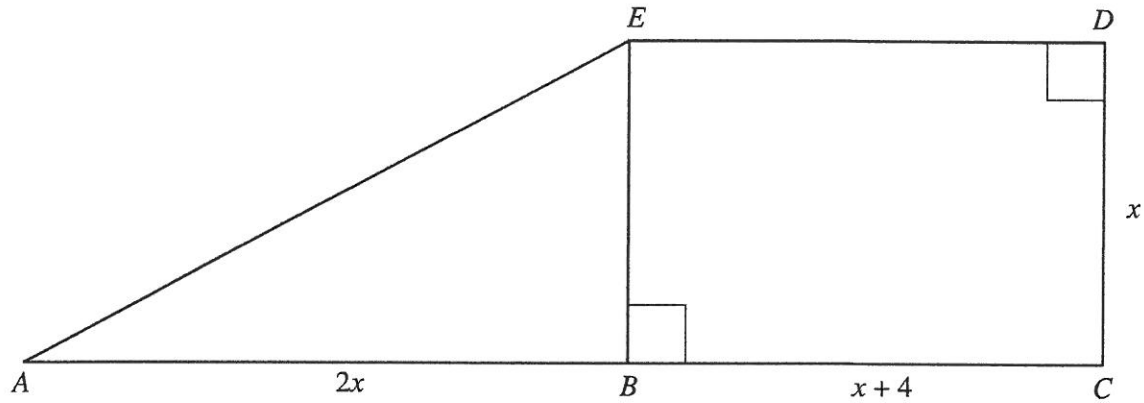


11. (a) In the diagram ABC is a straight line and $BCDE$ is a rectangle. The side DC is of length x cm, BC is of length $(x + 4)$ cm and AB is of length $2x$ cm.



The diagram is not drawn to scale and the measurements are in centimetres.

The area of the whole shape $ABCDE$ is 48 cm^2 .

Giving full details of all your working, show clearly that x satisfies the equation

$$x^2 + 2x - 24 = 0.$$

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[2]

- (b) Solve the equation to find the length of DC .

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[2]

17. The diagram shows a trapezium.

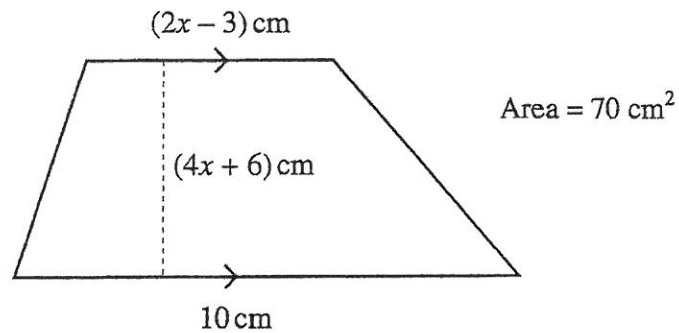


Diagram not drawn to scale.

The parallel sides of a trapezium are of lengths 10 cm and $(2x - 3) \text{ cm}$. The height of the trapezium is $(4x + 6) \text{ cm}$ and its area is 70 cm^2 .

- (a) Show that $4x^2 + 20x - 49 = 0$.

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[3]

- (b) Use the quadratic formula to solve the equation $4x^2 + 20x - 49 = 0$. Give your answers correct to one decimal place.

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[3]

- (c) Hence write down the height of the trapezium.

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[1]

19. The diagram shows a hexagonal prism.

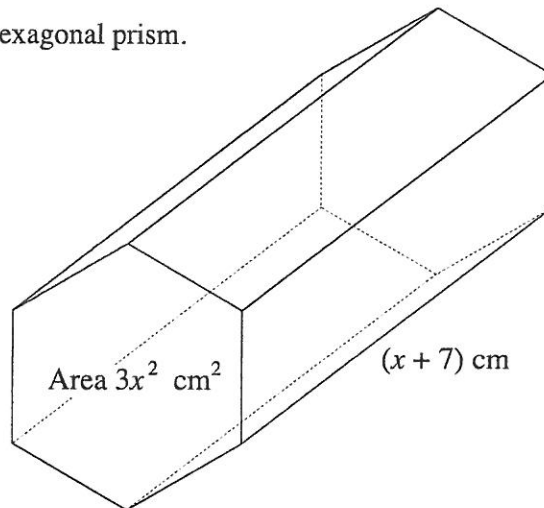


Diagram not drawn to scale.

The area of the cross-section of the prism is $3x^2 \text{ cm}^2$ and the length of the prism is $(x + 7) \text{ cm}$. The volume of the prism is $(3x^3 + 2x + 1) \text{ cm}^3$.

- (a) Show that $21x^2 - 2x - 1 = 0$.

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[2]

- (b) Use the quadratic formula to solve $21x^2 - 2x - 1 = 0$, giving solutions correct to two decimal places.

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[3]

- (c) Hence evaluate the volume of the prism, giving your answer correct to one decimal place.

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[1]

19. For the first x seconds of a journey the average speed of a cyclist is 4 m/s. For the next $(5x + 2)$ seconds the average speed is x m/s. The total distance travelled is 128 metres.

(a) Show that x satisfies the equation $5x^2 + 6x - 128 = 0$.

[3]

(b) Use the formula method to solve the equation $5x^2 + 6x - 128 = 0$, giving solutions correct to one decimal place.

[3]

(c) Hence find the total time for the journey.

[1]

- (a) Show that x satisfies the equation $21x^2 + 17x - 250 = 0$.

[illegible]

(b) Use the formula method to solve the equation $21x^2 + 17x - 250 = 0$, giving solutions correct to two decimal places.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

(c) Hence find the total time for the journey.

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