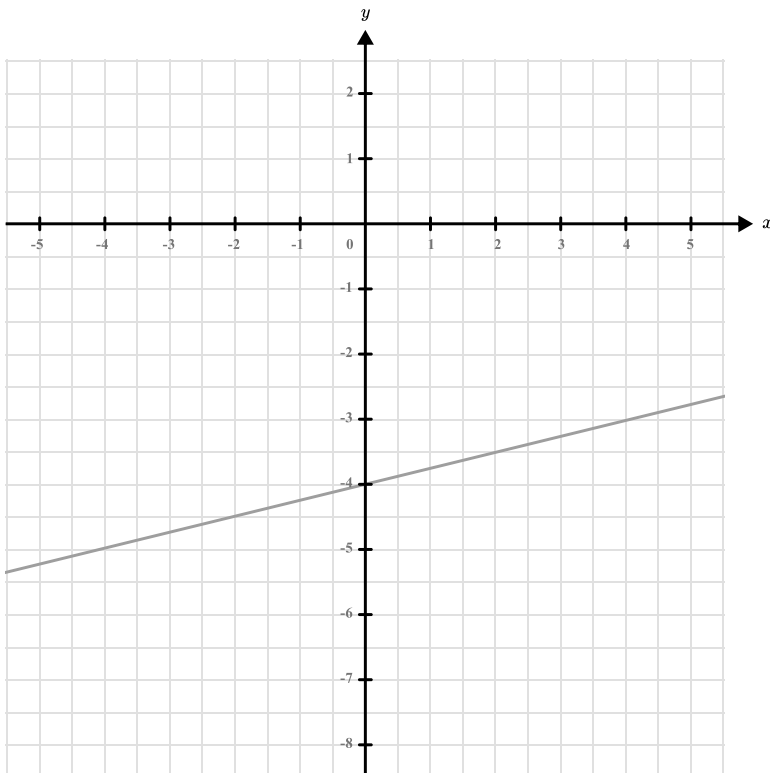
Answer _____

18 Make y the subject of the formula $x^2 + y = 8(2y + w)$

[3 marks]

Answer _____

19



(a) Work out the gradient of the line.

[2 marks]

