1st Class Maths

Video Solutions

SCAN ME

PRACTICE PAPER FOR

Edexcel Paper 3H (June 2024)

---------- Disclaimer ----------

This paper has been created based on the **most common** paper 3 topics from previous years and also careful analysis of what topics 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. Some topics may appear, some may not. Anybody giving you any sort of guarantee is misleading you. If any topics or questions from this paper do come up, this is just lucky guessing and nothing more. ☺

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

You can find a link to this paper and many more completely free resources at www.1stclassmaths.com

Answer ALL questions

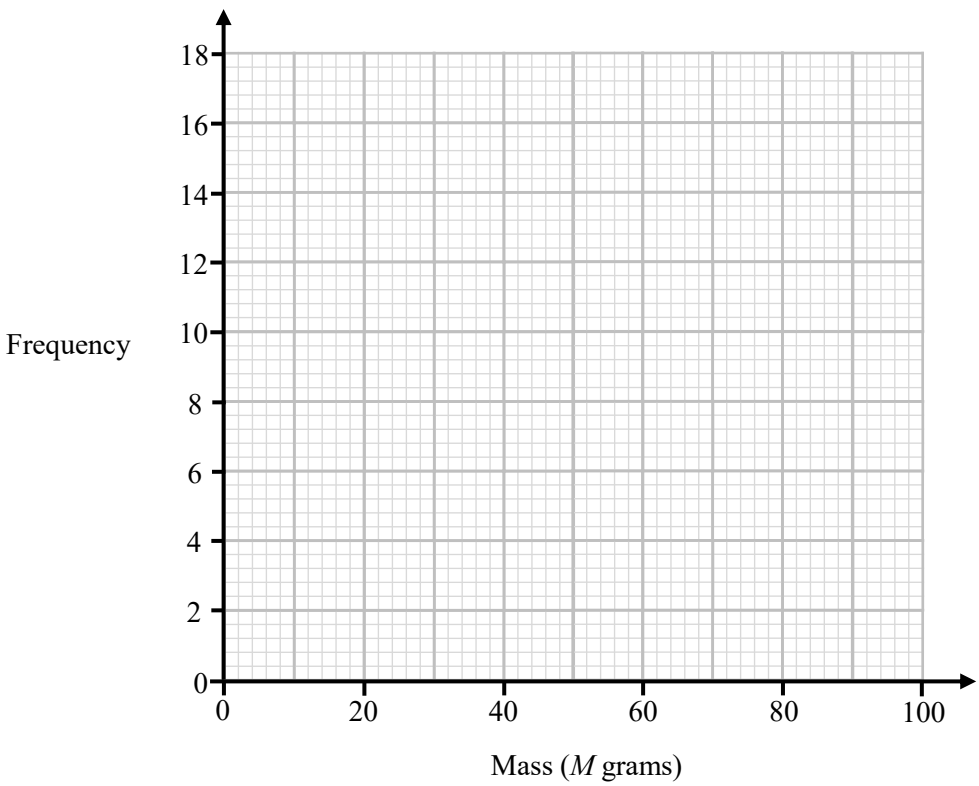
Write your answers in the spaces provided

You must write down all the stages in your working.

1 The table shows information about the mass, M grams, of 40 carrots in bag

Mass (M grams)	Frequency
$0 < M \leq 20$	2
$20 < M \leq 40$	5
$40 < M \leq 60$	8
$60 < M \leq 80$	16
$80 < M \leq 100$	9

On the grid, draw a frequency polygon for the information in the table.



(Total for Question 1 is 2 marks)

2 Work out $\dfrac{5.5 \times 10^3 + 4.5 \times 10^6}{1.8 \times 10^{-3}}$

Give your answer in standard form, correct to 2 significant figures.

.....

(2)

(Total for Question 2 is 2 marks)

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3 (a) Simplify $\dfrac{18a^{10}b^{15}}{6a^2b^{-3}}$

.....

(2)

(b) $(3^{30} \times 3^5)^{100} = 3^k$

Work out the value of k.

