

The Holy Family

Catholic School

a voluntary academy



YEAR 11 PAZ 3 April 2024

Student Name _____

Candidate Number _____

Subject Teacher _____

Form _____

Subject: Mathematics

Level: Higher GCSE

Title of Paper: Paper 2 Calculator Allowed

Duration of Paper: 1 hour and 30 minutes

Head of Faculty: Mrs Charlton

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Expand and simplify $3(2y - 5) + 7(y + 2)$

.....
(2)

(b) Factorise fully $6x^2 + 15x$

.....
(2)

(c) Make g the subject of the formula $f = 3g + 11$

.....
(2)

(Total for Question 1 is 6 marks)

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2 Karen is organising a party for a charity.

She spends

£100 on food

£120 on a hall

£80 on a DJ.

Karen sells 54 tickets for the party.

Each ticket costs £7.50

Work out the percentage profit Karen makes for the charity.

.....%

(Total for Question 2 is 4 marks)



- 3 Andrew invests £4500 in a savings account for 2 years.
The account pays compound interest at a rate of 3.4% per year.

Calculate how much Andrew has in this savings account at the end of the 2 years.

£.....

(Total for Question 3 is 2 marks)

- 4 Solve $5x - 14 = 52 - x$

$x =$

(Total for Question 4 is 3 marks)



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- 5 Chris, Debbie and Errol share some money in the ratio 3 : 4 : 2
Debbie gets £120

Chris then gives some of his share to Debbie and some of his share to Errol.
The money that Chris, Debbie and Errol each have is now in the ratio 2 : 5 : 3

How much money did Chris give to Errol?

£.....

(Total for Question 5 is 4 marks)

- 6 The bearing of port *B* from port *A* is 147°
Work out the bearing of port *A* from port *B*.

o

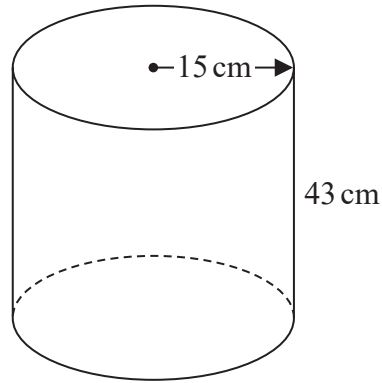
.....

(Total for Question 6 is 2 marks)



P 6 9 5 3 4 A 0 5 2 0

- 7 The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.

Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

..... minutes

(Total for Question 7 is 4 marks)



8 A number x is written correct to 2 significant figures.

The result is 1.9

Complete the error interval for x .

..... $\leq x <$

(Total for Question 8 is 2 marks)

9 Expand and simplify $(x + 7)(x - 2)(x + 3)$

.....

(Total for Question 9 is 3 marks)



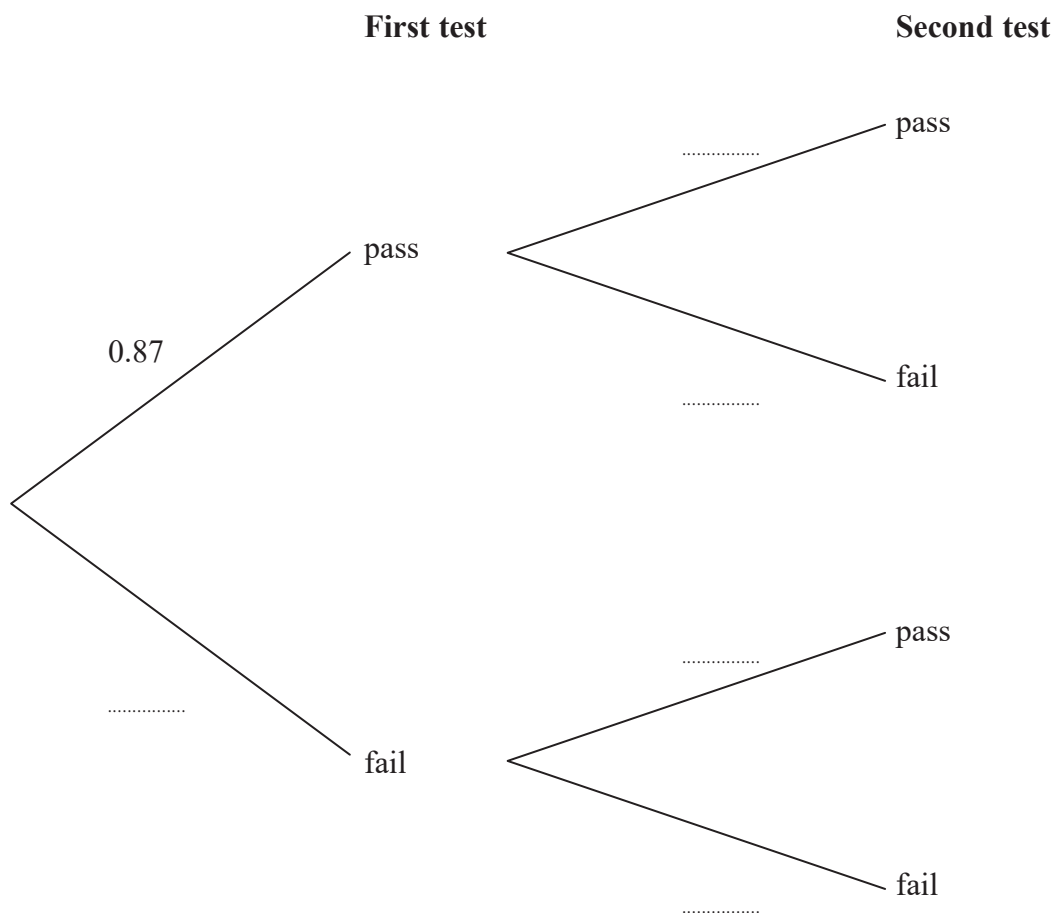
- 10 Shakir has to complete two tests.
He can either pass or fail each test.

The probability that he will pass the first test is 0.87

If he passes the first test the probability he will pass the second test is 0.94

If he fails the first test the probability he will pass the second test is 0.73

- (a) Complete the probability tree diagram for this information.



(2)

- (b) Work out the probability that Shakir passes at least one of the tests.

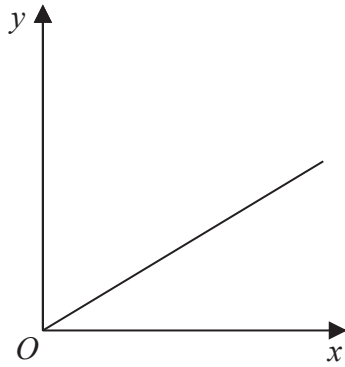
(3)

(Total for Question 10 is 5 marks)

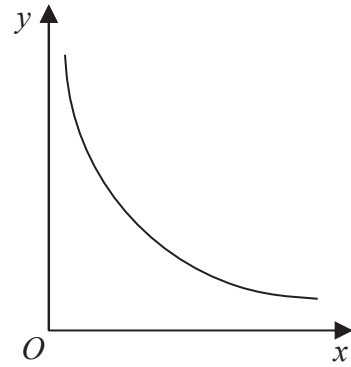


11

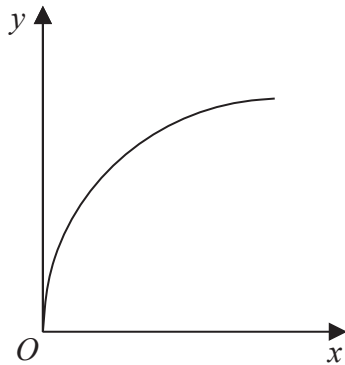
Graph A



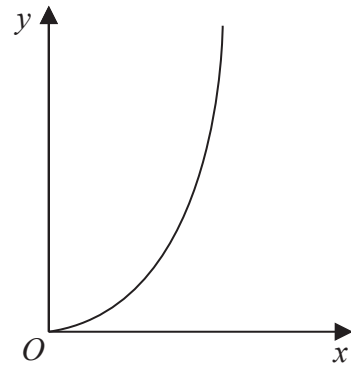
Graph B



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
$y \propto x^2$	
$y \propto x$	
$y \propto \frac{1}{x}$	
$y \propto \sqrt{x}$	

(Total for Question 11 is 2 marks)



13 Prove algebraically that $0.0\dot{7}2\dot{3}$ can be written as $\frac{241}{3330}$

(Total for Question 13 is 3 marks)

