

18 A rectangle $ABCD$ is to be drawn on a centimetre grid such that

A has coordinates $(-4, -2)$

B has coordinates $(1, 10)$

C has coordinates $(19, a)$

D has coordinates (b, c)

(a) Work out the value of a , the value of b and the value of c .

$a =$

$b =$

$c =$

(4)



(b) Calculate the perimeter, in centimetres, of rectangle $ABCD$.

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..... cm

(3)

(Total for Question 18 is 7 marks)



19 A particle P is moving along a straight line.
The fixed point O lies on this line.

At time t seconds where $t \geq 0$, the displacement, s metres, of P from O is given by

$$s = t^3 + 5t^2 - 8t + 10$$

Find the displacement of P from O when P is instantaneously at rest.

Give your answer in the form $\frac{a}{b}$ where a and b are integers.

..... metres

(Total for Question 19 is 5 marks)

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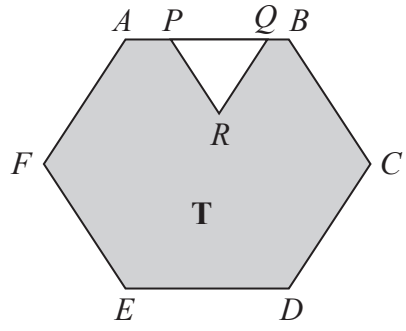


Diagram NOT accurately drawn

The diagram shows a shaded region **T** formed by removing an equilateral triangle PQR from a regular hexagon $ABCDEF$.

The points P and Q lie on AB such that $AB = 1.5 \times PQ$

Given that the area of region **T** is $72\sqrt{3}$ cm²

work out the length of PQ .

..... cm

(Total for Question 20 is 4 marks)



21 Write $\frac{25x^2 - 64}{5x^2 - 13x - 6} \times \frac{x^2 - 8x + 15}{5x + 8} - (x - 7)$

as a single fraction in its simplest form.
Show clear algebraic working.

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(Total for Question 21 is 4 marks)

Turn over for Question 22



22 The diagram shows a sector OBC of a circle with centre O and radius $(6 + x)$ cm.

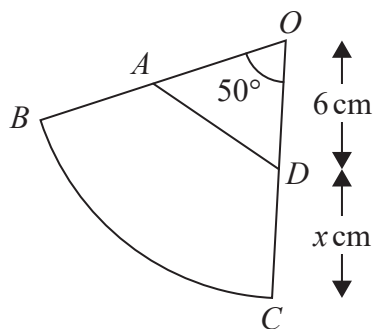


Diagram NOT accurately drawn

A is the point on OB and D is the point on OC such that $OA = OD = 6$ cm

Angle $BOC = 50^\circ$

Given that

the perimeter of sector $OBC = 2 \times$ the perimeter of triangle OAD

find the value of x .

Give your answer correct to 3 significant figures.

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$$x = \dots\dots\dots$$

(Total for Question 22 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

