1st Class Maths

Video Solutions

SCAN ME

PRACTICE PAPER FOR

Edexcel Paper 3H (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 as well as careful analysis of the topics that have already appeared in paper 1/2. 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**.

Answer ALL questions

Write your answers in the spaces provided

You must write down all the stages in your working.

1 (a) Write 8.9×10^{-3} as an ordinary number.

.....

(1)

(b) Work out $\dfrac{4.8 \times 10^{3}}{6 \times 10^{4} \times 2.5 \times 10^{-8}}$

Give your answer in standard form.

.....

(2)

(Total for Question 1 is 3 marks)

2 (a) Expand and simplify $(x + 7)(x - 7)$

.....

(2)

(b) Solve $x^2 - 13x + 36 = 0$

.....

(3)

(Total for Question 2 is 5 marks)

3 (a) Find the Highest Common Factor (HCF) of 63 and 105

.....

(2)

(b) Find the Lowest Common Multiple (LCM) of 48 and 80

.....

(2)

(Total for Question 3 is 4 marks)

Turn over ▶

4 The table shows information about the prices of 55 ties for sale in a tie shop.

Price, (p £)	**Frequency**
$0 < p \leq 10$	21
$10 < p \leq 20$	8
$20 < p \leq 30$	9
$30 < p \leq 40$	8
$40 < p \leq 50$	7
$50 < p \leq 60$	2

(a) Find the class interval that contains the median price.

.....

(1)

The shopkeeper orders 6 more ties and prices them all at £9

The shopkeeper believes that the class interval containing the median price does not change when he includes these 6 extra ties.

(b) Is the shopkeeper correct? You must give a reason for your answer.

.....

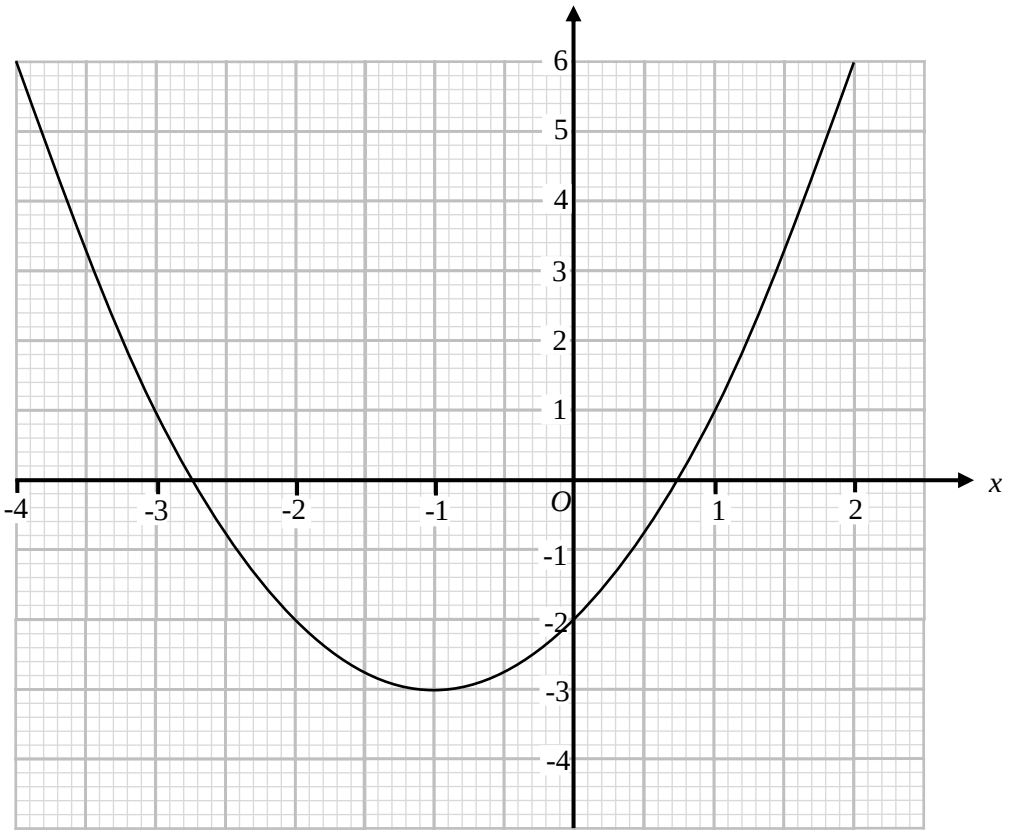
.....

.....

(2)

(Total for Question 4 is 3 marks)

5 The graph of $y = x^2 + 2x - 2$ is drawn on the grid.



(a) Write down the coordinates of the turning point of the graph.

(..... , ...)

(1)

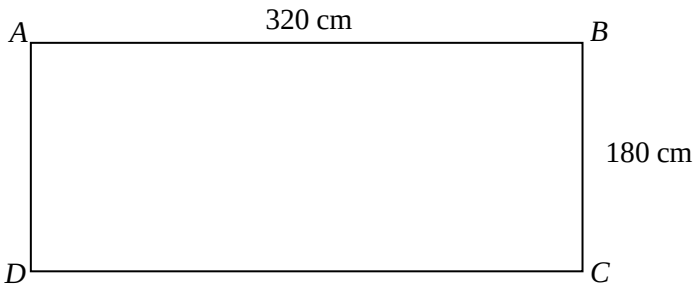
(b) Write down an estimate for the roots of the equation $x^2 + 2x - 2 = 0$

.....

(2)

(Total for Question 5 is 3 marks)

6 Here is a rectangle *ABCD*.



AB is increased by 12%
BC is reduced by x%

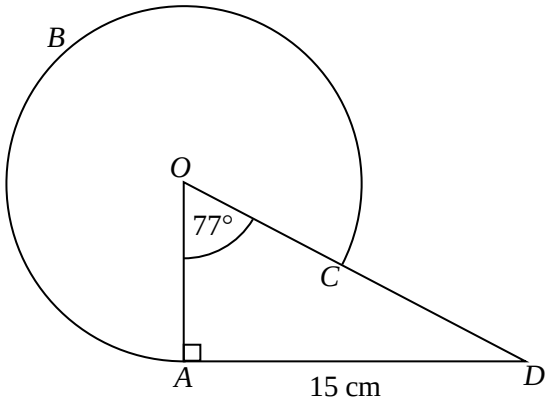
The area of the resulting rectangle is 48384 cm^2

Work out the value of x.

..... %

(Total for Question 6 is 4 marks)

7



A, *B* and *C* are points on an arc with centre *O*.
Triangle *ADO* is a right-angled triangle.
Angle *AOD* = 77°
AD = 15 cm

(a) Work out the length of *AO*.
Give your answer to 3 decimal places.

..... cm
(2)

(b) Work out the length of arc *ABC*.
Give your answer to 1 decimal place.

..... cm
(2)

(Total for Question 7 is 4 marks)

8 Ryan is going to sell some cupcakes at a local street party.
He asks a sample of 12 of his neighbours what their favourite flavour is.

The table shows information about his results.

Cupcake Flavour	Number of people
Lemon	4
Chocolate	7
Vanilla	1

Ryan expects to sell 300 cupcakes at the street party.

(a) Work out how many Lemon flavoured cupcakes Ryan should make.

.....

(2)

Ryan spends £40 on all the ingredients needed to make the 300 cupcakes.
He manages to sell all the cupcakes at a price of 25p.

(b) Work out Ryan's percentage profit.

..... %

(3)

(Total for Question 8 is 5 marks)

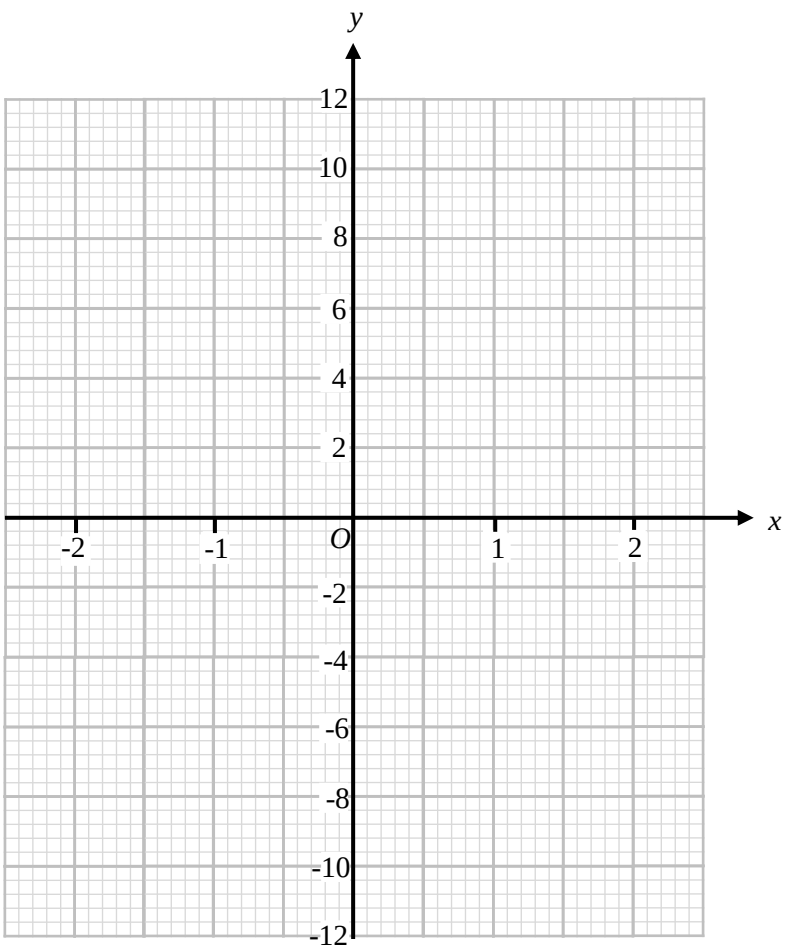
9 (a) Complete the table of values for $y = x^3 + 2x$

