

Gold Level

Question Paper 9

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Question Paper 9

Time Allowed: 52 minutes

Score: /43

Percentage: /100

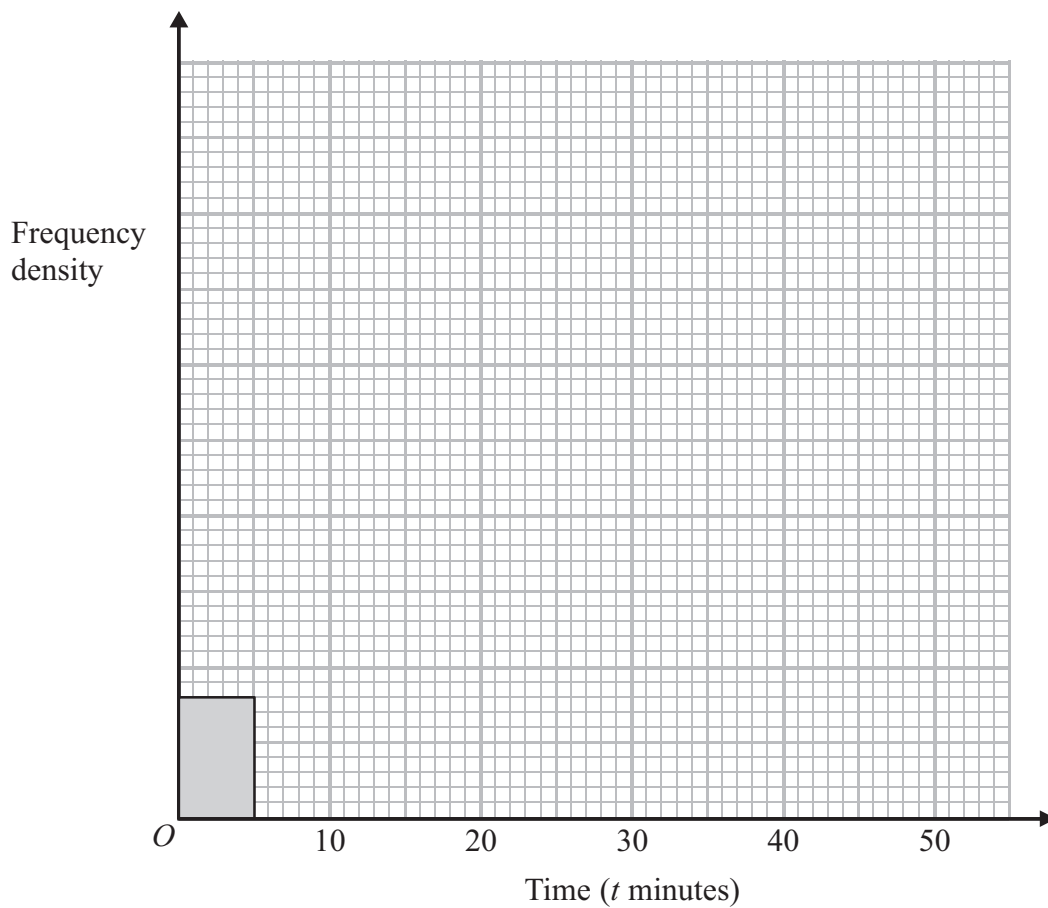
Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	65%	55%	45%	35%	25%	15%	<15%

- 1 The table shows information about the times, in minutes, that some people took to complete a sudoku puzzle.

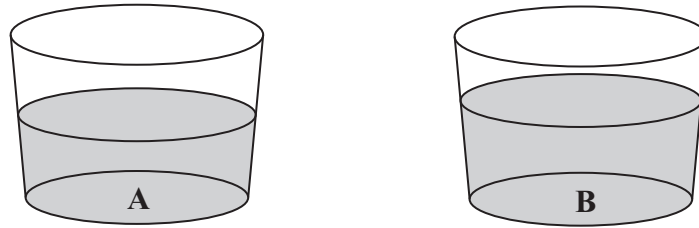
Time (t minutes)	$0 < t \leq 5$	$5 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 50$
Number of people	4	18	34	30

Complete the histogram for this information.



(Total for Question 1 is 3 marks)

2



Glass **A** contains 122 millilitres of water, correct to the nearest millilitre.

