Gold Level

Question Paper 10

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Difficulty Level	Gold
Booklet	Question Paper 10

Time Allowed: **56 minutes**

Score: **/46**

Percentage: **/100**

Grade Boundaries:

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

1 For $y = x^3 - 6x^2 + 20$

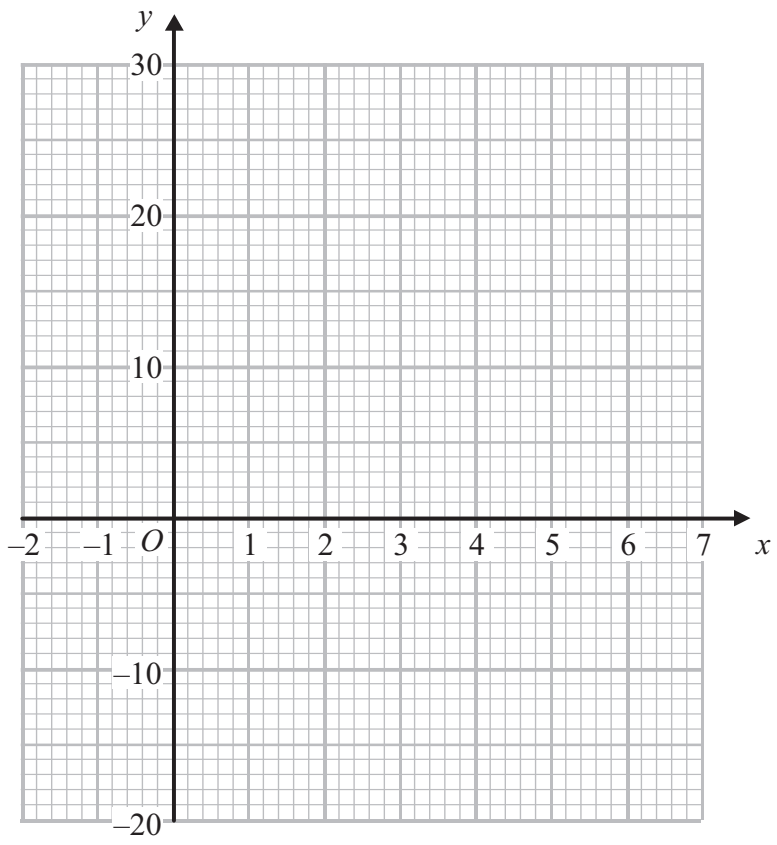
(a) (i) show that $y = 4$ when $x = 2$

(ii) complete the table of values

x	−1	0	1	2	3	4	5	6
y		20	15		−7	−12		20

(2)

(b) On the grid, draw the graph of $y = x^3 - 6x^2 + 20$ for values of x from –1 to 6



(2)

(c) For the curve with equation $y = x^3 - 6x^2 + 20$

(i) find $\frac{dy}{dx}$

.....

(ii) find the gradient of the curve at $x = -3$

.....

(4)

(Total for Question 1 is 8 marks)

2 The diagram shows an incomplete regular polygon.

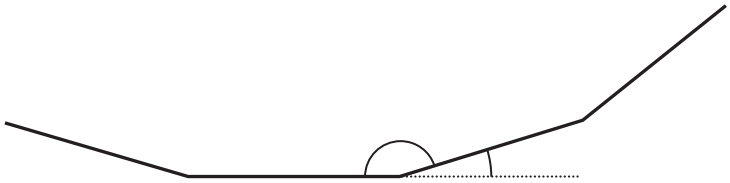


Diagram **NOT** accurately drawn

The size of each interior angle is 140 degrees greater than the size of each exterior angle.

Work out the number of sides the regular polygon has.

.....

(Total for Question 2 is 4 marks)

3 The table shows the surface areas, in km^2, of five oceans.

Ocean	Surface area (km^2)
Atlantic	7.68×10^7
Indian	6.86×10^7
Pacific	1.56×10^8
Southern	2.03×10^7
Arctic	1.41×10^7

(a) Which of these oceans has the largest surface area?

.....

(1)

(b) Work out the total surface area, in km^2, of all five oceans.
Give your answer in standard form.

..... km^2

(2)

The total surface area of the Earth is 5.10×10^8 km^2.

(c) Express the total surface area of the five oceans as a percentage of the total surface area of the Earth.
Give your answer correct to 1 decimal place.

..... %

(2)

(Total for Question 3 is 5 marks)

4 The pressure P, of water leaving a cylindrical pipe, is inversely proportional to the square of the radius, r, of the pipe.

$P = 22.5$ when $r = 2$

(a) Find a formula for P in terms of r.

.....

(3)

(b) Calculate the value of P when $r = 1.5$

$P =$ .....

(1)

(c) Calculate the value of r when $P = 10$

$r =$ .....

(2)

(Total for Question 4 is 6 marks)

5 The function f is defined as

$$f(x) = \frac{x - 6}{2}$$

(a) Find $f(8)$

.....

(1)

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

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

(2)

The function g is defined as

$$g(x) = \sqrt{x - 4}$$

(c) Which values of x cannot be included in a domain of g?

.....

(2)

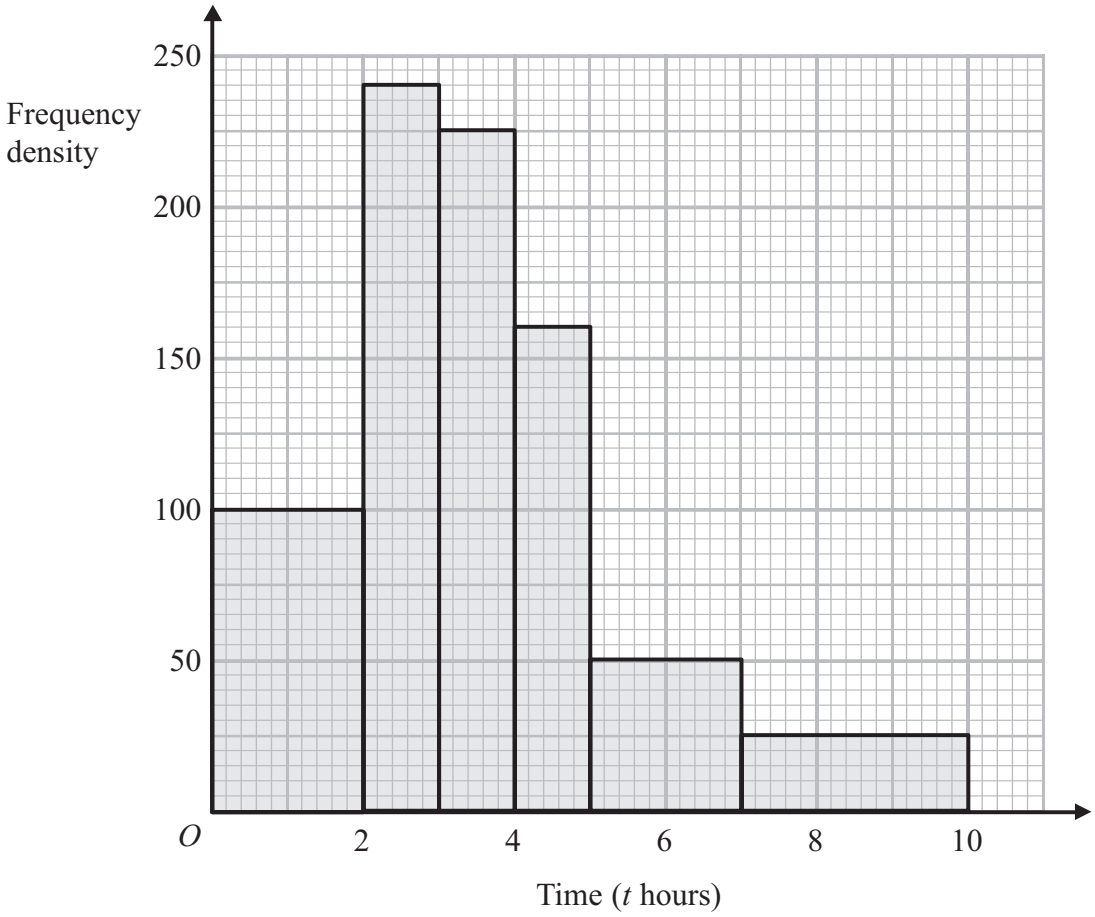
(d) Express the function gf in the form $gf(x) = ...$
Give your answer as simply as possible.

$gf(x) =$ .....

(2)

(Total for Question 5 is 7 marks)

6 The histogram shows information about the times, t hours, for which some cars were left in a car park.



Calculate an estimate for the number of cars which were left in the car park for between 4.5 hours and 8 hours.

.....

(Total for Question 6 is 3 marks)

7 The sides of triangle PQR are tangents to a circle.
The tangents touch the circle at the points S, T and U.
$QS = 6$ cm. $PS = 7$ cm.

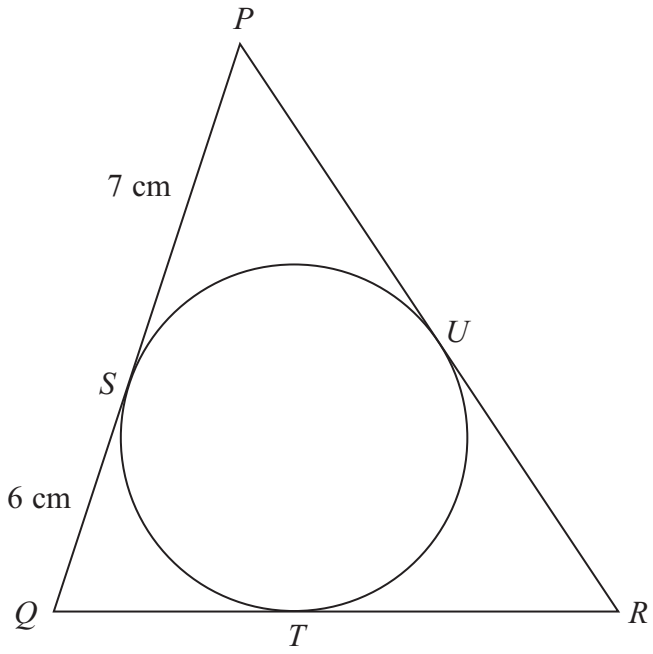


Diagram **NOT** accurately drawn

(a) (i) Write down the length of QT.

..... cm

(ii) Give a reason for your answer.

.....

(2)

The perimeter of triangle PQR is 42 cm.

(b) Calculate the size of angle PQR.
Give your answer correct to 1 decimal place.

.....°

(4)

(Total for Question 7 is 6 marks)

8

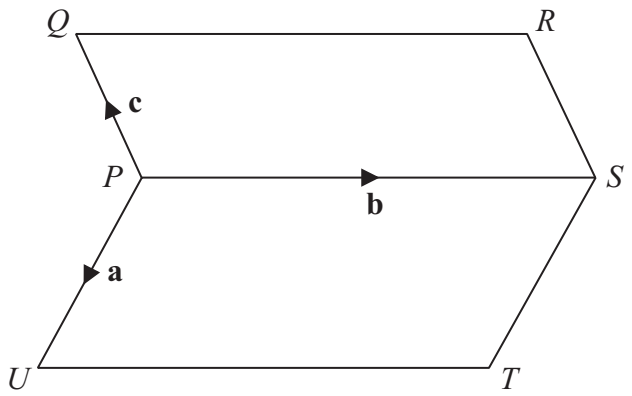


Diagram **NOT** accurately drawn

PQRS and *PSTU* are parallelograms.

$\overrightarrow{PU} = \mathbf{a}$ $\overrightarrow{PS} = \mathbf{b}$ $\overrightarrow{PQ} = \mathbf{c}$

Find, in terms of **a**, **b** and **c**

(i) $\overrightarrow{TQ}$

.....

(ii) $\overrightarrow{PX}$ where X is the midpoint of TQ.

Simplify your answer as much as possible.

.....

(Total for Question 8 is 3 marks)

9 The diagram shows a triangular prism with a horizontal rectangular base *ABCD*.
AB = 10 cm. *BC* = 7 cm.
M is the midpoint of *AD*.
The vertex *T* is vertically above *M*.
MT = 6 cm.

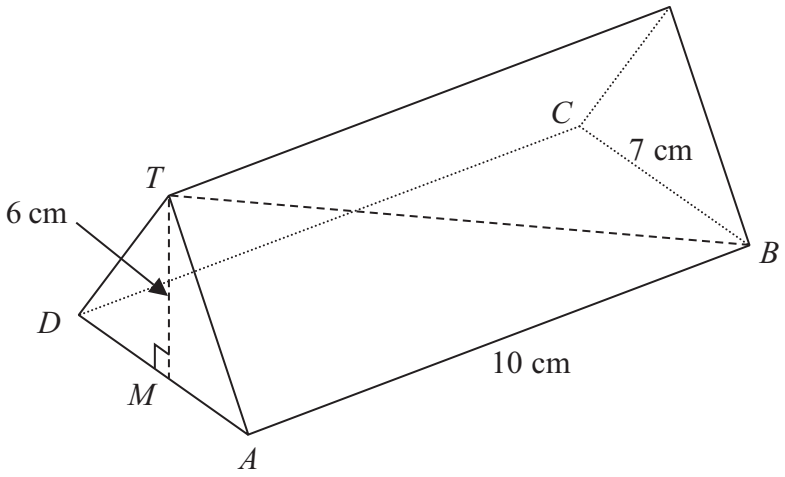


Diagram **NOT** accurately drawn

Calculate the size of the angle between *TB* and the base *ABCD*.

Give your answer correct to 1 decimal place.

°

(Total for Question 9 is 4 marks)