



Class  
Maths

Video Solutions



# PRACTICE PAPER FOR

## Edexcel Paper 1H (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 1 topics from previous years. Due to the nature of some topics they are better suited to paper 1 as if you had a calculator they would no longer be difficult to do. 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

## ----- INFORMATION FOR TEACHERS -----

**You will want to remove this page before printing to ensure that questions across a double page print in the correct places.**

This paper been produced with careful analysis from previous papers.

The **Series** percentage below shows the percentage of times that this topic came up across a whole set of 3 papers. Some topics tend to appear almost every year in at least one paper.

The **Paper 1** percentage below shows the percentage of times that this topic came up specifically in the non calculator paper. As expected certain topics favour paper 1 over paper 2/3

I hope you find this data interesting/useful!

Topic	Series	Paper 1	Question(s)
Prime Factorisation	50%	40%	1
HCF/LCM	60%	30%	1
Index Laws	100%	100%	2, 11, 18
Application of Ratio	90%	40%	3,8
% of an amount OR %increase/decrease	80%	40%	3
Quadratic Graphs	90%	40%	4
Form Equation/Formula from Context	80%	60%	5
Solve Quadratic Equation by Factorising	70%	50%	5
Estimation	60%	50%	6
Volume of a 3D Shapes	90%	50%	6, 21
Speed, Distance, Time	90%	40%	7
Averages and the Range	80%	50%	8
Algebraic Fractions	90%	70%	9, 19
Special Types of Graphs	70%	40%	10
Probability of Successive Events	100%	70%	12
Fraction Operations	60%	60%	13
Recurring Decimals to Fractions	80%	50%	13
Parallel and Perpendicular Lines	70%	40%	14
Transformations	90%	50%	15
Complete the Square	70%	40%	16
Algebraic Proof	70%	50%	17
Functions	90%	50%	18
Proportionality	100%	70%	20
Surds	80%	80%	20, 21
Write as a Ratio	60%	40%	21

**Answer ALL questions**

**Write your answers in the spaces provided**

**You must write down all the stages in your working.**

**1** (a) Write 96 as a product of its prime factors.

.....  
(2)

(b) Find the highest common factor (HCF) of 72 and 96

.....  
(2)

**(Total for Question 1 is 4 marks)**

2 (a) Find the value of  $2^{-4}$

.....  
(1)

(b) Write  $(4^{10} \div 4^{-2})^5$  as a power of 4

.....  
(2)

**(Total for Question 2 is 3 marks)**

3 A cinema has 400 seats.

A film is shown at 5pm and at 7pm with two types of tickets available, adult and child.

At the 5pm showing of the film

- The ratio of tickets sold to adults to tickets sold to children is 5 : 3
- 120 tickets are sold to children.

At the 7pm showing of the film

- The number of adult tickets sold is 15% less than at 5pm
- The number of child tickets sold is 10% more than at 5pm

Show that at the 7pm showing more than  $\frac{3}{4}$  of the seats are used.

