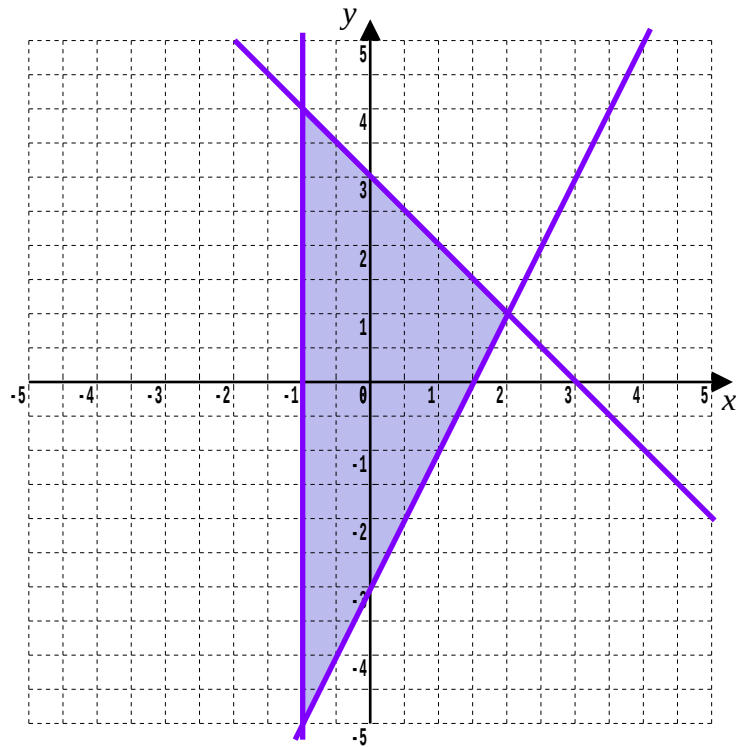


Brief Answers to Grade Grabber 6

Answer 1

(i) and (ii)



(iii) 13.5 units²

[3, 1 marks]

[1 mark]

Answer 2

$$60 \times 60 \times 24 \times 365 \\ = 32 \text{ million seconds}$$

[1 mark]

Answer 3

(i) 25 times

(ii) 0.116

[1, 2 marks]

Answer 4

(a) 51 is square free

49 divides by 7^2 , 50 divides by 5^2 , 52 divides by 2^2

(b) $9\sqrt{2}$

[2, 1 marks]

Answer 5

(i) 6, 11, 16, 21, 26, 31, ...

(ii) Yes, all positive integers ending in 1 or 6 are in this sequence and 2021 ends in 1

[2, 2 marks]

Answer 6

(i) $KE = 200 v^2$

(ii) 1280000 J

[3, 1 marks]

Answer 7

(a) (i) $\frac{dy}{dx} = 2x - 8$

(ii) (4, -1)

[2, 3 marks]

(b) Minimum

A parabola from a quadratic equation with positive x^2 term has a $\cup$ shape

[2 marks]

Answer 8

In the right angled triangle with hypotenuse 15 cm let the shorter sides each be x

Then, by the Theorem of Pythagoras, $x = 10.607$ cm

This is then the radius of the sector.

$$\begin{aligned} \text{Perimeter Shape} &= 2 \left(15 + \frac{1}{4} \times 2 \times \pi \times 10.607 \right) \\ &= 63.32 \text{ cm} \end{aligned}$$

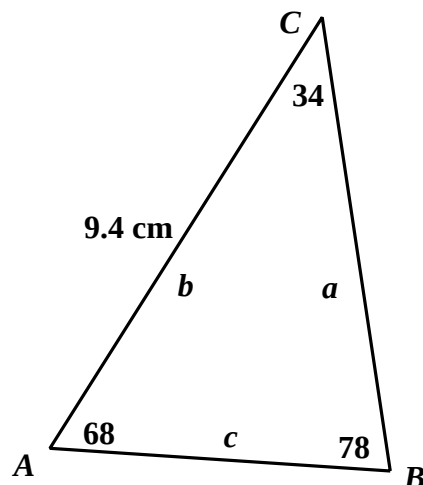
[3 marks]

Answer 9

(i) $\sum \text{angles in } \Delta = 180^\circ$ and so $\angle B = 78^\circ$

[1 mark]

(ii)



[1 mark]

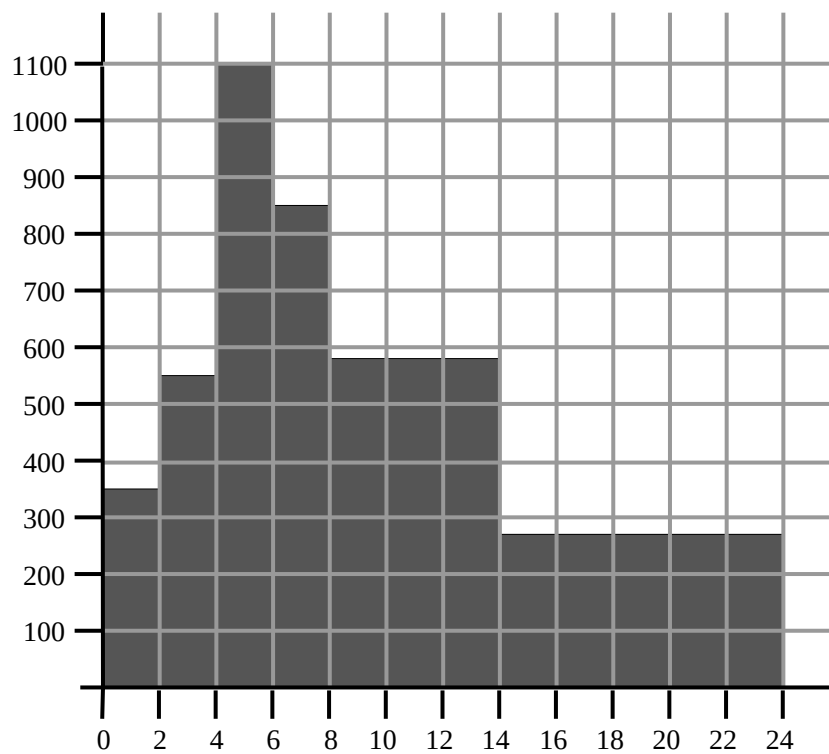
(iii)
$$\frac{a}{\sin 68} = \frac{9.4}{\sin 78} \Rightarrow a = 8.91 \text{ cm}$$

$$\frac{c}{\sin 34} = \frac{9.4}{\sin 78} \Rightarrow c = 5.37 \text{ cm}$$

[3 marks]

Answer 10**(i)** 3100**[1 mark]****(ii)**

Response time (hours)	Number of questionnaires Frequency = Area	Width	Height
$0 \leq h < 2$	700	2	350
$2 \leq h < 4$	1100	2	550
$4 \leq h < 6$	2200	2	1100
$6 \leq h < 8$	1700	2	850
$8 \leq h < 14$	3500	6	583
$14 \leq h < 24$	2700	10	270

**[4 marks]**

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In October 2020, Shrewsbury School was voted "**Independent School of the Year 2020**"

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk