Write your name here

Surname	Other names

Pearson Edexcel

Level 1/Level 2 GCSE (9-1)

Mathematics

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Hannah Kettle MATHS TUTORIALS

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Higher Tier

Half Past Paper – Week 4

Total Marks

Q	Topic		Sparx Code
2a	Finding the LCM, Finding the LCM using prime factor decomposition	2	U751,U250
2b	Finding the HCF using prime factor decomposition	1	U250
4	Finding percentages of amounts with a calculator, Writing and simplifying ratios	5	U349,U687
6	Calculating with pressure	3	U527
8	Sample space diagrams, Frequency trees, Venn diagrams	4	U104,U280,U476
10a	Understanding column vectors	1	U632
10b	Understanding column vectors	2	U632
12	Graphs of direct and inverse proportion	2	U238
14	Estimating gradients of non-linear graphs using tangents	3	U800
16a	Equations of circles and tangents	2	U567
16b	Solving simultaneous equations involving quadratics graphically	3	U875
18	Trigonometry in 3D shapes	4	U170
20a	Rationalising denominators containing two terms	1	U281
20b	Rationalising denominators containing a single term	1	U707
	Total	34	

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

2 (*a*) Find the lowest common multiple (LCM) of 40 and 56

.....

(**2**)

$A = 2^3 \times 3 \times 5$ $B = 2^2 \times 3 \times 5^2$

(*b*) Write down the highest common factor (HCF) of *A* and *B*.

.....

(**1**)

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

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4 Raya buys a van for £8500 plus VAT at 20%

Raya pays a deposit for the van.
She then pays the rest of the cost in 12 equal payments of £531.25 each month.

Find the ratio of the deposit Raya pays to the total of the 12 equal payments.
Give your answer in its simplest form.

.....

(**Total for Question 4 is 5 marks**)

6 A force of 70 newtons acts on an area of 20 cm^2

The force is increased by 10 newtons.
The area is increased by 10 cm^2

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Helen says,

"The pressure decreases by less than 20%"

Is Helen correct?
You must show how you get your answer.

(**Total for Question 6 is 3 marks**)

8 60 people were asked if they prefer to go on holiday in Britain or in Spain or in Italy.

38 of the people were male.
11 of the 32 people who said Britain were female.
8 males said Italy.
12 people said Spain.

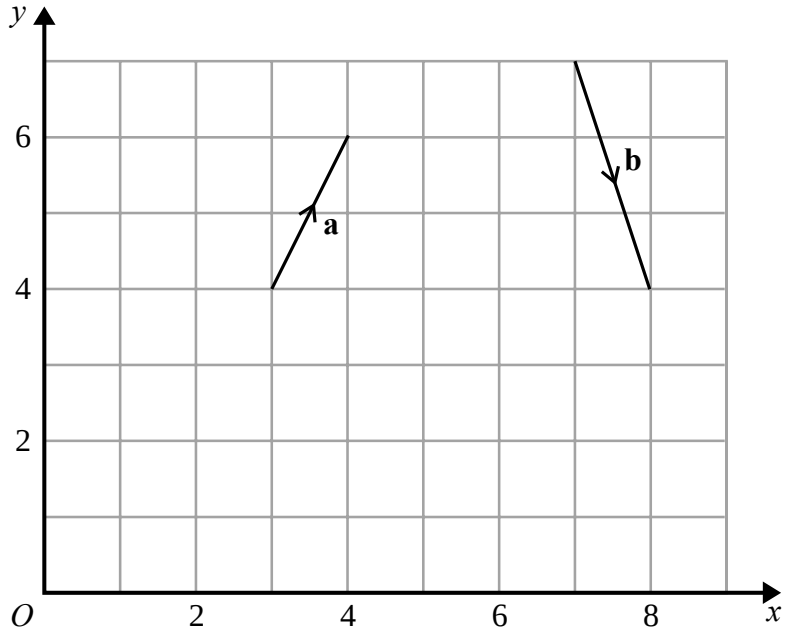
One of the females is chosen at random.

What is the probability that this female said Spain?

.....

(**Total for Question 8 is 4 marks**)

10 The vector **a** and the vector **b** are shown on the grid.



(*a*) On the grid, draw and label vector –2**a**

(1)

(*b*) Work out **a** + 2**b** as a column vector.