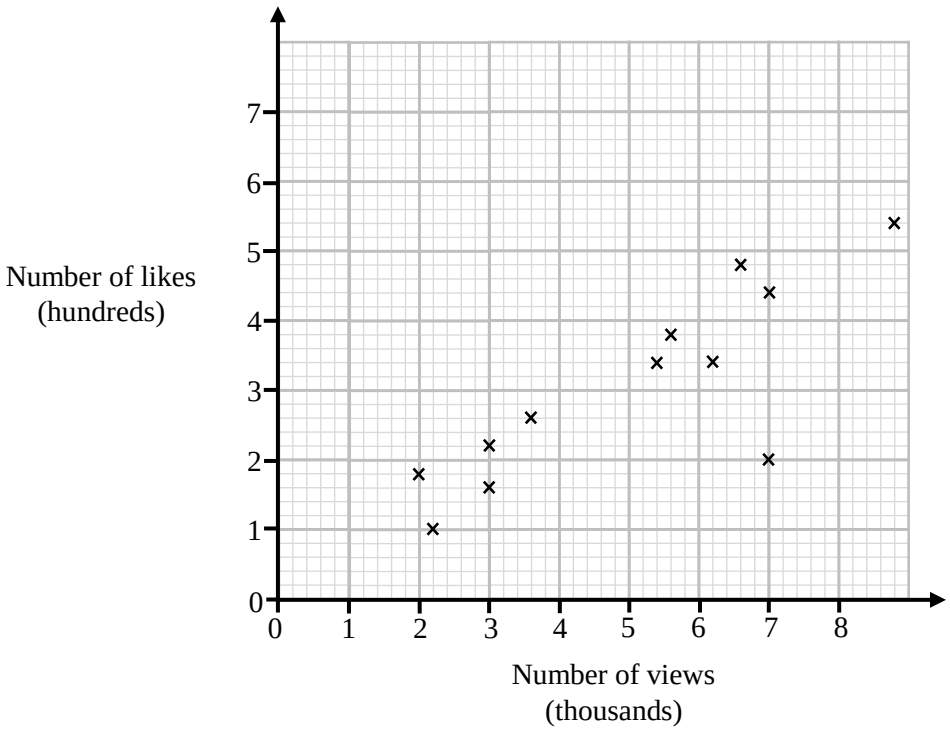
$k =$ .....

(2)

(Total for Question 3 is 4 marks)

Turn over ▶

4 The scatter graph shows number of likes and the number of views for 12 videos uploaded by a user to a TikTok account.



(a) One of the points plotted on the scatter graph is considered an outlier.
Circle this point.

(1)

(b) For all the other points write down the type of correlation.

.....

(1)

The user uploaded another video that receives 300 likes.

(c) Estimate the number of views that the video received.

..... views

(2)

(Total for Question 4 is 4 marks)

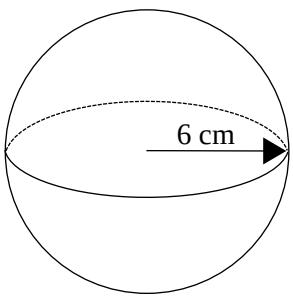
5 In 2022 Sammi had 3200 subscribers on YouTube.
In 2023 Sammi had 3760 subscribers on YouTube.

Work out the percentage increase in Sammi's subscribers between 2022 and 2023.

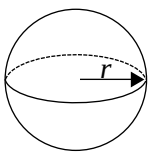
..... %

(Total for Question 5 is 3 marks)

6 The diagram shows a sphere with radius 6 cm
The sphere is made from metal with a density of 8 g/cm^3



Volume of a Sphere = $\frac{4}{3}\pi r^3$



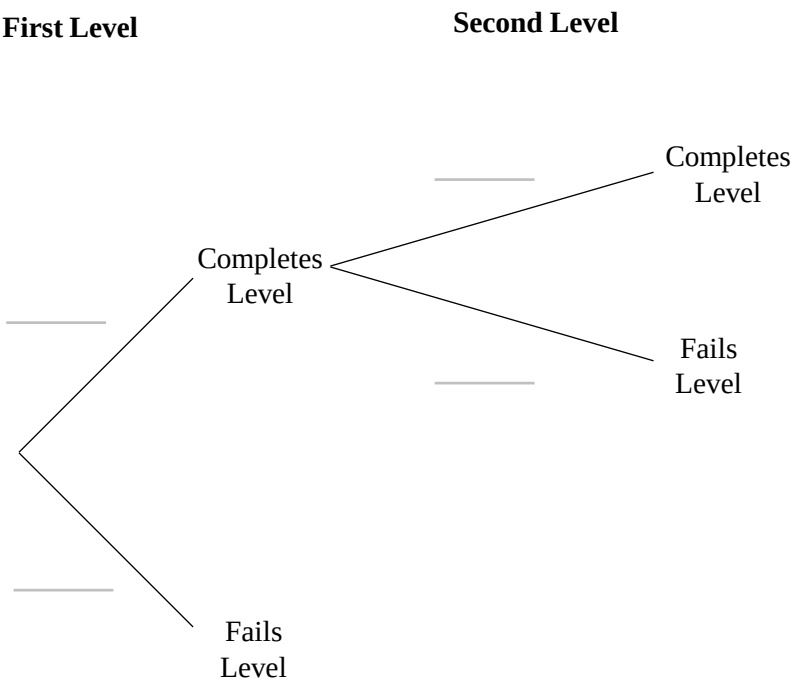
Work out the mass of the sphere.
Give your answer to 4 significant figures.