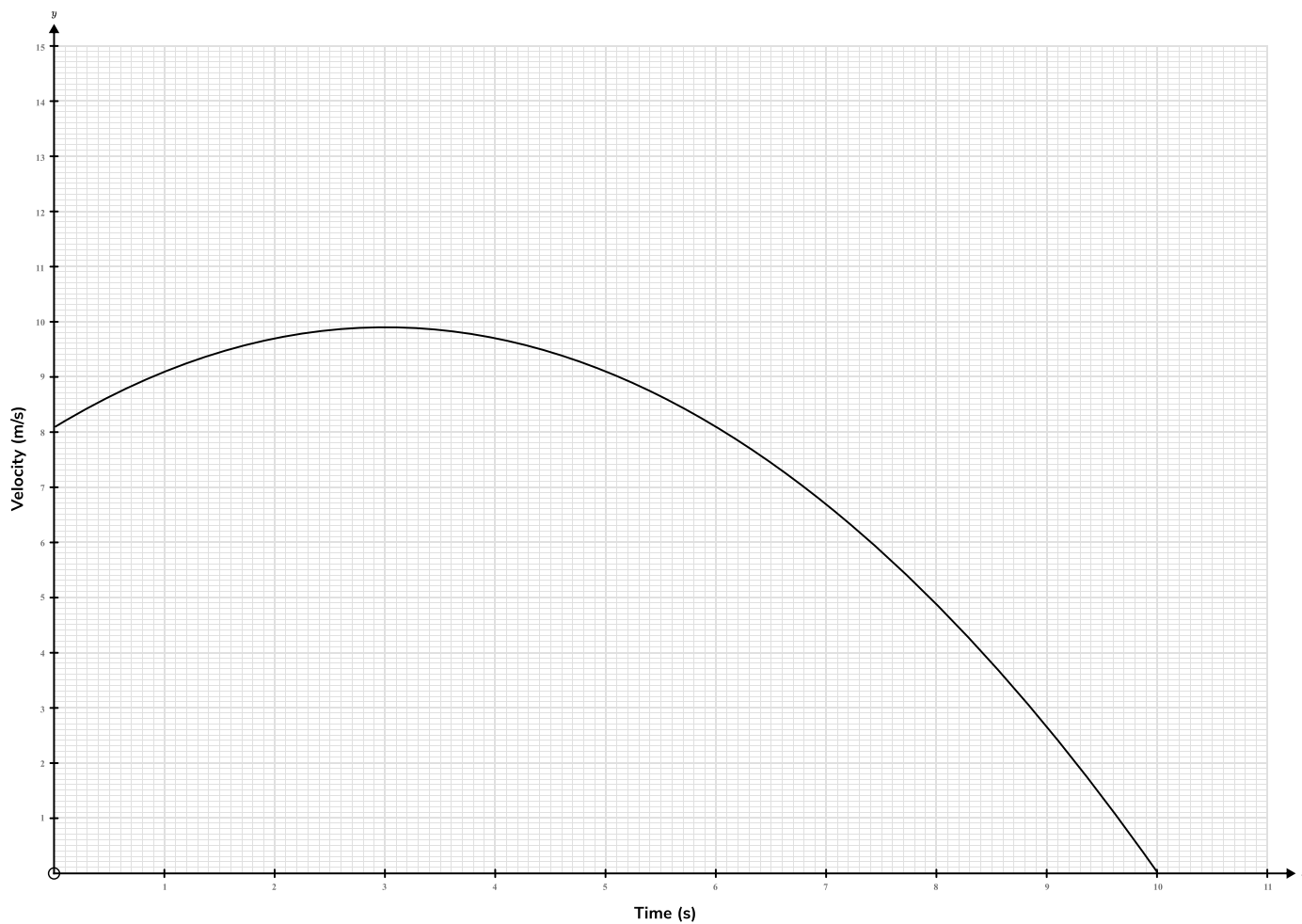
Answer _____

(b) Write down the equation of the line.

[2 marks]

Answer _____

20 This velocity time graph shows the velocity of a car over 10 seconds.



Calculate an estimate for the acceleration of the graph when $t = 8$.

[2 marks]

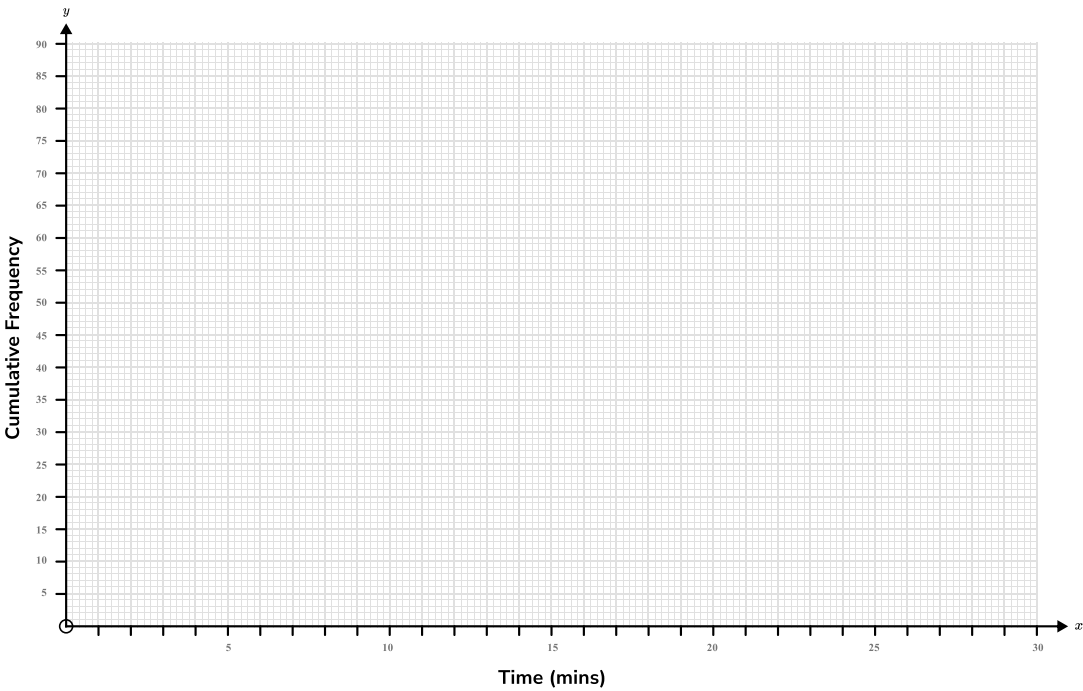
Answer _____ m/s

21 This table shows the amount of time it takes 80 students to travel to school:

| Time, t (mins) | Frequency | Cumulative Frequency |
|------------------|-----------|----------------------|
| $0 \leq t < 5$ | 8 | |
| $5 \leq t < 10$ | 14 | |
| $10 \leq t < 15$ | 21 | |
| $15 \leq t < 20$ | 17 | |
| $20 \leq t < 25$ | 11 | |
| $25 \leq t < 30$ | 9 | |

(a) Complete the cumulative frequency column. [1 mark]

(b) On the grid below, draw a cumulative frequency graph for your completed table. [2 marks]



(c) Use your cumulative frequency graph to estimate the interquartile range of the times taken for students to travel to school. [2 marks]

Answer _____

- 22 y is inversely proportional to the square root of x . $y = 30$ when $x = 25$.

Find the value of y when $x = 16$.

[2 marks]

Answer $y =$ _____

- 23 Simplify the fraction.

[4 marks]

$$\frac{12x^2 + 42x + 18}{24x^2 - 6}$$

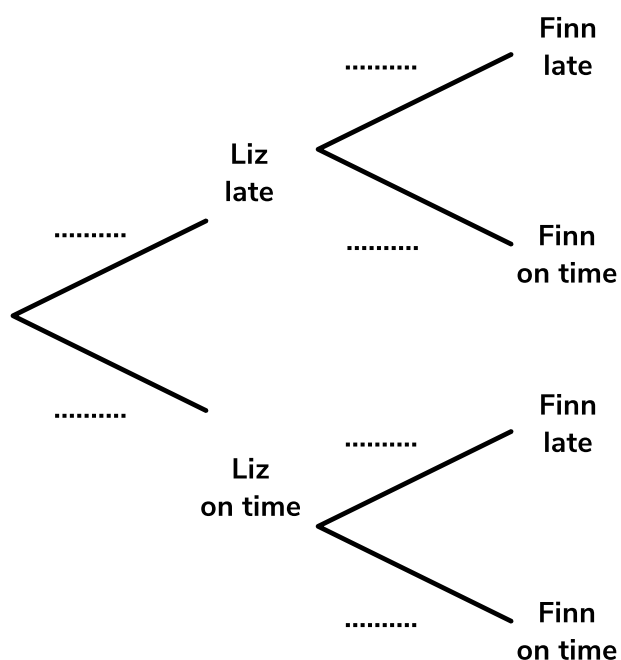
Answer _____

- 24 Prove algebraically that $0.\dot{4}\dot{5}$ can be written as $\frac{5}{11}$.

[2 marks]

- 25 The probability that Liz is late for school is $\frac{1}{5}$. The probability that Finn is late for school is $\frac{1}{4}$.

Complete the probability following tree diagram:



[2 marks]

- (b) Calculate an estimate of the number of days both Liz and Finn and be on time out of the period of 80 days.

[3 marks]

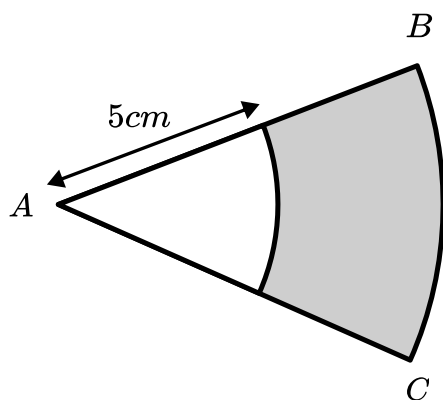
Answer _____

- 26 Write $(3 + \sqrt{2})(4 + \sqrt{8})$ in the form $a + b\sqrt{2}$.