x	-2	-1	0	1	2
y					

(2)

(b) On the grid, draw the graph of $y = x^3 + 2x$ for values of x from -2 to 2

(2)



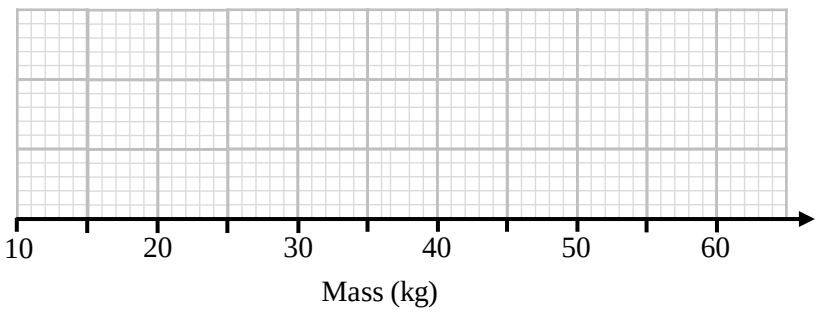
(Total for Question 9 is 4 marks)

10 The stem and leaf diagram below shows information about the masses of some goats on a farm.

1	8						
2	4	5	5	7	7	8	9
3	1	1	4	5	6		
4	3	3	4	5			
5	0	1					

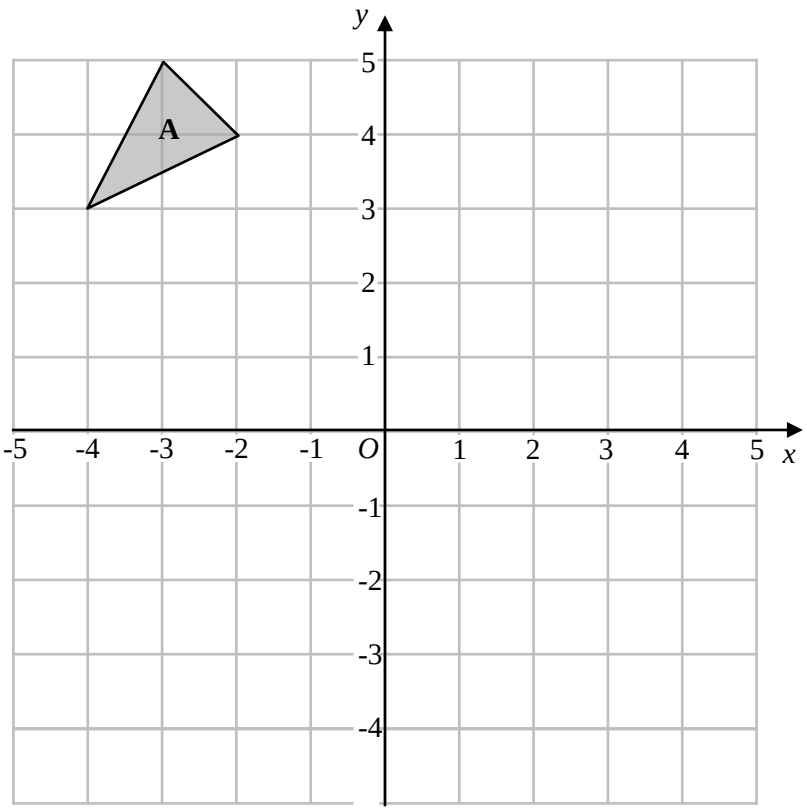
Key: 1 | 8 represents 18 kg

On the grid below, draw a box plot for the distribution of the masses of the goats.



(Total for Question 10 is 4 marks)

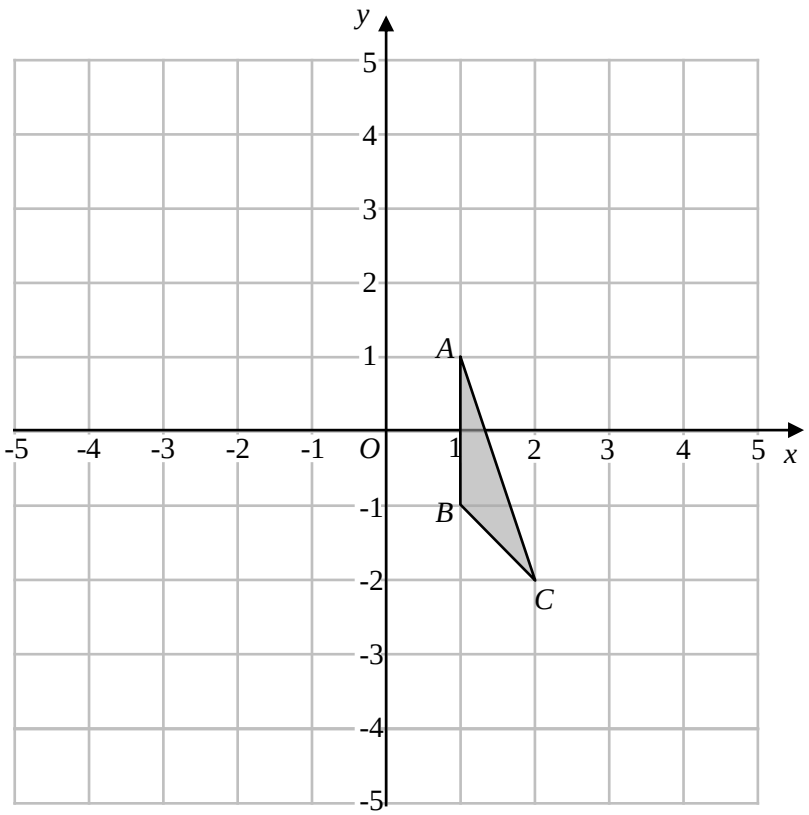
11



Enlarge Triangle **A** by a scale factor $-1\frac{1}{2}$ with centre of enlargement (-2, 1)
Label your image **B**.

(Total for Question 11 is 2 marks)

12



$A = (1,1)$
$B = (1, -1)$
$C = (2, -2)$

Triangle ABC is transformed.

(a) Describe a single transformation where exactly 2 of the points, A, B or C are invariant.

.....

.....

.....

(2)

(b) Describe another single transformation where exactly 2 of the points, A, B or C are invariant.

.....

.....

.....

(2)

(Total for Question 12 is 4 marks)

13 Using algebra, prove that $0.5\dot{3} \div 0.1\dot{6} = 3\frac{1}{5}$

(Total for Question 13 is 4 marks)

14 (a) Write $x^2 + 6x + 11$ in the form $(x + a)^2 + b$

.....

(2)

(b) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = x^2 + 6x + 11$

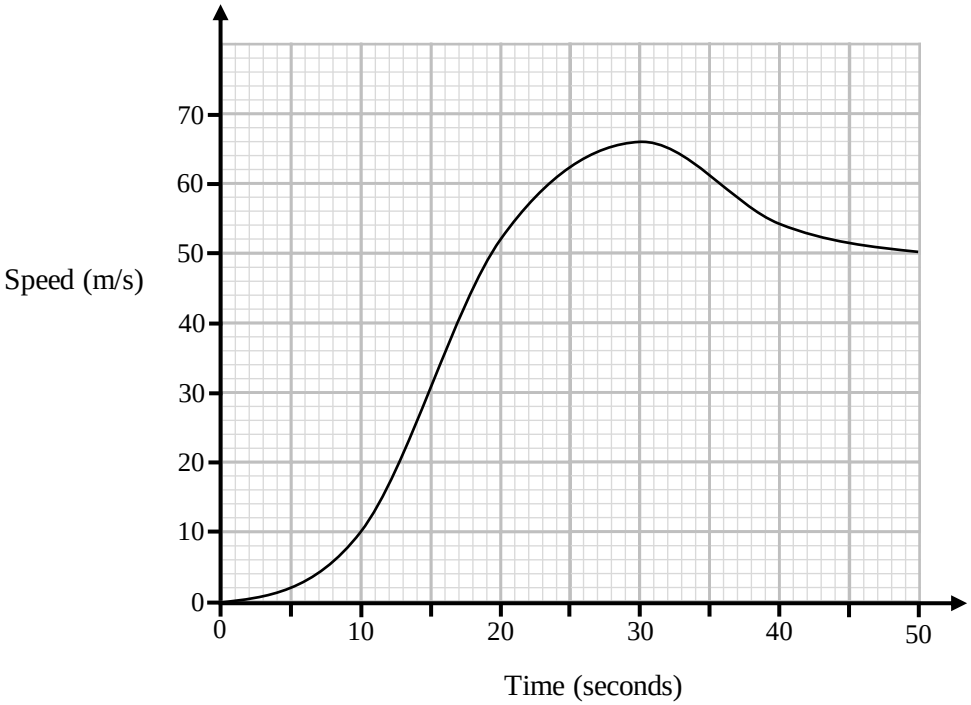
(..... , ...)

(1)

(Total for Question 14 is 3 marks)

15 A car moves from rest.

The graph gives information about the speed, v metres per second, of the car t seconds after it starts to move.



(a) Work out an estimate for the acceleration of the car at $t = 10$

..... m/s^2

(3)

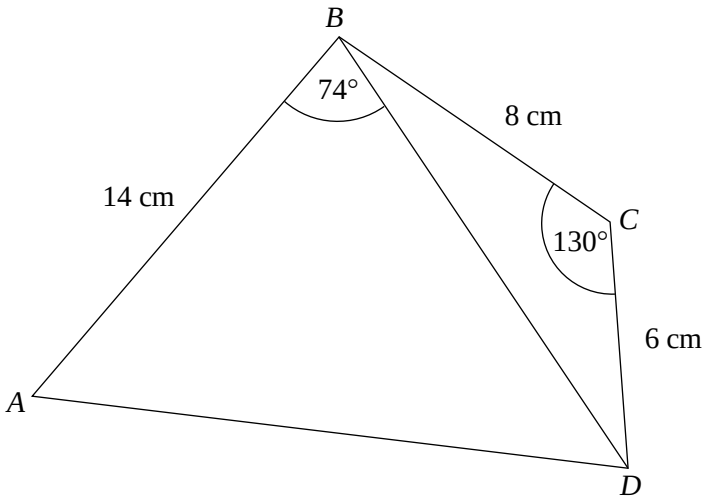
(b) Work out an estimate for the distance the car travels in the first 30 seconds of its journey.
Use 3 strips of equal width.

..... m

(3)

(Total for Question 15 is 6 marks)

16



ABCD is a quadrilateral.
AB = 14 cm
BC = 8 cm
CD = 6 cm

Angles *ABD* = 74°
Angle *BCD* = 130°

Work out the area of triangle *ABD*.
Give your answer to 1 decimal place.

..... cm^2

(Total for Question 16 is 4 marks)

17 Solve $\frac{1}{x-1} - \frac{2}{x+1} = \frac{3}{2}$

Give your answers to 3 significant figures.

.....

(Total for Question 17 is 5 marks)

18 A rocket is launched to space.
The height of the rocket above the surface n minutes after it is launched is h_n kilometres.

The height of the rocket $(n + 1)$ minutes after it is launched, h_{n+1} kilometres, is given by

$$h_{n+1} = K \times h_n + 8 \quad \text{where } K \text{ is a constant.}$$

The rocket is launched from the ground (0 km).
After 2 minutes the rocket reaches a height of 20.4 km.

Work out the average speed of the rocket during the first 4 minutes of the journey.
Give your answer in km/h.

..... km/h

(Total for Question 18 is 4 marks)

19 Prove algebraically that the difference between two consecutive cube numbers is always one more than a multiple of 3.

(Total for Question 19 is 5 marks)

20 Liquid **A** and Liquid **B** are stored in cans.

Density of Liquid **A** : Density of Liquid **B** = 4 : 3

Mass of Liquid **A** : Mass of Liquid **B** = 5 : 2

3 cans of Liquid **B** are mixed with 1 can of Liquid **A** to make Liquid **C**.

Work out

Density of Liquid **A** : Density of Liquid **C**

Give your answer in its simplest form.

.....

(Total for Question 20 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS