

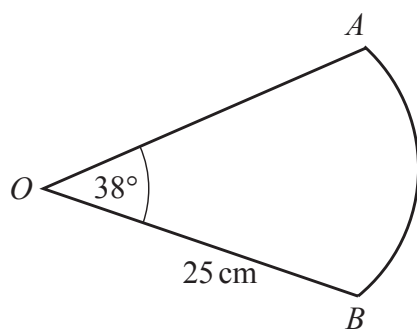
1. Question | 0580 Feb-March 2016 P2 V2 Q10

10 The scale on a map is 1 : 20 000.
The area of a lake on the map is 1.6 square centimetres.

Calculate the actual area of the lake.
Give your answer in square metres.

.....m² [3]

11

NOT TO
SCALE

The diagram shows a sector of a circle, centre O , radius 25 cm .
The sector angle is 38° .

Calculate the length of the arc AB .

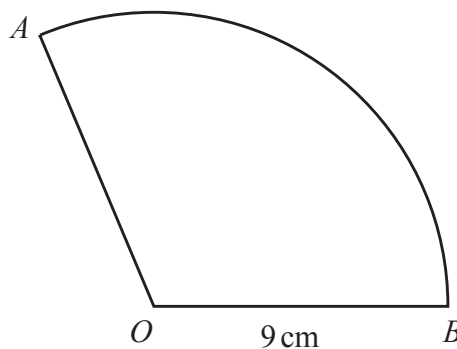
Give your answer correct to 4 significant figures.

$AB = \dots\dots\dots\text{ cm}$ [3]

3. Question | 0580 May-June 2016 P2 V1 Q20

- 20** AB is an arc of a circle, centre O , radius 9 cm.
The length of the arc AB is 6π cm.
The area of the sector AOB is $k\pi$ cm².

Find the value of k .

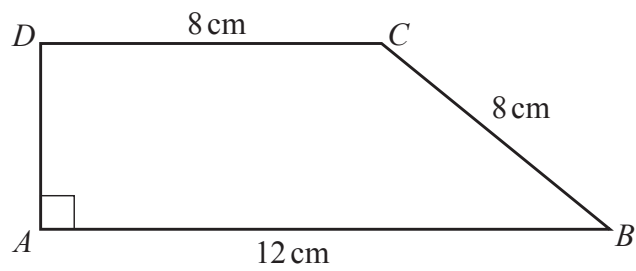


NOT TO
SCALE

$k = \dots\dots\dots$ [3]

4. Question | 0580 May-June 2016 P2 V1 Q23

23



NOT TO
SCALE

Calculate the area of this trapezium.

..... cm^2 [4]

5. Question | 0580 May-June 2016 P2 V2 Q7

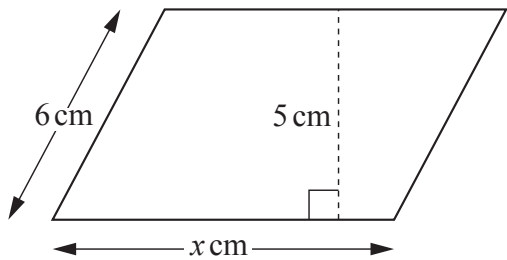
- 7 A map is drawn to a scale of 1 : 1 000 000.
 A forest on the map has an area of 4.6 cm^2 .

Calculate the actual area of the forest in square kilometres.

..... km^2 [2]

6. Question | 0580 May-June 2016 P2 V3 Q3

3



NOT TO
SCALE

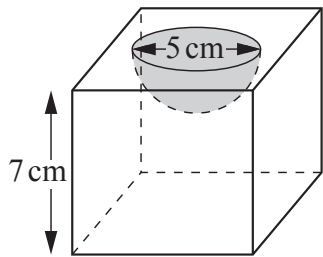
The area of this parallelogram is 51.5 cm^2 .

Work out the value of x .

$x = \dots\dots\dots$ [2]

7. Question | 0580 May-June 2016 P2 V3 Q15

15 A solid consists of a metal cube with a hemisphere cut out of it.



NOT TO
SCALE

The length of a side of the cube is 7 cm.
The diameter of the hemisphere is 5 cm.

Calculate the volume of this solid.
[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

$\dots\dots\dots\text{cm}^3$ [3]

8. Question | 0580 Oct-Nov 2016 P2 V1 Q16

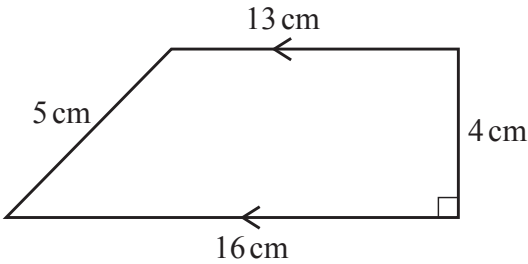
- 16
- Two cups are mathematically similar.
The larger cup has capacity 0.5 litres and height 8 cm.
The smaller cup has capacity 0.25 litres.

Find the height of the smaller cup.

..... cm [3]

9. Question | 0580 Oct-Nov 2016 P2 V2 Q4

4



NOT TO
SCALE

Calculate the area of this trapezium.

..... cm² [2]

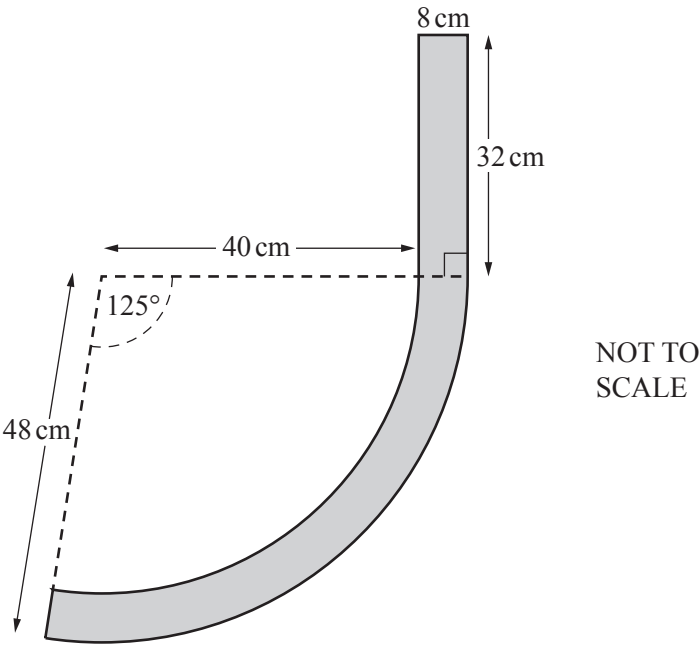
10. Question | 0580 Oct-Nov 2016 P2 V2 Q10

10 The length of a backpack of capacity 30 litres is 53 cm.

Calculate the length of a mathematically similar backpack of capacity 20 litres.

..... cm [3]

17

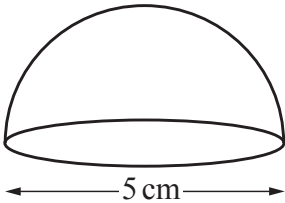


The diagram shows the cross section of part of a park bench.
It is made from a rectangle of length 32 cm and width 8 cm and a curved section.
The curved section is made from two concentric arcs with sector angle 125°.
The inner arc has radius 40 cm and the outer arc has radius 48 cm.

Calculate the area of the cross section correct to the nearest square centimetre.

..... cm² [5]

12



NOT TO
SCALE

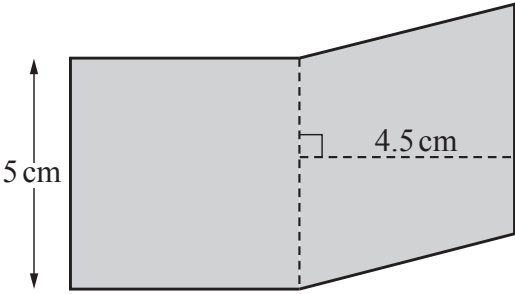
The diagram shows a hemisphere with diameter 5 cm.

Calculate the volume of this hemisphere.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm³ [2]

14 The shaded shape is made by joining a square and a rhombus.



NOT TO
SCALE

Work out

(a) the perimeter of the shaded shape,

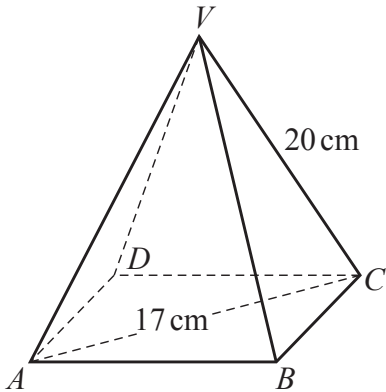
..... cm [1]

(b) the area of the shaded shape.

..... cm² [2]

14. Question | 0580 Feb-March 2017 P2 V2 Q9

- 9 The diagram shows a pyramid with a square base $ABCD$.
All the sloping edges of the pyramid are 20 cm long and $AC = 17$ cm.

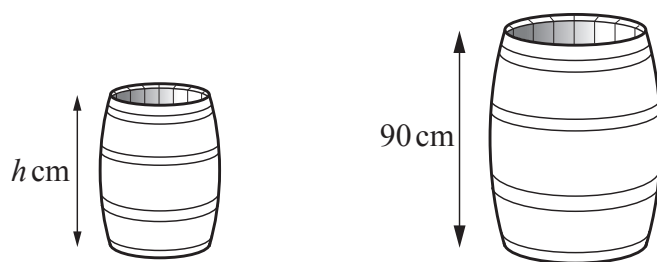


NOT TO
SCALE

Calculate the height of the pyramid.

..... cm [3]

- 11** The two barrels in the diagram are mathematically similar.



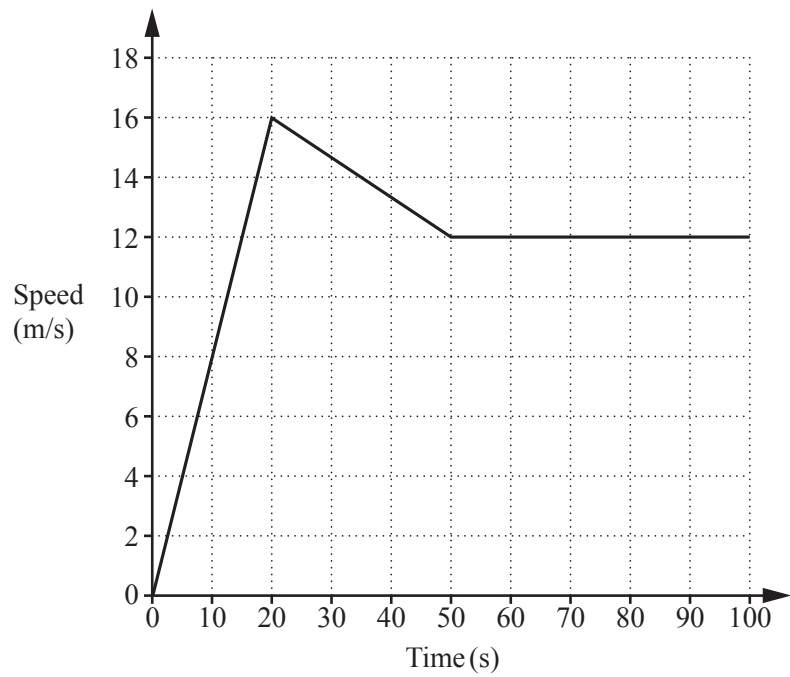
NOT TO
SCALE

The smaller barrel has a height of h cm and a capacity of 100 litres.
The larger barrel has a height of 90 cm and a capacity of 160 litres.

Work out the value of h .

$h = \dots\dots\dots$ [3]

15 The diagram shows information about the first 100 seconds of a car journey.



(a) Calculate the acceleration during the first 20 seconds of the journey.

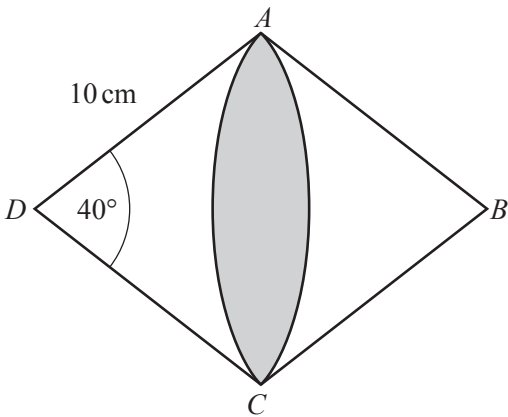
.....m/s² [1]

(b) Work out the total distance travelled by the car in the 100 seconds.

..... m [3]

17. Question | 0580 May-June 2017 P2 V1 Q19

19 $ABCD$ is a rhombus with side length 10 cm.



NOT TO
SCALE

Angle $ADC = 40^\circ$.
 DAC is a sector of a circle with centre D .
 BAC is a sector of a circle with centre B .

Calculate the shaded area.

..... cm^2 [4]

18. Question | 0580 May-June 2017 P2 V2 Q3

3 Change 6200 cm^2 into m^2 .

..... m^2 [1]

19. Question | 0580 May-June 2017 P2 V3 Q5

5 Calculate the volume of a **hemisphere** with radius 3.2 cm .

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm^3 [2]

20. Question | 0580 May-June 2017 P2 V3 Q13

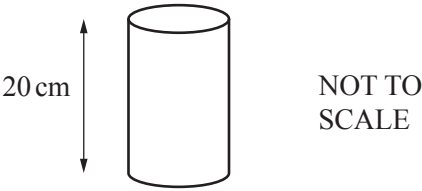
13 Two bottles and their labels are mathematically similar.
The smaller bottle contains 0.512 litres of water and has a label with area 96 cm^2 .
The larger bottle contains 1 litre of water.

Calculate the area of the larger label.

..... cm^2 [3]

21. Question | 0580 Oct-Nov 2017 P2 V1 Q20

20 (a)

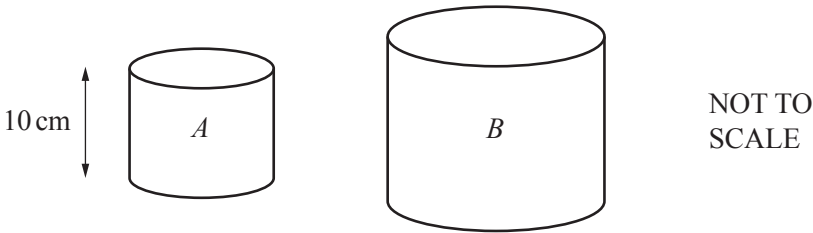


A cylinder has height 20 cm.
The area of the circular cross section is 74 cm^2 .

Work out the volume of this cylinder.

..... cm^3 [1]

(b) Cylinder A is mathematically similar to cylinder B .



The height of cylinder A is 10 cm and its surface area is 440 cm^2 .
The surface area of cylinder B is 3960 cm^2 .

Calculate the height of cylinder B .

..... cm [3]

0580 Mathematics Paper 2 - Mensuration

Topical questions | 130 questions

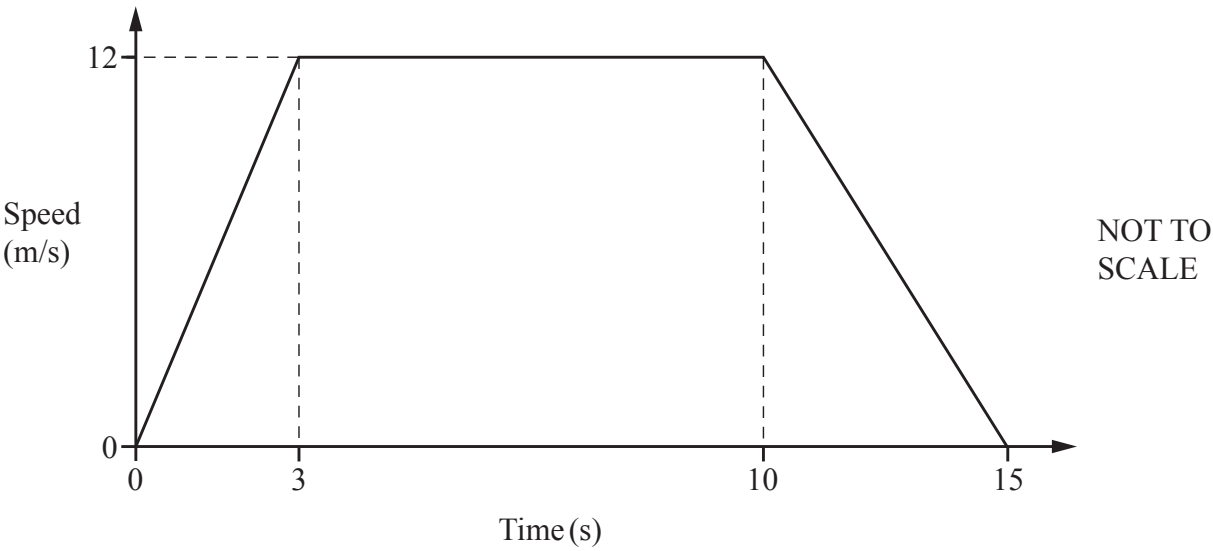
22. Question | 0580 Oct-Nov 2017 P2 V2 Q7

- 7** The area of a triangle is 528 cm^2 .
The length of its base is 33 cm .

Calculate the perpendicular height of the triangle.

..... cm [2]

20



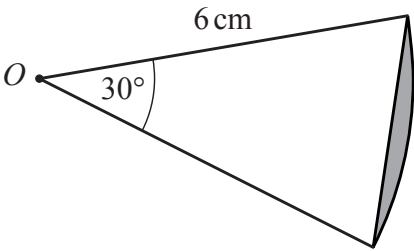
The diagram shows a speed-time graph.

Calculate the total distance travelled.

..... m [3]

24. Question | 0580 Oct-Nov 2017 P2 V2 Q23

23



NOT TO
SCALE

The diagram shows a sector of a circle, centre O and radius 6 cm .
The sector angle is 30° .
The area of the shaded segment is $(k\pi - c)\text{ cm}^2$, where k and c are integers.
Find the value of k and the value of c .

$k = \dots\dots\dots$

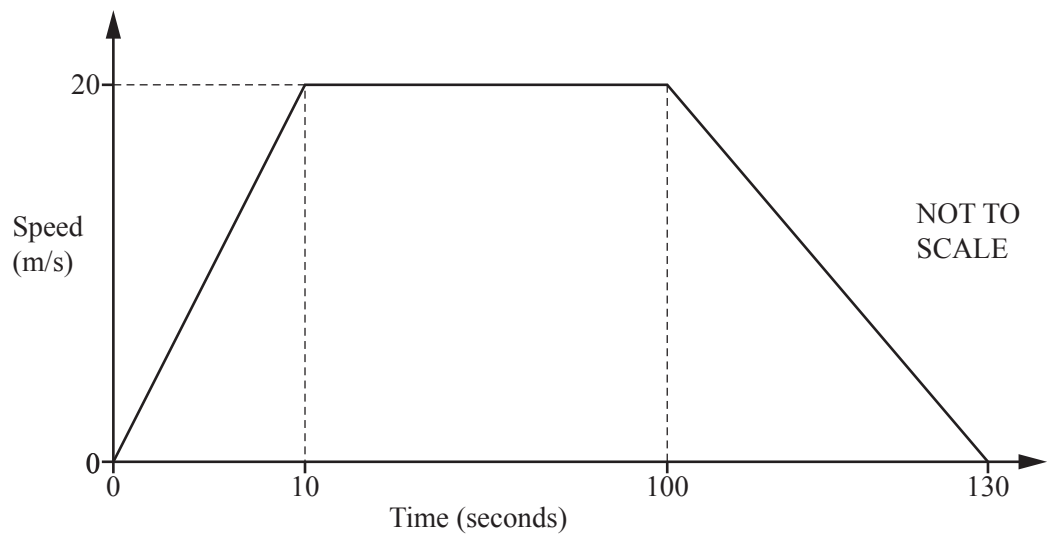
$c = \dots\dots\dots [3]$

25. Question | 0580 May-June 2018 P2 V1 Q6

6 Calculate the area of a circle with radius 5.1 cm .

$\dots\dots\dots\text{cm}^2 [2]$

17



The speed–time graph shows information about the journey of a tram between two stations.

(a) Calculate the distance between the two stations.

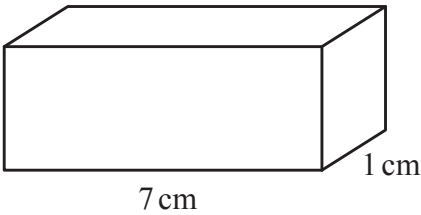
..... m [3]

(b) Calculate the average speed of the tram for the whole journey.

..... m/s [1]

27. Question | 0580 May-June 2018 P2 V2 Q14

14



NOT TO
SCALE

The diagram shows a solid cuboid with base area 7 cm^2 .
The volume of this cuboid is 21 cm^3 .

Work out the total surface area.

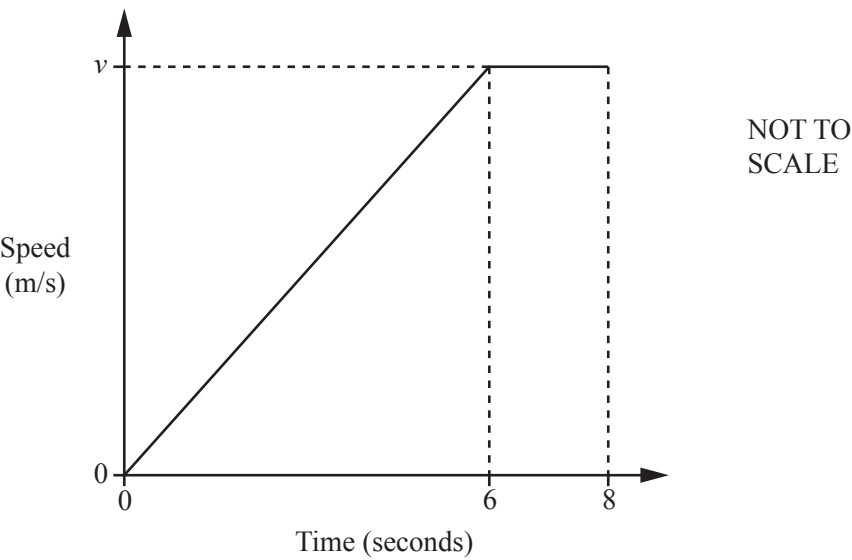
..... cm^2 [3]

28. Question | 0580 May-June 2018 P2 V2 Q15

15 Find the volume of a cylinder of radius 5 cm and height 8 cm .
Give the units of your answer.

..... [3]

17 The diagram shows information about the first 8 seconds of a car journey.

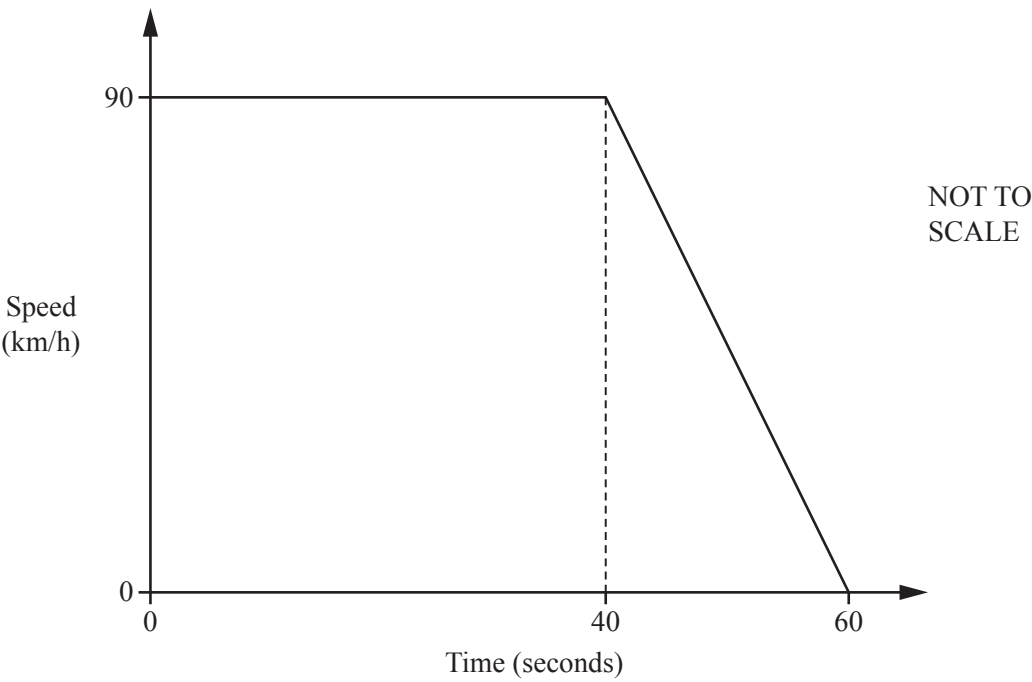


The car travels with constant acceleration reaching a speed of v m/s after 6 seconds.
The car then travels at a constant speed of v m/s for a further 2 seconds.
The car travels a total distance of 150 metres.

Work out the value of v .

$v = \dots\dots\dots [3]$

24



The diagram shows the speed–time graph for 60 seconds of a car journey.

(a) Change 90 km/h to m/s.

..... m/s [2]

(b) Find the deceleration of the car in m/s².

..... m/s² [1]

(c) Find the distance travelled, in metres, in the 60 seconds.

..... m [2]

31. Question | 0580 Oct-Nov 2018 P2 V1 Q10

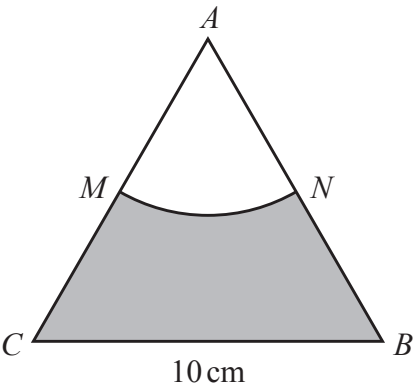
- 10** A water tank in the shape of a cuboid has length 1.5 metres and width 1 metre.
The water in the tank is 60 centimetres deep.

Calculate the number of litres of water in the tank.

..... litres [3]

32. Question | 0580 Oct-Nov 2018 P2 V2 Q21

21



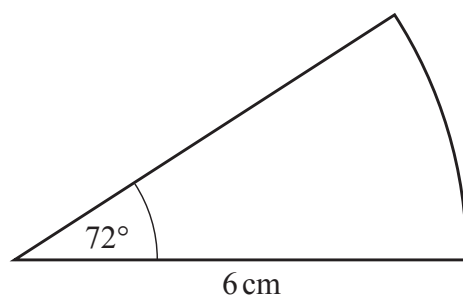
NOT TO
SCALE

The diagram shows an equilateral triangle ABC with sides of length 10 cm.
 AMN is a sector of a circle, centre A .
 M is the mid-point of AC .

Work out the area of the shaded region.

..... cm^2 [4]

19

NOT TO
SCALE

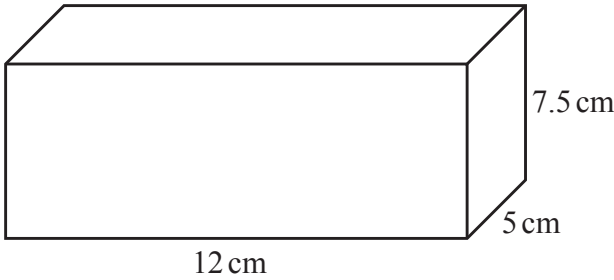
The diagram shows a sector of a circle with radius 6 cm and sector angle 72° .
The perimeter of this sector is $(p + q\pi)$ cm.

Find the value of p and the value of q .

 $p = \dots\dots\dots$ $q = \dots\dots\dots [3]$

34. Question | 0580 Feb-March 2019 P2 V2 Q10

10



NOT TO
SCALE

Calculate the total surface area of the cuboid.

.....cm² [3]

35. Question | 0580 Feb-March 2019 P2 V2 Q12

12 A cone with height 14.8 cm has volume 275 cm³.

Calculate the radius of the cone.

[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

..... cm [3]

36. Question | 0580 Feb-March 2019 P2 V2 Q18

- 18

A pipe is full of water.

The cross-section of the pipe is a circle, radius 2.6 cm.

Water flows through the pipe into a tank at a speed of 12 centimetres per second.

Calculate the number of litres that flow into the tank in one hour.

..... litres [3]

37. Question | 0580 May-June 2019 P2 V1 Q5

- 5

The volume of a cuboid is 180 cm^3 .

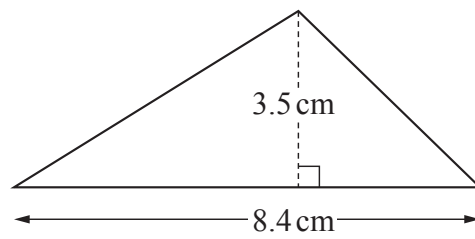
The base is a square of side length 6 cm.

Calculate the height of this cuboid.