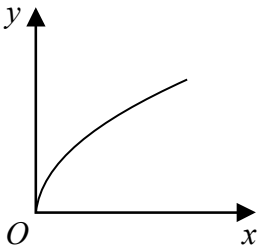
$$\begin{pmatrix} \cdots\cdots \\ \cdots\cdots \end{pmatrix}$$

(2)

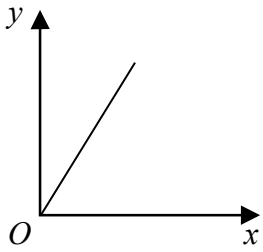
(Total for Question 10 is 3 marks)

12

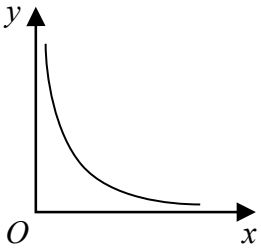
Graph A



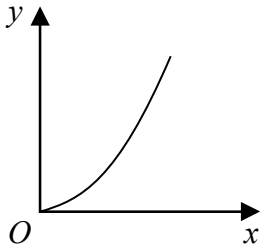
Graph B



Graph C



Graph D



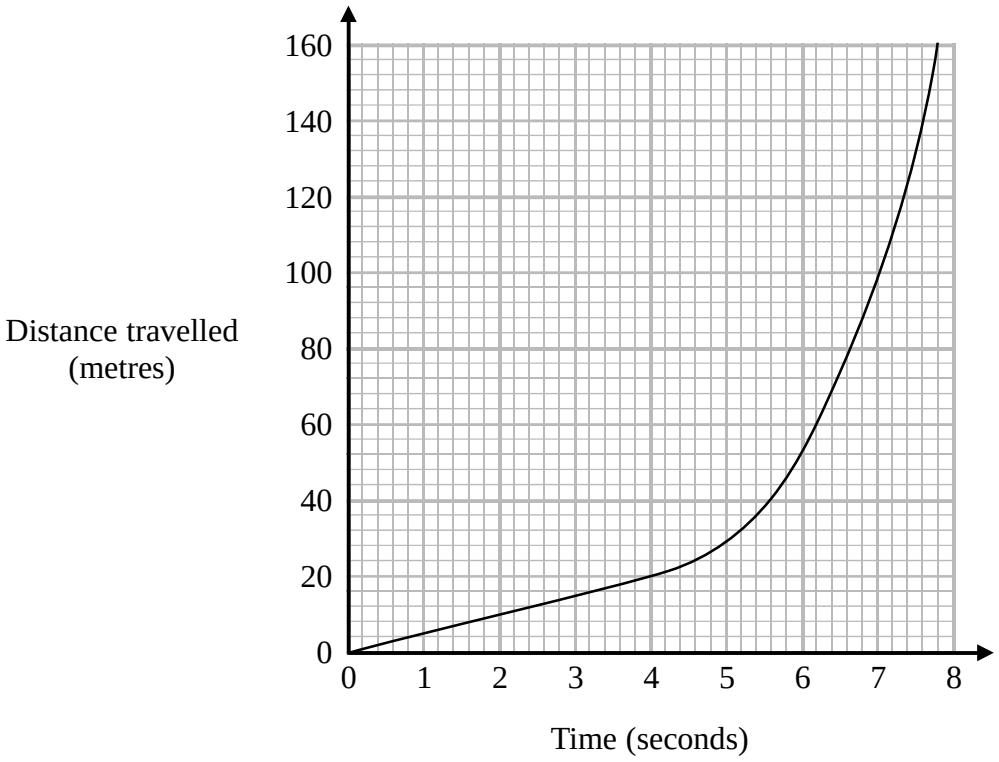
The graphs of y against x represent four different types of proportionality.

Match each type of proportionality in the table to the correct graph.

Type of proportionality	**Graph letter**
$y \propto x$	
$y \propto x^2$	
$y \propto \sqrt{x}$	
$y \propto \frac{1}{x}$	

(**Total for Question 12 is 2 marks**)

14 The distance-time graph shows information about part of a car journey.

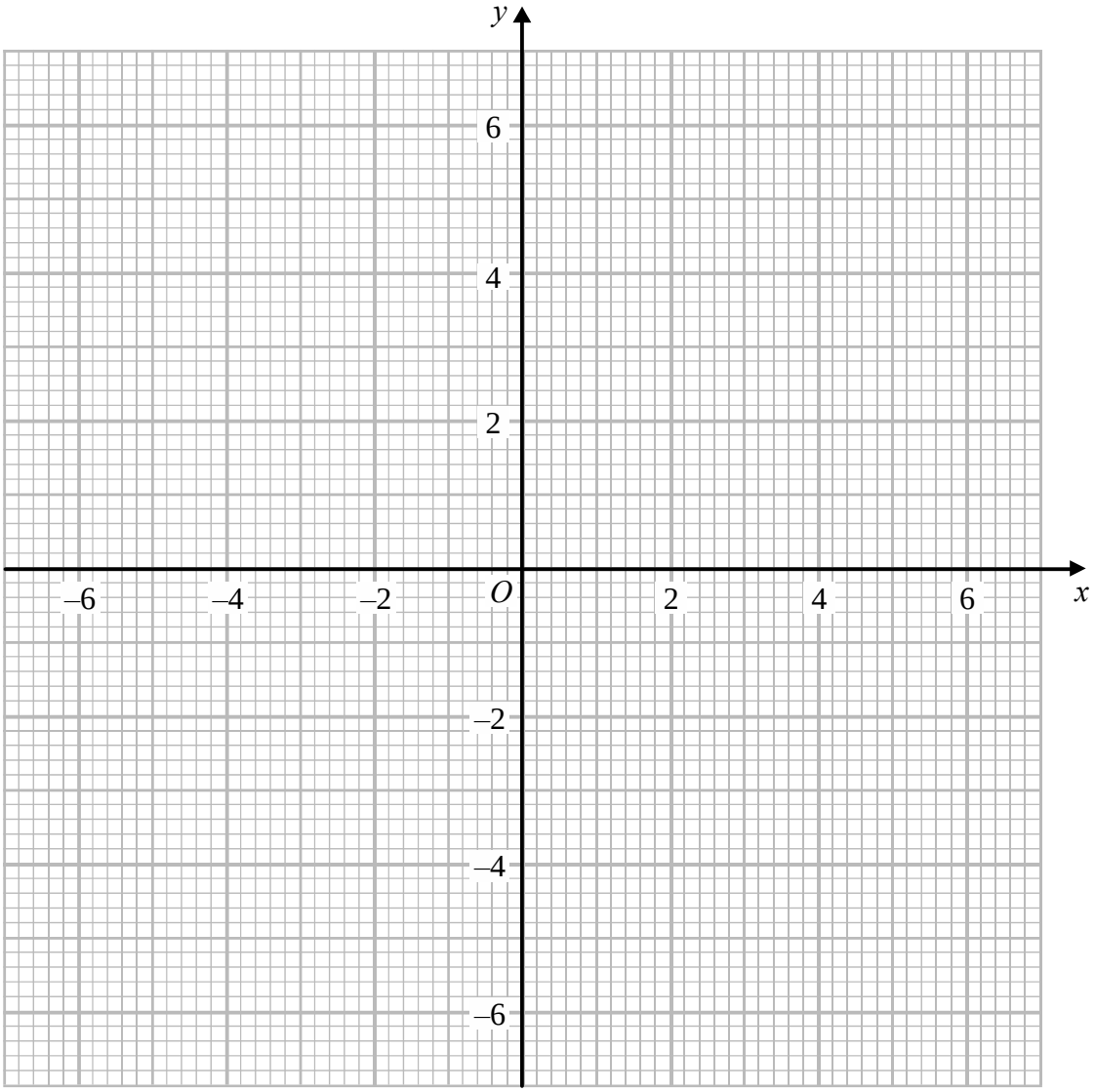


Use the graph to estimate the speed of the car at time 5 seconds.

..... m/s

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

16 (*a*) On the grid, draw the graph of $x^2 + y^2 = 12.25$



(2)

(*b*) Hence find estimates for the solutions of the simultaneous equations

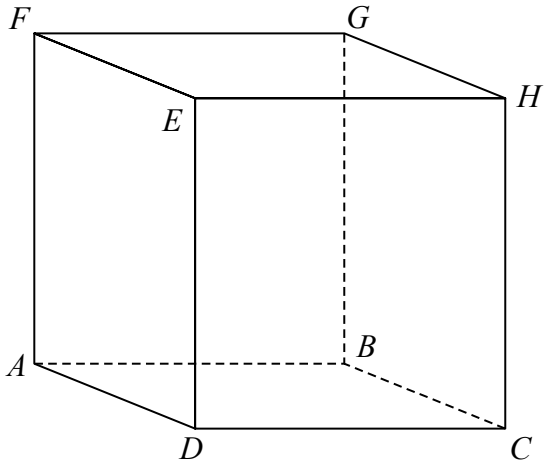
$$x^2 + y^2 = 12.25$$
$$2x + y = 1$$

.....

(3)

(Total for Question 16 is 5 marks)

18 *ABCDEFGH* is a cuboid.



AB = 7.3 cm
CH = 8.1 cm
Angle *BCA* = 48°

Find the size of the angle between *AH* and the plane *ABCD*.
Give your answer correct to 1 decimal place.

..... °

(**Total for Question 18 is 4 marks**)

20 Martin did this question.

Rationalise the denominator of $\frac{14}{2+\sqrt{3}}$

Here is how he answered the question.

$$\frac{14}{2+\sqrt{3}} = \frac{14\times(2-\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})}$$

$$= \frac{28-14\sqrt{3}}{4+2\sqrt{3}-2\sqrt{3}+3}$$

$$= \frac{28-14\sqrt{3}}{7}$$

$$= 4-2\sqrt{3}$$

Martin's answer is wrong.

(*a*) Find Martin's mistake.

.....

.....

(1)

Sian did this question.

Rationalise the denominator of $\frac{5}{\sqrt{12}}$

Here is how she answered the question.

$$\frac{5}{\sqrt{12}} = \frac{5\sqrt{12}}{\sqrt{12}\times\sqrt{12}}$$

$$= \frac{5\times3\sqrt{2}}{12}$$

$$= \frac{5\sqrt{2}}{4}$$

Sian's answer is wrong.

(*b*) Find Sian's mistake.

.....

.....

(1)

(Total for Question 20 is 2 marks)

TOTAL FOR PAPER IS 34 MARKS