



Class
Maths

Video Solutions



PRACTICE PAPER FOR

AQA Paper 2H (June 2023)

----- Disclaimer -----

In 2022 I wrote a series of predicted papers that in many cases reflected the real exam paper very well. This was due to the exam boards providing advance information on the topics that were going to be in each paper. This information is no longer provided so “predicting” a paper is not possible. Nobody can know what topics and types of questions will come up in each paper, apart from the few examiners that write them.

This paper has been created based on the **most common** paper 2/3 topics from previous years and also careful analysis of what topics have already appeared in paper 1. The paper should be excellent at helping students revise for exams, however should not be relied upon as the basis for revision. The topics from this paper may well appear in the real exams, however there is absolutely no guarantee of this for the reasons previously mentioned. Some topics may appear, some may not.

Ultimately the best way to prepare for the exams is to **revise all topics**.



@1stclassmaths



Do not write
outside the
box

Answer **all** questions in the spaces provided.

- 1 $17 : 40 = n : 1$
Where n is a decimal.
Work out the value of n . **[1 mark]**

$n =$ _____

- 2 Expand and simplify fully $(x + 4)(x - 3)$ **[2 marks]**

Answer _____

- 3 Sasha answers some maths questions.
She gets 27 questions correct and 33 questions wrong.
Write down the relative frequency for correct answers. **[1 mark]**

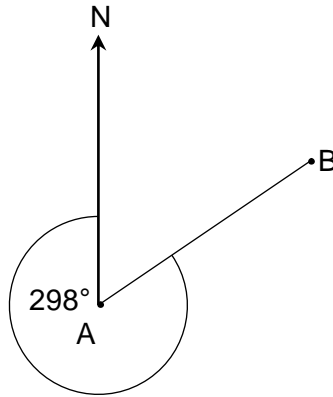
Answer _____





Do not write outside the box

4



Not drawn accurately

Work out the bearing of B from A.

[2 marks]

Answer _____ °

5

Work out the highest common factor (HCF) of 56 and 70

[2 marks]

Answer _____

Turn over ►





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6 The capacity of a small drinking cup is 330 ml (to the nearest 10 ml)

6 (a) Complete the error interval for the capacity the small drinking cup. [2 marks]

Answer _____ ml \leq capacity $<$ _____ ml

6 (b) A larger cup has three times the capacity of the small cup.

Complete the error interval for the capacity the larger drinking cup. [1 mark]

Answer _____ ml \leq capacity $<$ _____ ml

7 The lengths of 16 songs on an album, in seconds, are shown below.

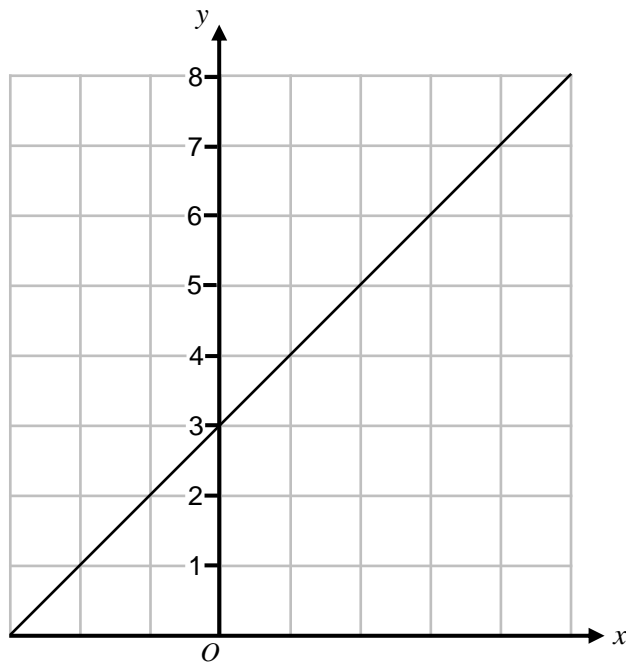
| Time, t (seconds) | Frequency | Midpoint | |
|---------------------|-----------|----------|--|
| $0 \leq t < 100$ | 1 | | |
| $100 \leq t < 200$ | 8 | | |
| $200 \leq t < 300$ | 7 | | |

Work out an estimate for the mean length of the songs on the album. [3 marks]
Give your answer as a decimal.