Glass **B** contains 168 millilitres of water, correct to the nearest millilitre.

Calculate the upper bound of the difference, in millilitres, between the volume of water in glass **A** and the volume of water in glass **B**.

..... millilitres

(Total for Question 2 is 2 marks)

3 Make n the subject of the formula

$$t = \sqrt{\frac{n+3}{n}}$$

$n =$

(Total for Question 3 is 4 marks)

- 4 Boris and Nigel play games of chess against each other in a match.
In each game, Boris wins or Nigel wins or the game is a draw.

When a player wins a game, he wins the match.

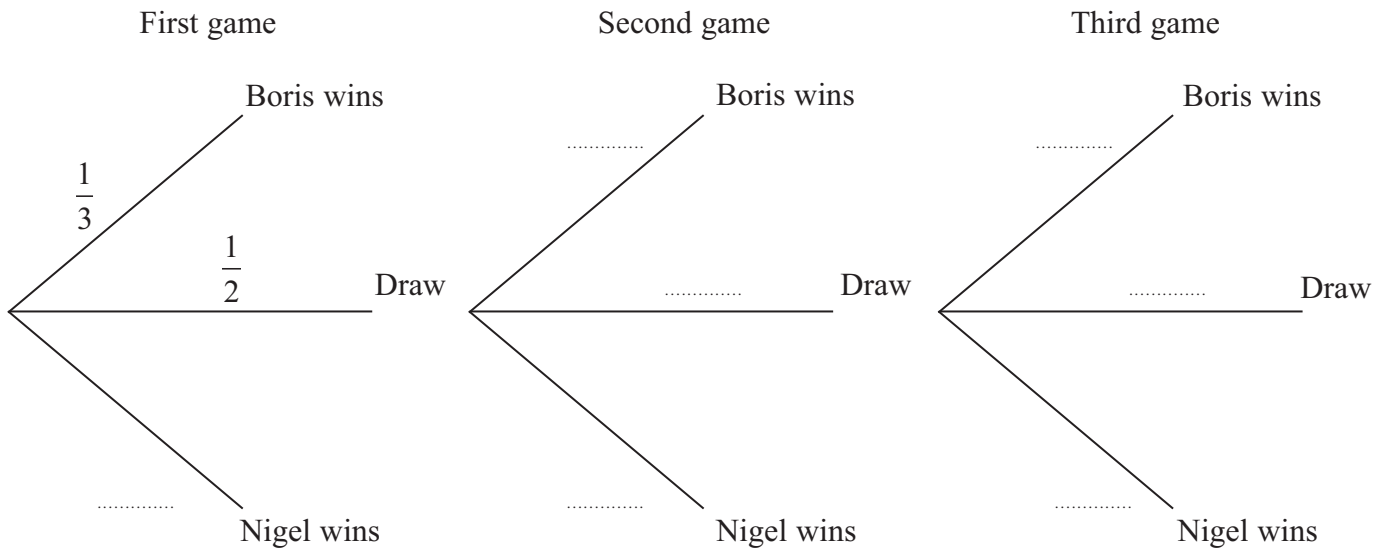
When a game is a draw, the players play another game against each other.

Boris and Nigel play a maximum of 3 games.

The probability that Boris wins a game is $\frac{1}{3}$

The probability that a game is a draw is $\frac{1}{2}$

- (a) Complete the probability tree diagram.



(3)

- (b) Calculate the probability that Boris wins the match.

.....
(3)

(Total for Question 4 is 6 marks)

- 5 A particle is moving in a straight line which passes through a fixed point O .
The displacement, s metres, of the particle from O at time t seconds is given by

$$s = 10 + 9t^2 - t^3$$

- (a) Find an expression for the velocity, v m/s, of the particle at time t seconds.

$v = \dots\dots\dots$
(2)

- (b) Find the time at which the acceleration of the particle is zero.

$\dots\dots\dots$ seconds
(2)

(Total for Question 5 is 4 marks)

- 6 PTR and QTS are chords of a circle.

- $PT = 3$ cm.
 $ST = 10$ cm.
 $RT = 15$ cm.
 $QT = x$ cm.

