Gold Level

Question Paper 21

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Question Paper 21

Time Allowed: **58 minutes**

Score: **/48**

Percentage: **/100**

Grade Boundaries:

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

1 The functions g and h are defined as

$$g(x) = \frac{x}{2x - 5}$$

$$h(x) = x + 4$$

(a) Find the value of g(1)

.....

(1)

(b) State which value of x must be excluded from any domain of g

.....

(1)

(c) Find gh(x)
Simplify your answer.

gh(x) = ...

(2)

(d) Express the inverse function g^{-1} in the form $g^{-1}(x)$ =...

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

(3)

(Total for Question 1 is 7 marks)

2 Here are 7 cards.
Each card has a number on it.

1	2	2	3	3	3	4

Harry takes at random two cards.

(a) Calculate the probability that the numbers on the two cards are the same.

.....

(3)

(b) Calculate the probability that the sum of the numbers on the two cards is 5

.....

(3)

(Total for Question 2 is 6 marks)

3 Here is triangle *LMN*, where angle *LMN* is an obtuse angle.

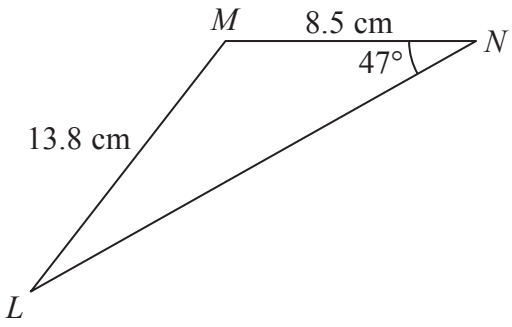


Diagram **NOT** accurately drawn

ML = 13.8 cm
MN = 8.5 cm
Angle *MNL* = 47°

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

..... cm^2

(Total for Question 3 is 6 marks)

4 Solve the simultaneous equations

$$y = 2x - 3$$
$$x^2 + y^2 = 41$$

Show clear algebraic working.

(Total for Question 4 is 6 marks)

5

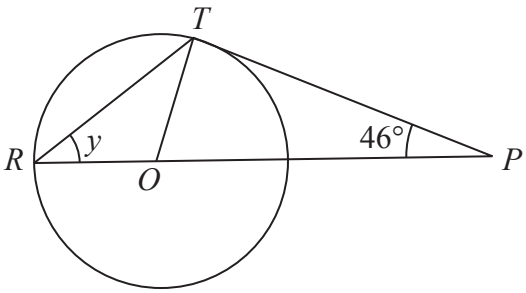


Diagram **NOT** accurately drawn

R and *T* are points on a circle, centre *O*.
ROP is a straight line.
PT is a tangent to the circle.
Angle *TPO* = 46°

(a) Explain why angle *OTP* = 90°

.....

.....

(1)

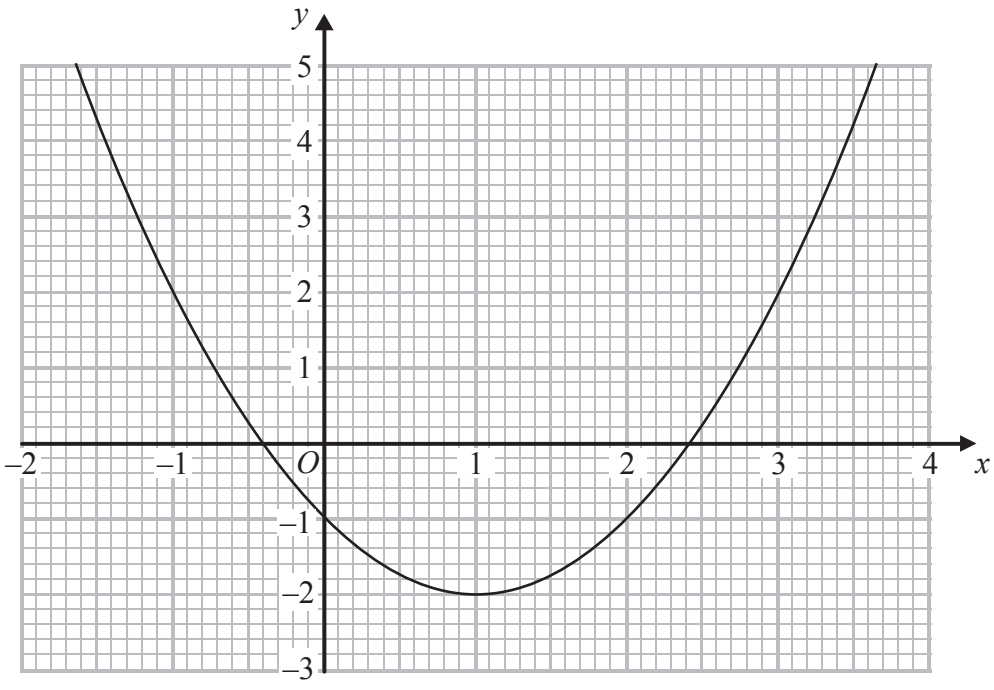
(b) Work out the size of angle *y*.

.....°

(3)

(Total for Question 5 is 4 marks)

6 Here is the graph of $y = x^2 - 2x - 1$



(a) Use the graph to solve the equation $x^2 - 2x - 1 = 2$

.....

(2)

The equation $x^2 + 5x - 7 = 0$ can be solved by finding the points of intersection of the line $y = ax + b$ with the graph of $y = x^2 - 2x - 1$

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

$a =$ .....

$b =$ .....

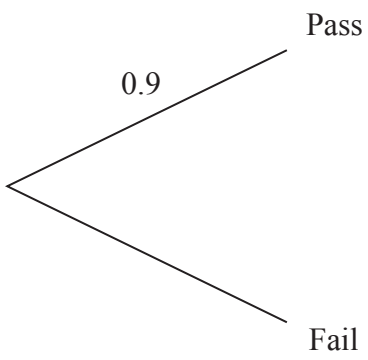
(2)

(Total for Question 6 is 4 marks)

7 Chris and Sunil each take a driving test.

The probability that Chris passes the driving test is 0.9
The probability that Sunil passes the driving test is 0.65

(a) Complete the probability tree diagram.



(3)

(b) Work out the probability that exactly one of Chris or Sunil passes the driving test.

.....

(3)

(Total for Question 7 is 6 marks)

8

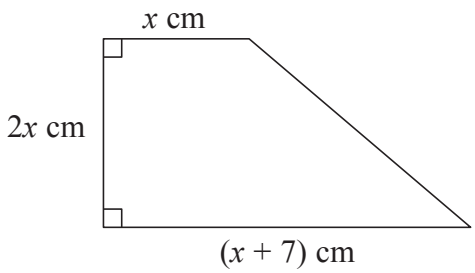


Diagram **NOT** accurately drawn

The diagram shows a trapezium.
The trapezium has an area of 17 cm^2

(a) Show that $2x^2 + 7x - 17 = 0$

(3)

(b) Work out the value of x.
Give your answer correct to 3 significant figures.
Show your working clearly.

$x =$ .....

(3)

(Total for Question 8 is 6 marks)

9 An athlete runs 400 metres, correct to the nearest metre.
The athlete takes 50.2 seconds, correct to the nearest 0.1 of a second.

Work out the upper bound of the athlete's average speed.
Give your answer correct to 3 significant figures.

..... m/s

(Total for Question 9 is 3 marks)