..... g

(Total for Question 6 is 4 marks)

7 Max is playing a computer game with two levels.
If Max completes the first level, he will be able to attempt the second level.
If Max fails the first level, he will not be able to attempt the second level.
Max estimates that his probability of completing the first level is 0.4
If Max gets to play the second level, he estimates his probability of completing it to be 0.3

(a) Complete the probability tree diagram



(2)

(b) Using Max's estimates work out the probability that he does not complete both levels.

.....

(2)

(Total for Question 7 is 4 marks)

8 Some of the ingredients needed to make 12 flapjacks are shown below.

For 12 flapjacks	
Oats	250 g
Butter	125 g
Sugar	125 g
Syrup	3 tablespoons

(a) Work out how much butter is needed to make 42 flapjacks.

..... g

(2)

Kian has 1.2 kg of butter.

(b) Work out the maximum number of flapjacks that Kian can make.
Assume that Kian has enough of each of the other ingredients.

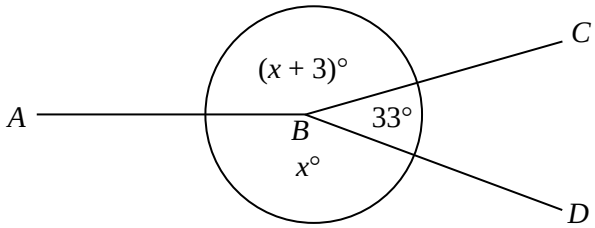
.....

(2)

(Total for Question 8 is 4 marks)

Turn over ▶

9 Two regular polygons share the side AB.



Angle ABC is the interior angle of a regular polygon with m sides.
Angle ABD is the interior angle of a regular polygon with n sides.

Work out the value of $m - n$

.....

(Total for Question 9 is 5 marks)

10 Some bacteria are placed into a Petri dish.

The number of bacteria in the dish is set to increase by 0.2% each day.

Show that after 1 year the number of bacteria in the Petri dish will have more than doubled.

(Total for Question 10 is 2 marks)

11 In Year 11 there are 4 maths classes.

Class A has 30 students
Class B has 28 students
Class C has x students
Class D has y students

There are 868 ways of selecting one student from class B and one student from class C.
There are 700 ways of selecting one student from class B and one student from class D.

Work out the number of ways of selecting one student from each of the four classes.

.....

(Total for Question 11 is 3 marks)

12 The equation of line $\mathbf{L_1}$ is $y = 5x + 1$
The equation of line $\mathbf{L_2}$ is $10y + 2x = 9$

Show that these two lines are perpendicular.

(Total for Question 12 is 2 marks)

13 (a) Factorise fully $2c^2 - 18d^2$

.....

(2)

(b) Simplify fully $\dfrac{3x^2 + 9x}{6x^2 + 6xy}$

.....

(2)

(Total for Question 13 is 4 marks)

14 The table below shows some information about the heights of giraffes in a safari park.

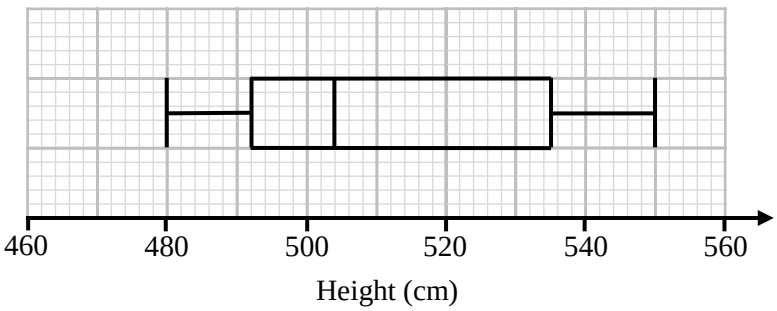
Shortest Giraffe	480 cm
Lower Quartile	492 cm
Median	502 cm
Upper Quartile	535 cm
Tallest Giraffe	550 cm

(a) What percentage of the giraffes are between 480 cm and 535 cm tall?

..... %

(1)

Richard draws a box plot of the information about the heights of the giraffes.



(b) Write down the mistake that Richard has made with his box plot.

.....

.....

.....

(1)

(Total for Question 14 is 2 marks)

15 $\frac{a}{5} = \frac{b}{6}$ $\frac{b}{c} = \frac{4}{9}$

Work out $a : b : c$

Give your answer in its simplest form.

.....

(Total for Question 15 is 3 marks)

16 $m = \sqrt{\frac{p - t}{r}}$

$p = 870$ (to 2 significant figures)
$t = 500$ (to 1 significant figure)
$r = 0.03$ (to 1 significant figure)

Work out the upper bound of m.
Give your answer to 6 significant figures.

.....

(Total for Question 16 is 4 marks)

17 (a) Show that the equation $x^3 - x - 9 = 0$ has a solution between $x = 2$ and $x = 3$

(2)

(b) Show that the equation $x^3 - x - 9 = 0$ can be rearranged to give $x = \sqrt[3]{x + 9}$

(1)

(c) Starting with $x_0 = 3$, use the iteration formula $x_{n+1} = \sqrt[3]{x_n + 9}$ three times to find an estimate for the solution of $x^3 - x - 9 = 0$

.....

(3)

(Total for Question 17 is 6 marks)

Turn over ▶

18 $f(x) = 80x^2$ $\quad g(x) = \dfrac{x-1}{5-2x}$

(a) Work out fg(1.5)

.....

(2)

(b) Find $g^{-1}(x)$

$g^{-1}(x) =$ .....

(3)

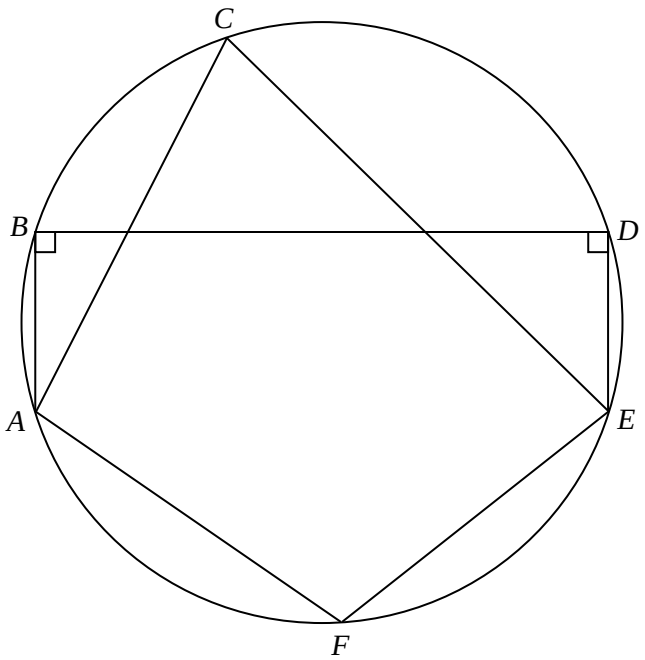
(Total for Question 18 is 5 marks)

19 Solve $\dfrac{2}{2x+3} + \dfrac{3}{x-2} = 1$

.....

(Total for Question 19 is 4 marks)

20 *A*, *B*, *C*, *D*, *E* and *F* are points on the circumference of a circle.



Angle *ABD* = Angle *EDB* = 90°

Angle *BAC* : Angle *CED* : Angle *AFE* = 3 : 5 : 12

Work out the size of angle *AFE*.

°

.....

(Total for Question 20 is 4 marks)

21 A stationary race car begins to accelerate from a start line.

The distance the racing car has travelled n seconds after it begins to accelerate is d_n metres.

The distance $(n + 1)$ seconds after it begins to accelerate, d_{n+1} metres, is given by

$$d_{n+1} = K \times d_n + 10 \quad \text{where } K \text{ is a constant.}$$

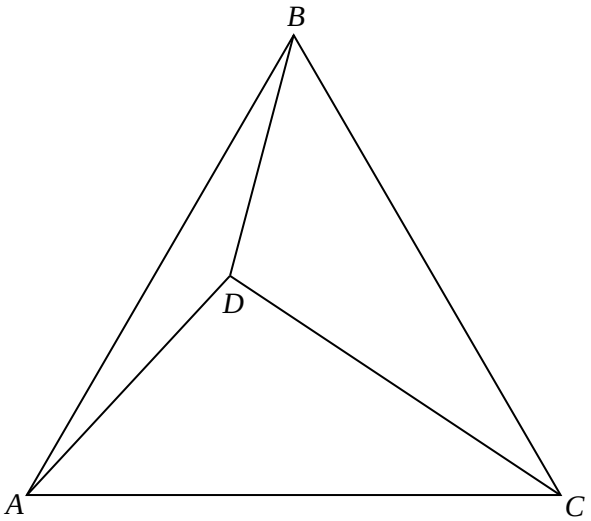
The racing car travels 23 metres in the first 2 seconds after it begins to accelerate.

Work out the average speed of the race car during the first 5 seconds after it begins to accelerate.
Give your answer in m/s.

..... m/s

(Total for Question 21 is 4 marks)

22 *ABC* is an equilateral triangle.



AB = 18 cm
BD = 8 cm
Angle *ABD* = 15°

Work out the area of triangle *ADC*.
Give your answer to 3 significant figures.

..... cm^2

(Total for Question 22 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS