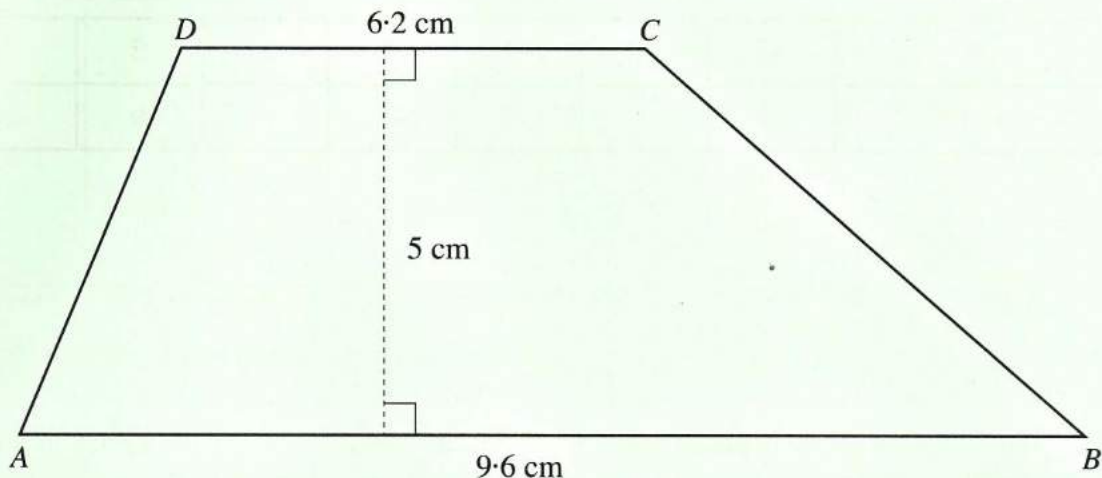


13. A metal bar has a uniform cross-section in the shape of a trapezium  $ABCD$  in which  $AB$  is parallel to  $DC$ . The length of  $AB$  is  $9.6$  cm and the length of  $DC$  is  $6.2$  cm. The perpendicular distance between the two parallel sides is  $5$  cm.



*Diagram not drawn to scale.*

- (a) Calculate the area of the cross-section of the metal bar, stating clearly the units of your answer.

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[3]

- (b) The metal bar is  $13.6$  cm long and has a mass of  $2.4$  kg. Calculate the density of the metal from which the rod is made, give your answer in  $\text{g/cm}^3$ .

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[4]

16. (a) A rod has a uniform circular cross-section of radius 2.6 cm and a length of 95 cm. Calculate the volume of the rod.

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[3]

- (b) The rod has a mass of 8.6 kg. Calculate the density of the material from which the rod is made, giving your answer in  $\text{g/cm}^3$ .

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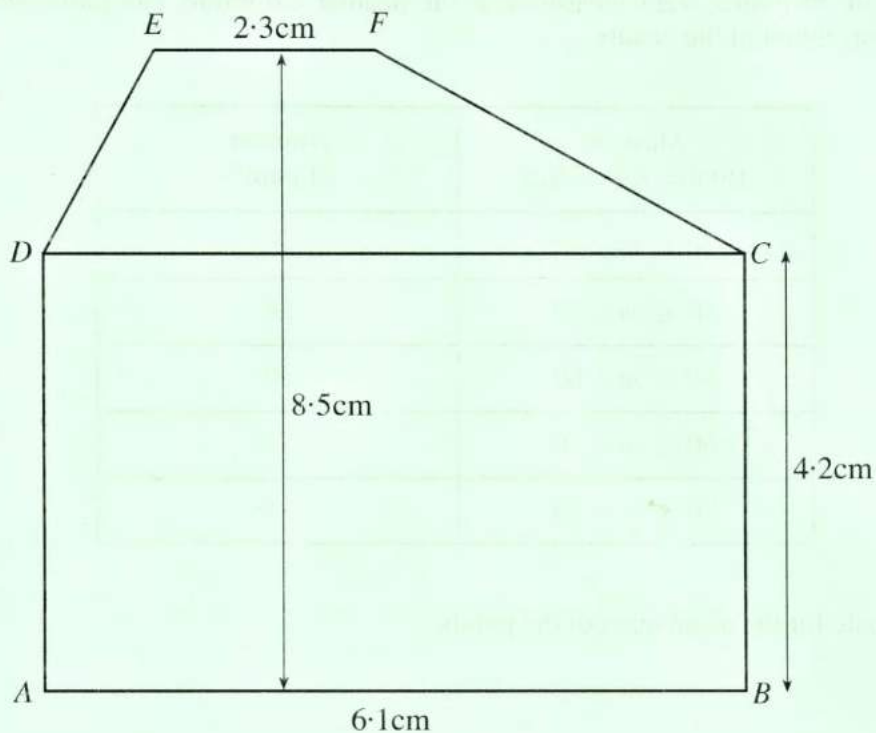
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[3]

16.



*Diagram not drawn to scale.*

$ABCFED$  represents the uniform cross-section of a solid block of material.  $ABCD$  is a rectangle in which  $AB = 6.1\text{ cm}$  and  $BC = 4.2\text{ cm}$ .  $EF$  is of length  $2.3\text{ cm}$  and is parallel to  $AB$ . The distance between  $EF$  and  $AB$  is  $8.5\text{ cm}$ .

(a) Calculate the area of cross-section of the block.

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- (b) The block has this uniform cross-section along its length of 12.6 cm and has a mass of 2 kg. Calculate the density, in  $\text{g/cm}^3$ , of the material from which the block is made.

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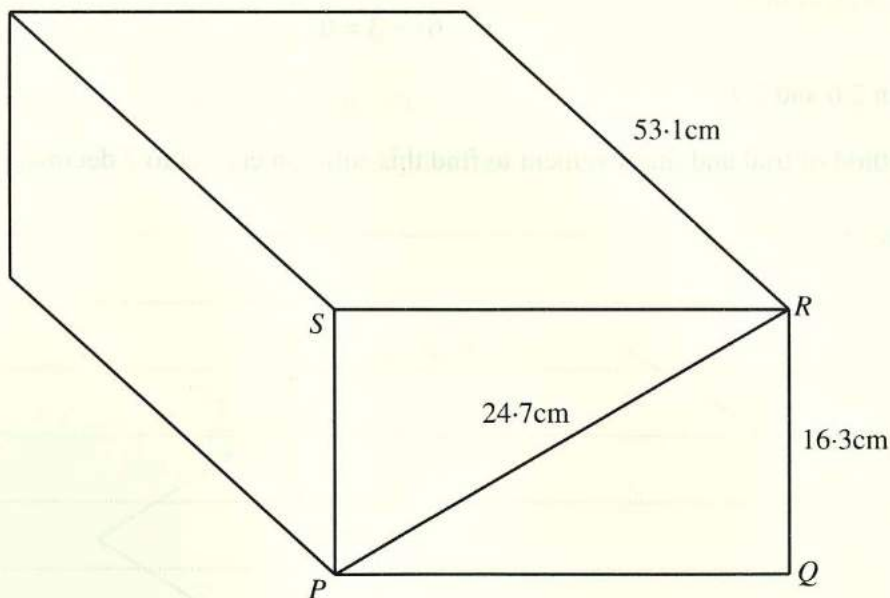
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18.



*Diagram not drawn to scale.*

The diagram shows a cuboid of length 53.1 cm. The cross-section,  $PQRS$ , is such that  $PR = 24.7$  cm and  $QR = 16.3$  cm.

(a) Calculate the length of  $PQ$ .

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[3]

(b) The density of the material from which the cuboid is made is  $4.3 \text{ g/cm}^3$ . Calculate the mass of the cuboid in kilograms.

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[3]

**Turn over.**