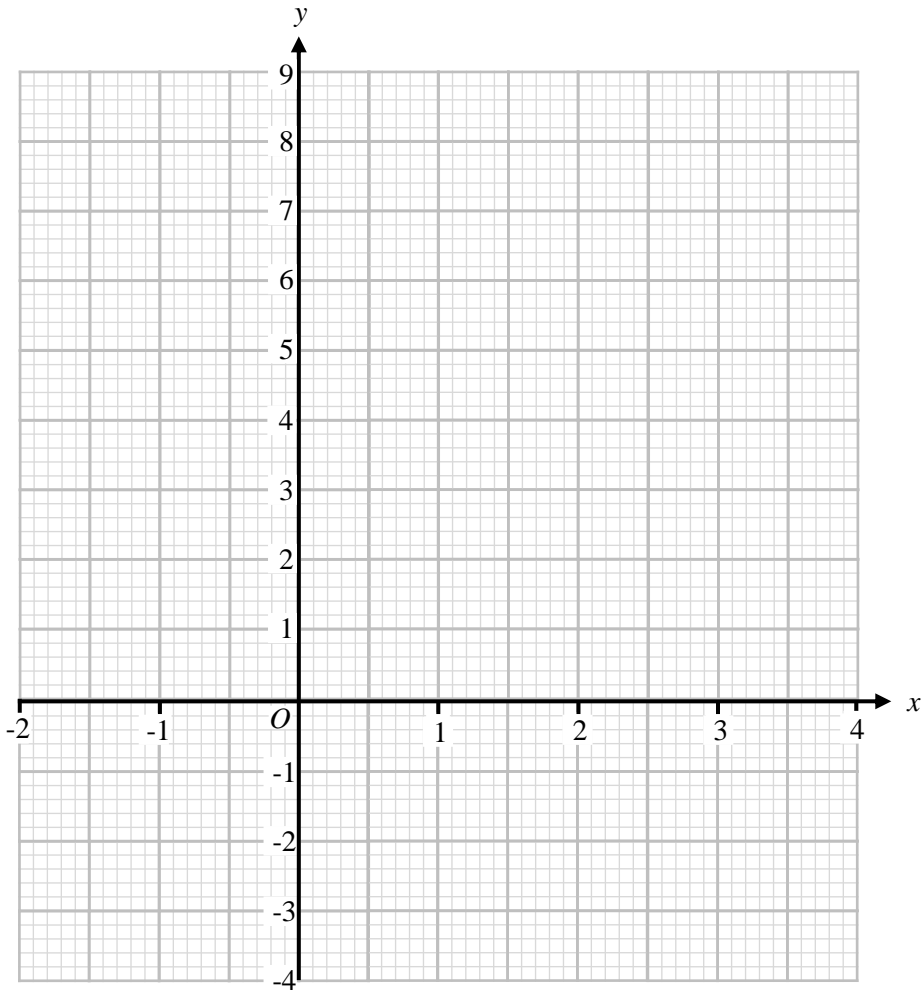
**(Total for Question 3 is 4 marks)**

4 (a) Complete the table of values for  $y = x^2 - 2x - 1$

$x$	-2	-1	0	1	2	3	4
$y$		2			-1	2	

(2)

(b) On the grid, draw the graph of  $y = x^2 - 2x - 1$  for values of  $x$  from -2 to 4



(2)

(c) Use the graph to estimate the solutions to  $x^2 - 2x - 1 = 3$

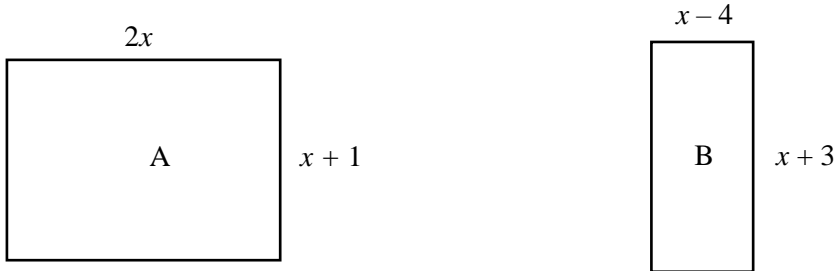
.....

(2)

(Total for Question 4 is 6 marks)



5 Two rectangles are shown below.



Area of rectangle A =  $3 \times$  Area of rectangle B

(a) Show that  $x^2 - 5x - 36 = 0$

(b) Solve  $x^2 - 5x - 36 = 0$

(3)

.....  
(2)

**(Total for Question 5 is 5 marks)**

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6 The height of a cylinder is 22 cm  
The radius of the cylinder is 5.04 cm

(a) Find an estimate for volume of the cylinder.

..... cm<sup>3</sup>  
(3)

(b) Is your answer to part (a) an underestimate or an overestimate?  
You must give a reason for your answer.

.....  
.....  
.....

(1)

**(Total for Question 6 is 4 marks)**

7 Travis leaves his house at 10 00 and drives 60 miles from his house to his friend's house at an average speed of 45 mph.

He stays at his friends house for a while and then drives the same route back home at an average speed of 50 mph.

He arrives back home at 13 14

How many minutes did he spend at his friend's house?

..... minutes

**(Total for Question 7 is 4 marks)**



8 40 students were asked how many hours they spent revising each week.

Some of the students selected were in Year 10 and the rest were in Year 11.  
The ratio of students selected from Year 10 to those from Year 11 is 5 : 3

The mean amount of time spent revising each week for all 40 students was 7 hours.

The mean amount of time that Year 11 students spent revising each week is 8 hours more than the mean amount of time Year 10 students spent revising.

Work out the mean amount of time that Year 11 students spent revising each week.