Answer _____ seconds



8 Veronika draws the straight line graph shown below.



Veronika forgets to label her x -axis.

For each of the following statements, tick the correct box.

[3 marks]

| | Must be true | Could be true | Cannot be true |
|--|--------------------------|--------------------------|--------------------------|
| The coordinates of the y -intercept are $(0, 3)$ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The gradient of the graph = -1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The gradient of the graph = 2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |





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9 Gareth invests £5000 into a bank.

The bank gives 3.5% compound interest per year.
All interest is paid at the end of each year.

Gareth wants to withdraw the money once he has made over £1000 interest.

How many years will Gareth need to wait before withdrawing his money?
You must show all of your working.

[3 marks]

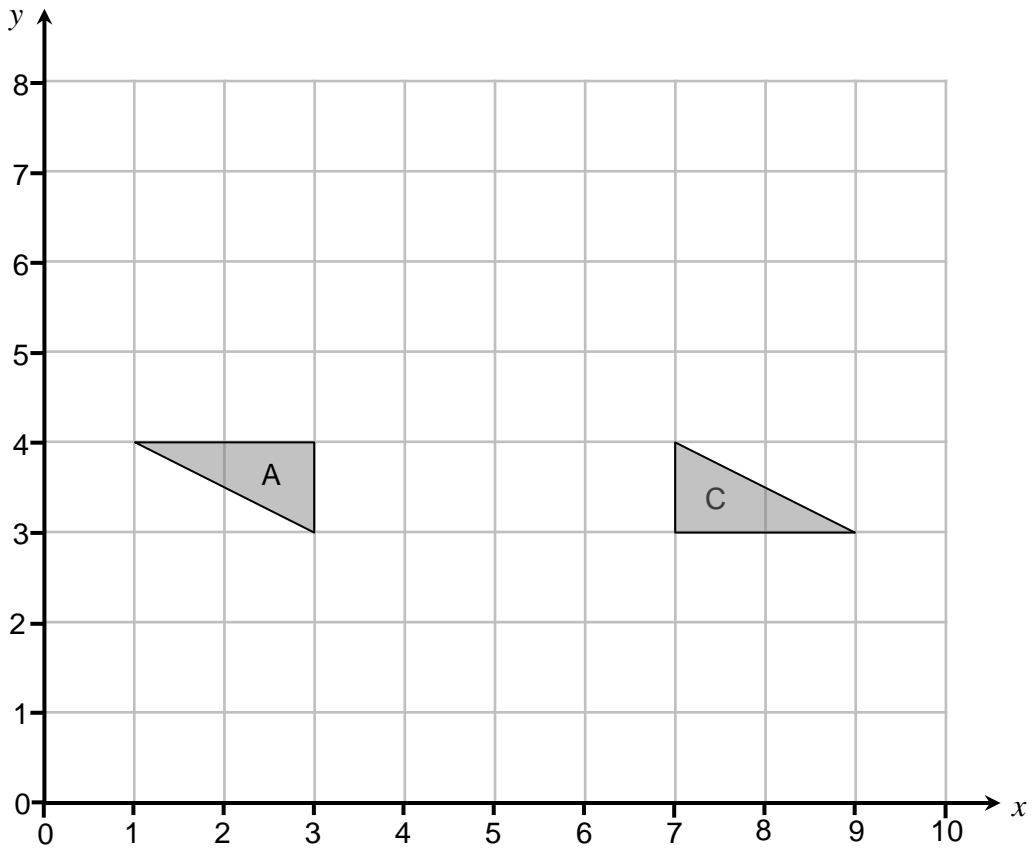
Answer _____ years





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10



Triangle A is translated by the vector $\begin{pmatrix} 0 \\ 2 \end{pmatrix}$ to give Triangle B.

Describe the single transformation that maps Triangle B onto Triangle C. **[4 marks]**

$\frac{7}{7}$

Turn over ►





Do not write
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11 Here are the first three terms of a sequence.

1 a b

All terms in the sequence are positive.
The sum of the first 3 terms of the sequence is equal to 21.

11 (a) Assume the sequence is an **arithmetic** sequence.

Work out the values of a and b .

[2 marks]

$a =$ _____

$b =$ _____

11 (b) Assume instead that the sequence is a **geometric** sequence.

Work out the values of a and b .

[2 marks]

$a =$ _____

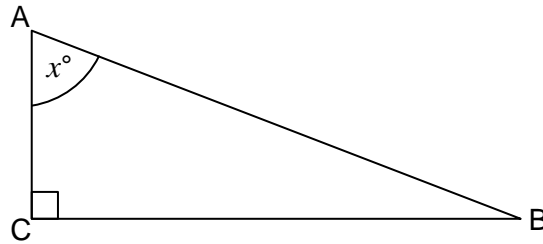
$b =$ _____





Do not write outside the box

12



Not drawn accurately

$$AB : AC = 4 : 1$$

Use trigonometry to work out the value of x
Give your answer to 1 decimal place.

[2 marks]

$$x = \text{_____}^\circ$$

$\frac{\quad}{6}$

Turn over ►



14

72 people took a driving theory test on a Saturday.

Everyone who did the test was asked if they did any revision to prepare.

$\frac{5}{12}$ of the people did some revision, the rest did no revision.

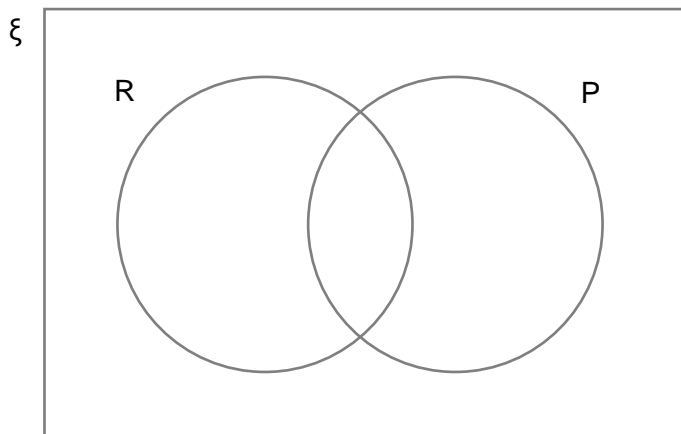
26 of the people did no revision and also failed the test.

60% of those who passed the test did some revision.

In the Venn diagram below

R = the person did some revision

P = the person passed the test



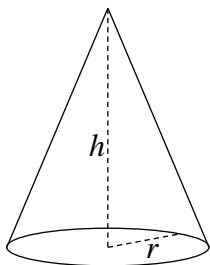
Complete the Venn diagram to show all 72 people.

[4 marks]





15 Here is a cone



Volume of a cone = $\frac{1}{3} \pi r^2 h$
where r is the radius
 h is the perpendicular height.

The height of a cone is increased by 32%

Work out the percentage decrease in the radius of the cone, so that the volume of the cone remains unchanged.

Give your answer to 4 significant figures.

[3 marks]

Answer _____ %





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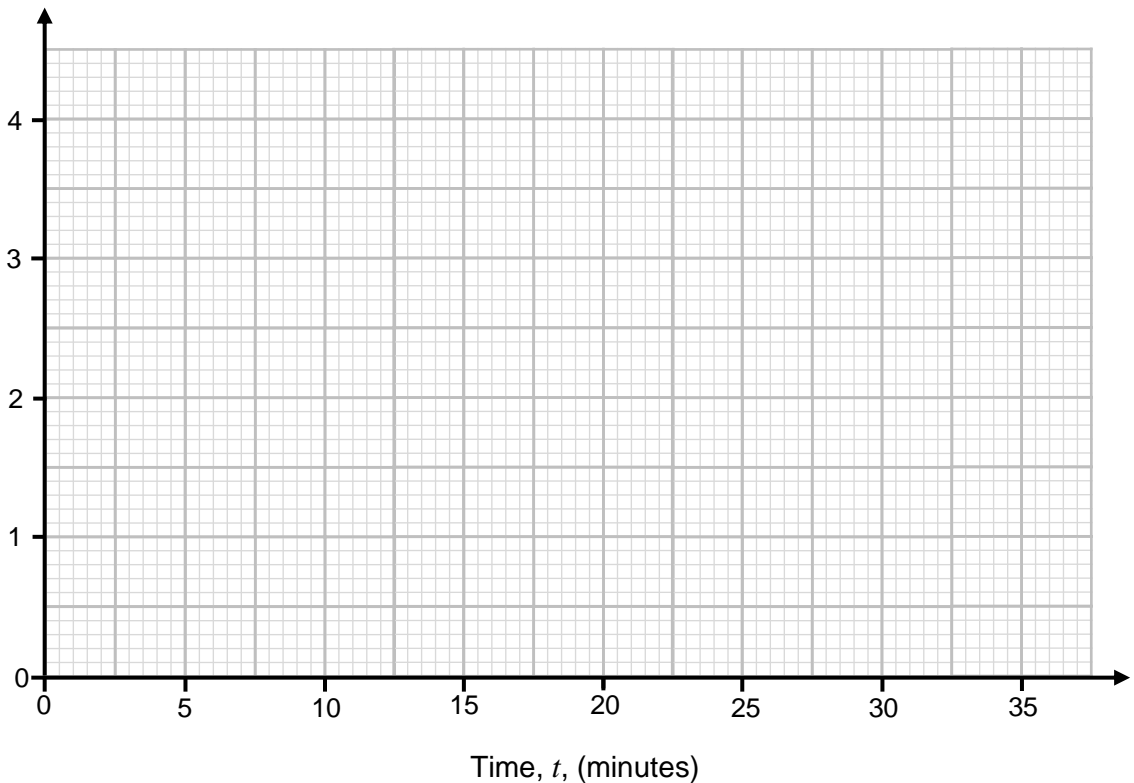
16 Here is some information about times, t , in minutes for some runners to complete a race.

| Time, t (minutes) | Frequency | | |
|---------------------|-----------|--|--|
| $0 \leq t < 15$ | 6 | | |
| $15 \leq t < 20$ | 18 | | |
| $20 \leq t < 25$ | 15 | | |
| $25 \leq t < 35$ | 8 | | |

Draw a histogram to represent the information.

[4 marks]

Frequency density



$\frac{7}{7}$

Turn over ►





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17 Felix is rolling an ordinary, fair dice.

He decides to roll the dice repeatedly until he rolls a number 6.
When he rolls the number 6, he stops.

17 (a) Work out the probability that it takes Felix exactly four rolls before he rolls a 6

[2 marks]

Answer _____

17 (b) Work out the probability that it takes Felix more than three rolls to roll a 6.

[4 marks]

Answer _____





Do not write outside the box

18 Solve $6 - 2x^2 = 5x$

Give your answers to 2 decimal places.

[4 marks]

Answer _____

19 A sequence of numbers is formed by the iterative process

$$u_{n+1} = \sqrt{\frac{u_n}{2} - 1} \quad u_1 = 14.5$$

Work out the values of u_2 and u_3

[2 marks]

$u_2 =$ _____

$u_3 =$ _____

12

Turn over ►

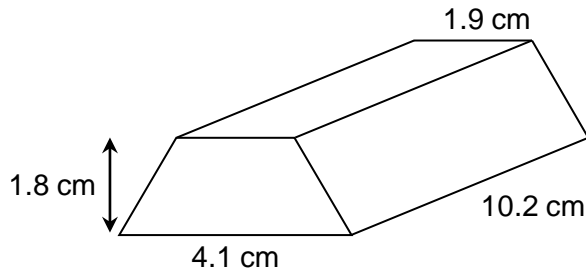




Do not write
outside the
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21

A gold collector is given a gold bar with a mass of exactly 1 kg.
The bar is shown below.



The bar is in the shape of a prism.

All measurements are recorded to 1 decimal place.

The density of pure gold is known to be 19.3 g/cm^3

Show that the gold collector can be sure that the bar is **not** made from pure gold.

You **must** show your working.

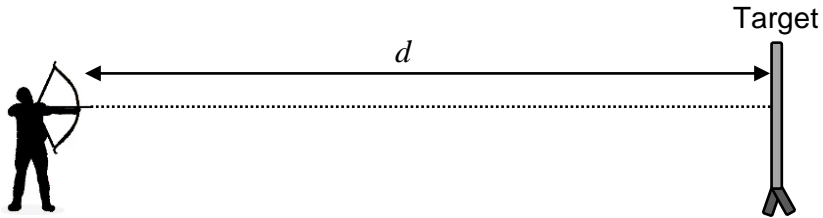
[5 marks]

Turn over ►



22 Robin is entering an archery competition.

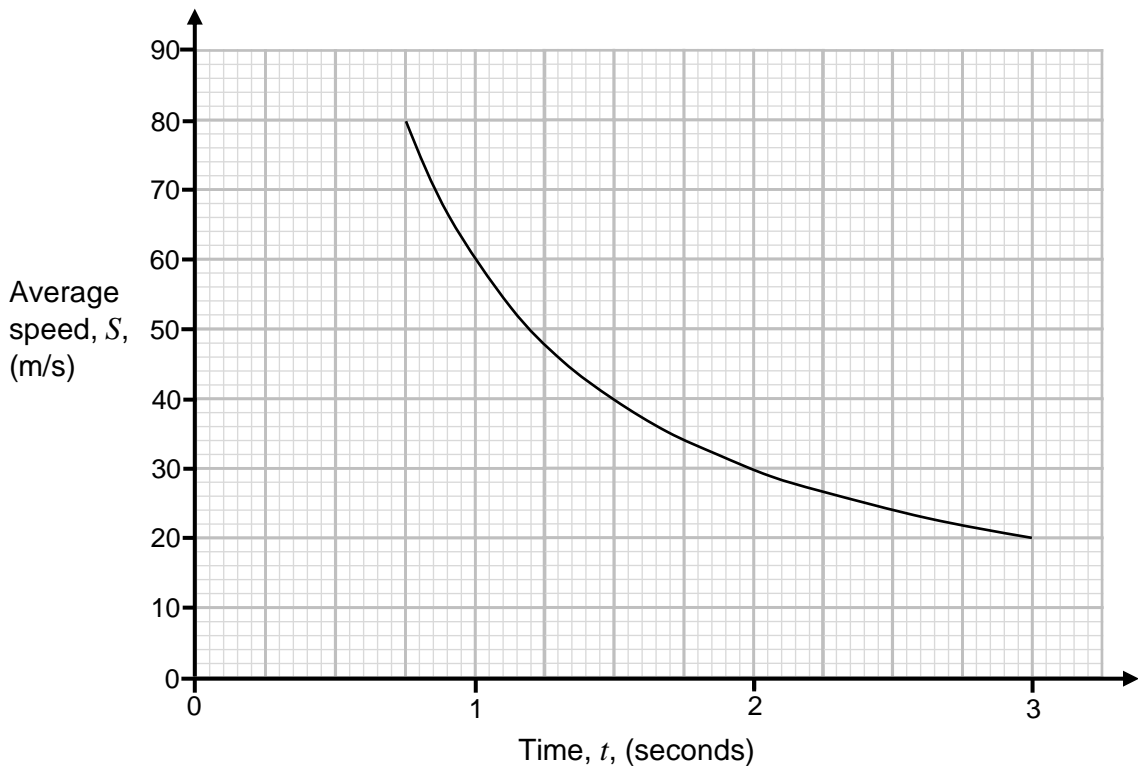
He must stand a fixed distance, d , away from a target then fire an arrow towards the target.



Robin assumes that his arrow will travel in a straight horizontal line.

Robin fires lots of arrows at different speeds and times how long they take to hit the target.

The graph below shows the average speeds, S , of the arrows and the times, t , that the arrows take to hit the target.

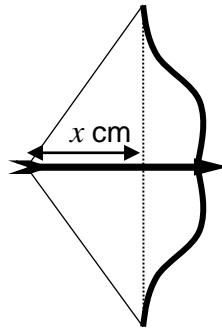


22 (a) Work out the value of d , the fixed distance that Robin stands from the target.

[2 marks]

$d =$ _____ metres

22 (b) When Robin fires an arrow he draws his bow strings back a distance x cm.



The distance x is directly proportional to the average speed of the arrow, S .
When $x = 60$ cm, $S = 80$ m/s

Find the time taken to hit the target when Robin draws the bow string back 36 cm.

[4 marks]

Answer _____ seconds

$\frac{\quad}{6}$

Turn over ►