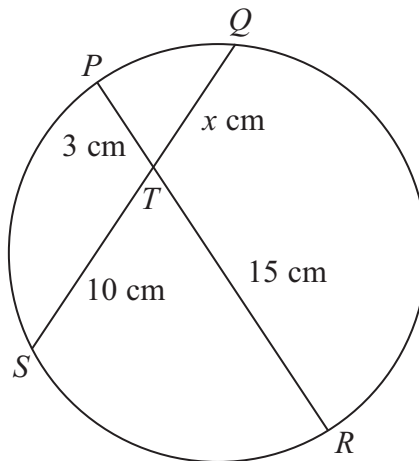


Diagram **NOT** accurately drawn

Calculate the value of x .

$x = \dots\dots\dots$

(Total for Question 6 is 2 marks)

7 A bag contains x counters.
7 of the counters are blue.
Sam takes at random a counter from the bag and does not replace it.
Jill then takes a counter from the bag.
The probability they both take a blue counter is 0.2

- (a) Form an equation involving x .
Show that your equation can be expressed as $x^2 - x - 210 = 0$

(2)

- (b) Solve $x^2 - x - 210 = 0$
Show clear algebraic working.

.....
(3)

(Total for Question 7 is 5 marks)

8 $(\sqrt{a} + \sqrt{8a})^2 = 54 + b\sqrt{2}$

a and b are positive integers.
Find the value of a and the value of b .
Show your working clearly.

$a =$

$b =$

(Total for Question 8 is 3 marks)

9

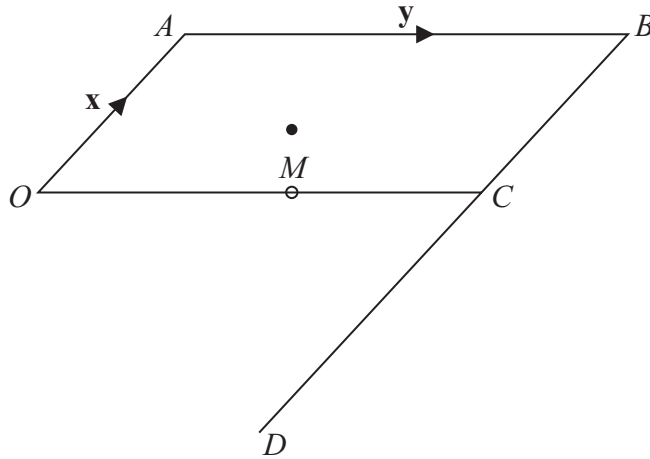


Diagram NOT accurately drawn

$OABC$ is a parallelogram.

BCD is a straight line.

$BD = 3BC$.

M is the midpoint of OC .

$\vec{OA} = \mathbf{x}$ $\vec{AB} = \mathbf{y}$

(a) Find, in terms of \mathbf{x} and \mathbf{y} ,

(i) \vec{AM}

(ii) \vec{OD}

.....

.....

(2)

(b) Use your answers to (a)(i) and (ii) to write down two different geometric facts about the lines AM and OD .

.....

.....

(2)

(Total for Question 9 is 4 marks)

- 10 The diagram shows a cube $ABCDEFGH$.
The sides of the cube are of length 5 cm.

Calculate the size of the angle between the diagonal AH and the base $EFGH$.
Give your answer correct to 1 decimal place.

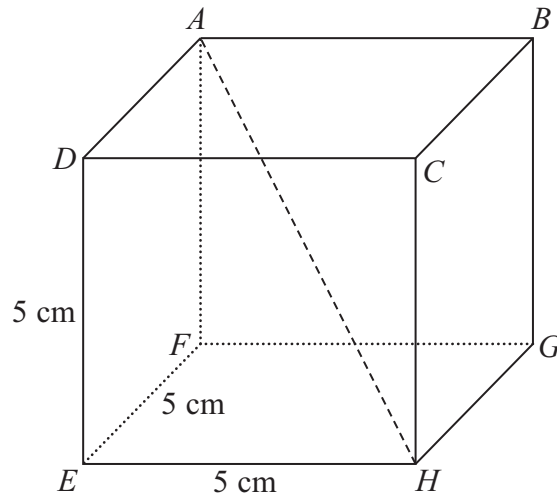


Diagram **NOT**
accurately drawn

11 Solve the simultaneous equations

$$x^2 + y^2 = 26$$

$$y = 3 - 2x$$

Show clear algebraic working.

(Total for Question 11 is 6 marks)