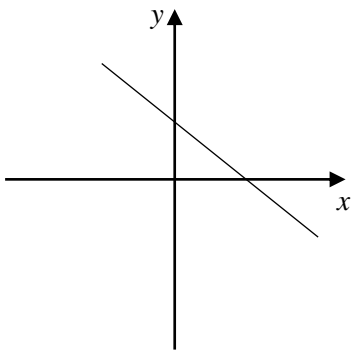
..... hours  
(Total for Question 8 is 4 marks)

9 Simplify fully  $\frac{6x^2}{(x+4)^2} \times \frac{1}{x} \div \frac{3}{x+4}$

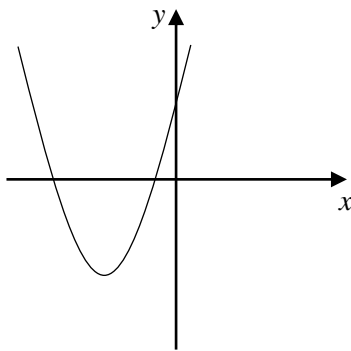
.....  
(Total for Question 9 is 2 marks)



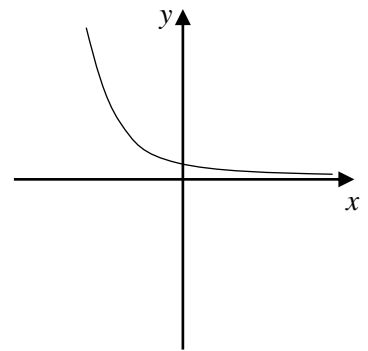
10 Here are some graphs



Graph A



Graph B



Graph C

Here is a table showing some equations.

$y = 10 + x$	$y = x^2 - 7x - 6$	$y = 2^x$
$y = 10 - x$	$y = x^2 - 7x + 6$	$y = -2^x$
$y = x - 10$	$y = x^2 + 7x + 6$	$y = 2^{-x}$

(a) Write down an equation from the table above that could be the equation of graph A.

.....  
(1)

(b) Write down an equation from the table above that could be the equation of graph B.

.....  
(1)

(c) Write down an equation from the table above that could be the equation of graph C.

.....  
(1)

(Total for Question 10 is 3 marks)

11 (a) Simplify  $(4x \times 2x^5)^{\frac{1}{3}}$

.....  
(2)

(b) Find the value of  $\left(\frac{25}{4}\right)^{-\frac{3}{2}}$

.....  
(2)

**(Total for Question 11 is 4 marks)**

12 A biased coin is thrown twice.  
The probability that both throws are tails is 0.09

Calculate the probability that at least one of the two throws is a tails.

.....  
**(Total for Question 12 is 3 marks)**

13 Work out  $2\frac{1}{3} \div 0.7\dot{3}$

Give your answer as a mixed number.

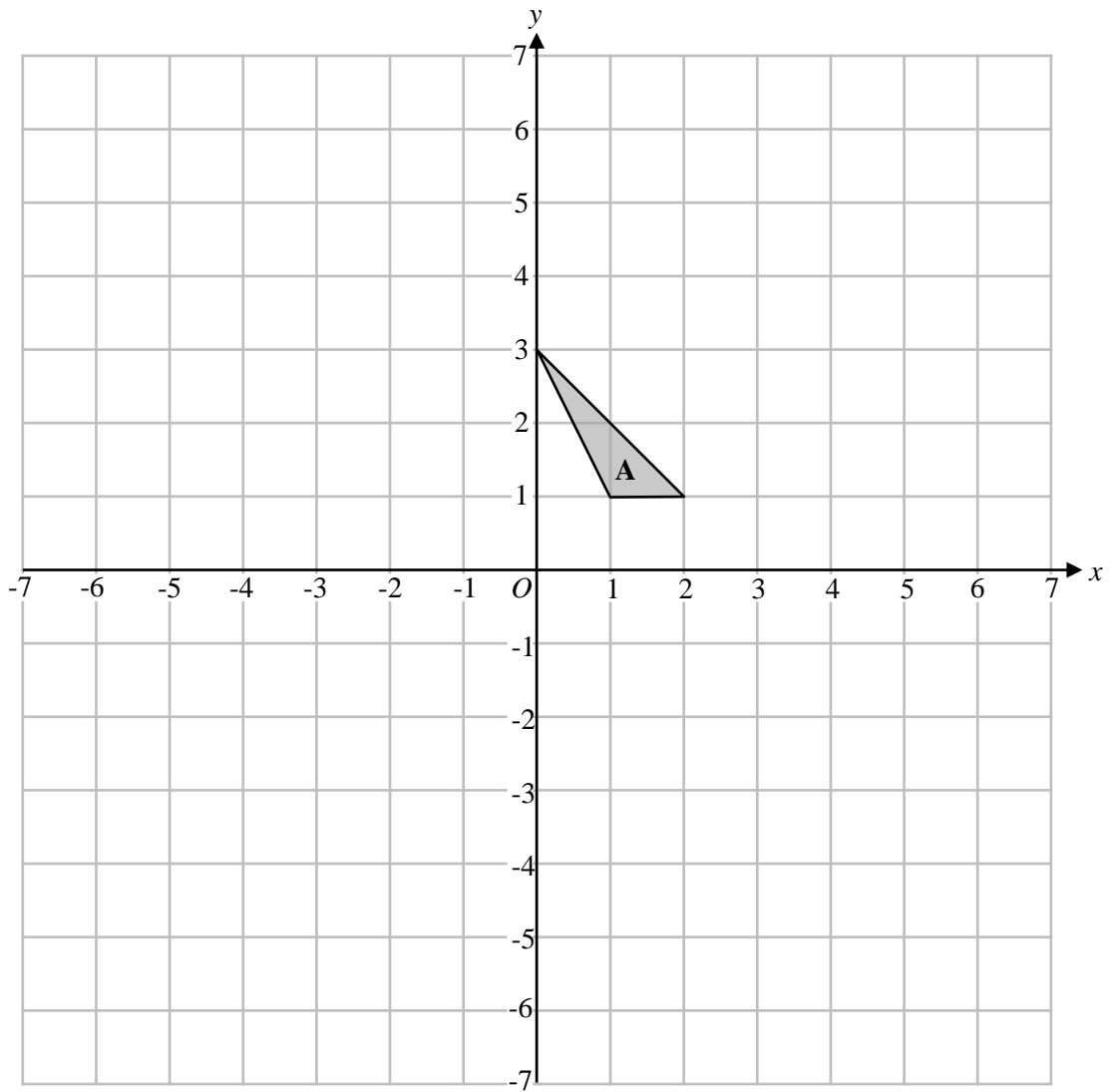
.....  
(Total for Question 13 is 4 marks)

14 The straight line  $L_1$  has the equation  $2y = 6x - 9$   
The point  $A$  has coordinates  $(1.5, 2)$   
The point  $B$  has coordinates  $(0, k)$

The straight line  $L_2$  is perpendicular to line  $L_1$  and passes through points  $A$  and  $B$ .  
Work out the value of  $k$

.....  
(Total for Question 14 is 3 marks)

15



Enlarge shape A by scale factor  $-3$  with centre of enlargement  $(0, 1)$ .  
Label your image B.

(Total for Question 15 is 2 marks)

**16**  $x^2 + 8x + 7 = (x + a)^2 - b$

(a) Find the value of  $a$  and  $b$ .

$a =$  .....

$b =$  .....  
(2)

(b) Write down the coordinates of the turning point of the graph of  $y = x^2 + 8x + 7$

(.....,.....)  
(1)

**(Total for Question 16 is 3 marks)**

**17**  $n$  is a positive integer

Prove that  $(3n - 2)^2 - (n^2 - 1)$  is an odd number.

**(Total for Question 17 is 3 marks)**

18 The functions  $f$  and  $g$  are such that

$$f(x) = 3^x \quad \text{and} \quad g(x) = 2x - 1$$

(a) Find  $gf(2)$

(b) Solve  $fg(x) = \frac{1}{9}$

.....  
(2)

.....  
(3)

**(Total for Question 18 is 5 marks)**

19 Solve  $\frac{5}{x-2} + \frac{8}{x-3} = 3$

.....  
(Total for Question 19 is 4 marks)

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**20**  $r$  is directly proportional to  $p$

When  $r = 9$  ,  $p = \sqrt{2}$

$p$  is inversely proportional to  $y^3$

When  $p = 0.5$  ,  $y = 2$

Show that when  $y = \sqrt{6}$  ,  $r = \tan(60^\circ)$

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**(Total for Question 20 is 5 marks)**



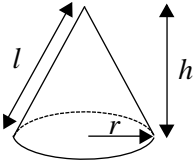
**21** A cone has a radius of  $1 + \sqrt{3}$  cm and a perpendicular height of  $2 - \sqrt{3}$  cm

A sphere has radius 2 cm.

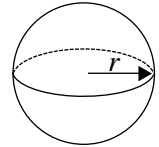
The volume of the sphere to the volume of the cone can be written in the form  $n : 1$

Work out the value of  $n$

Volume of a cone =  $\frac{1}{3} \pi r^2 h$



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



$n = \dots\dots\dots$

**(Total for Question 21 is 5 marks)**

**TOTAL FOR PAPER IS 80 MARKS**