[3 marks]

Answer _____

- 27 ABC is a sector with radius 10cm and area 20cm^2 .



- (a) Work out the size of angle BAC. Leave your answer in terms of π .

[2 marks]

Answer _____

- (b) Calculate the size of the shaded area.

[3 marks]

Answer _____ cm^2

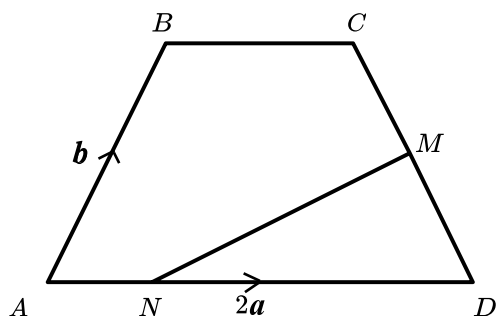
28 ABCD is a trapezium.

$$\vec{AB} = \mathbf{b}$$

$$\vec{AD} = 2\mathbf{a}$$

$$\vec{BC} = \frac{1}{2}\vec{AD}$$

M is the midpoint of CD and N is the point such that AN:ND=1:3.



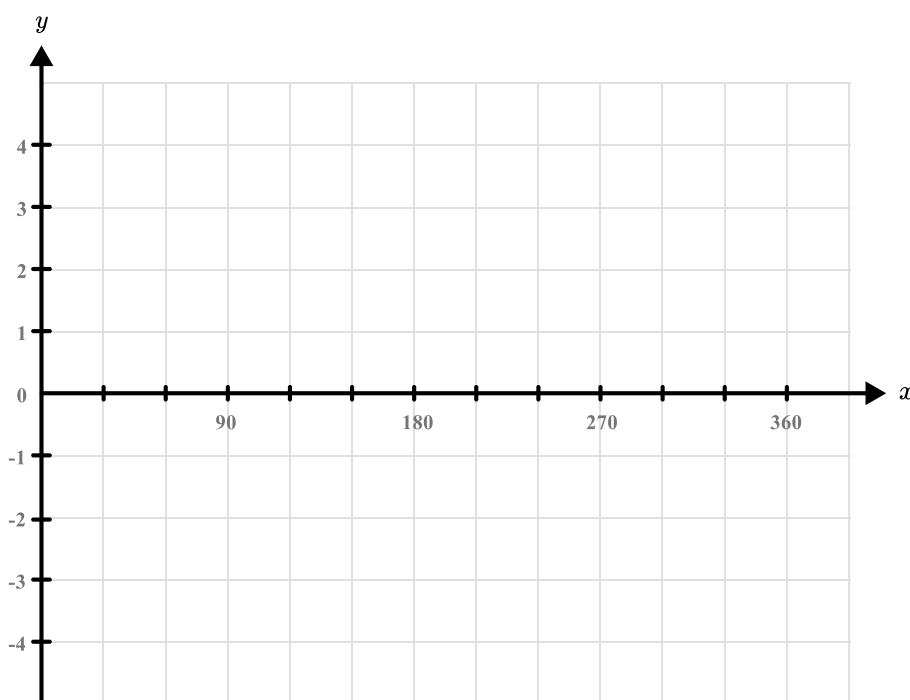
Find the vector \vec{NM}

[4 marks]

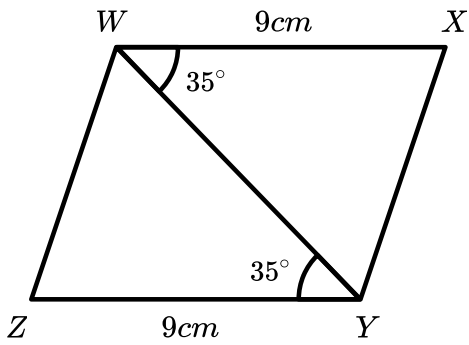
Answer _____

29 Sketch the graph of $y = \tan(x)$ for $0^\circ \leq x \leq 360^\circ$.

[1 mark]



29 WXYZ is a quadrilateral. WY is a diagonal.



Prove that triangle WXY is congruent to triangle WYZ.

[3 marks]

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