14 y is proportional to x^2
 $y = 3$ when $x = 0.5$

x is inversely proportional to w
 $x = 2$ when $w = 0.2$

Find the value of y when $w = 2$

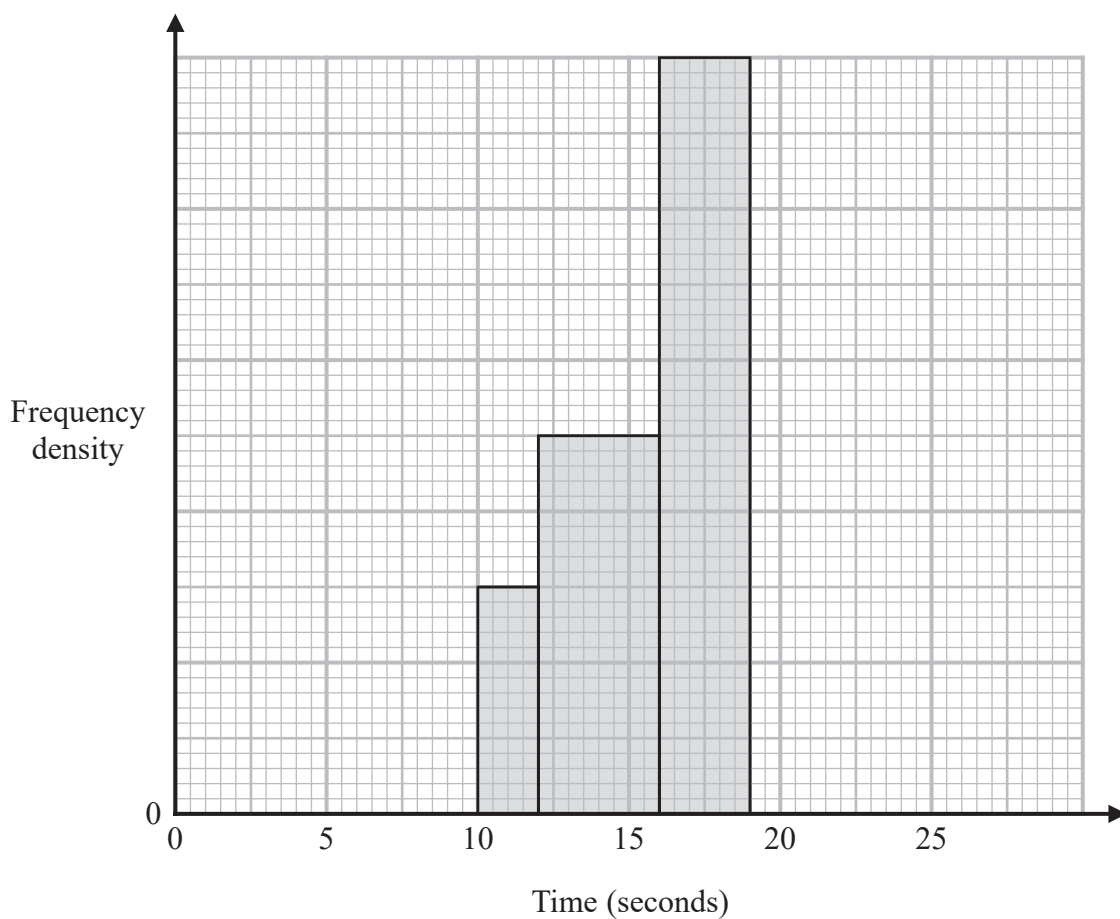
$y = \dots\dots\dots$

(Total for Question 14 is 5 marks)



- 15 The incomplete table and the incomplete histogram give information about the times taken by some students to run a race.

Time (t seconds)	Frequency
$10 < t \leq 12$	
$12 < t \leq 16$	10
$16 < t \leq 19$	15
$19 < t \leq 21$	9
$21 < t \leq 26$	7



None of these students had a time for the race such that $t \leq 10$ or $t > 26$

- (a) Use the histogram to complete the table.

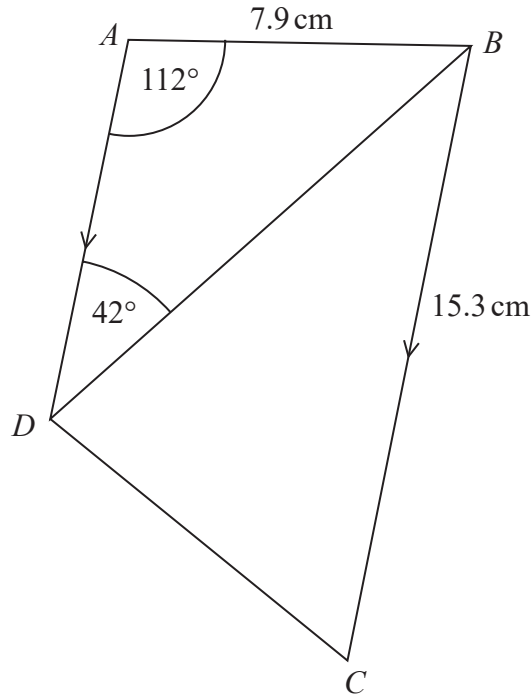
(1)

- (b) Use the table to complete the histogram.

(2)



16 $ABCD$ is a trapezium.



AD is parallel to BC .

Calculate the area of triangle BCD .
Give your answer correct to 1 decimal place.

..... cm^2

(Total for Question 16 is 4 marks)

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19 The functions f and g are such that

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

(a) Find $gf(-3)$

.....
(2)

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

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

(2)

(Total for Question 19 is 4 marks)



20 Write

$\frac{14}{3x-21} + \left[(x+4) \div \frac{2x^2-6x-56}{2x+3} \right]$ in the form $\frac{ax+b}{cx+d}$ where a, b, c and d are integers.

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.....
(Total for Question 20 is 4 marks)



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