..... cm [2]

38. Question | 0580 May-June 2019 P2 V2 Q7

7



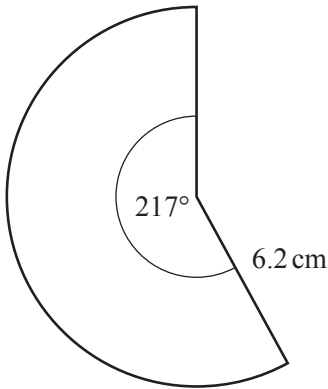
NOT TO
SCALE

Calculate the area of this triangle.

..... cm^2 [2]

39. Question | 0580 May-June 2019 P2 V3 Q12

12



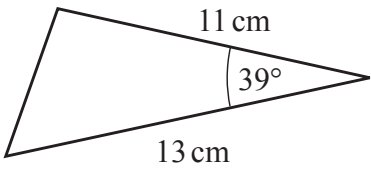
NOT TO
SCALE

The diagram shows a sector of a circle with radius 6.2 cm and sector angle 217° .
Calculate the area of this sector.

..... cm^2 [2]

40. Question | 0580 Oct-Nov 2019 P2 V1 Q13

13



NOT TO
SCALE

Calculate the area of the triangle.

..... cm² [2]

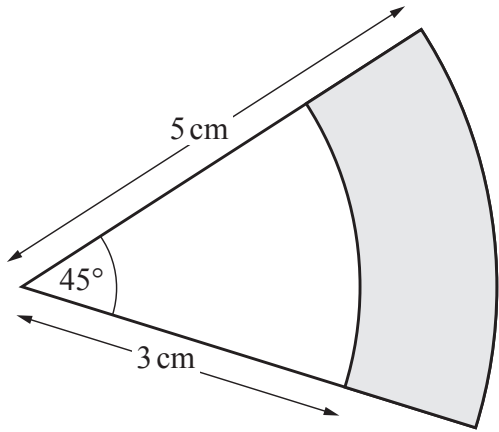
41. Question | 0580 Oct-Nov 2019 P2 V1 Q14

- 14 The scale of a map is 1 : 10 000 000.
On the map, the area of Slovakia is 4.9 cm².

Calculate the actual area of Slovakia.
Give your answer in square kilometres.

..... km² [3]

17



NOT TO
SCALE

The diagram shows two sectors of circles with the same centre.
Calculate the shaded area.

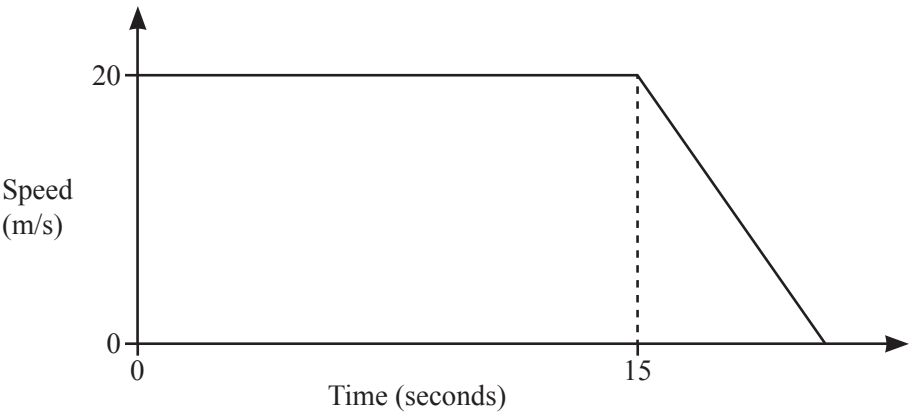
..... cm² [3]

22 A pipe is completely full of water.
Water flows through the pipe at a speed of 1.2 m/s into a tank.
The cross-section of the pipe has an area of 6 cm².

Calculate the number of litres of water flowing into the tank in 1 hour.

..... litres [4]

26



NOT TO
SCALE

A car travels at 20 m/s for 15 seconds before it comes to rest by decelerating at 2.5 m/s^2 .

Find the total distance travelled.

..... m [5]

45. Question | 0580 Oct-Nov 2019 P2 V2 Q13

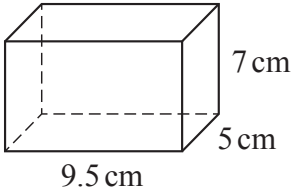
- 13** Two mathematically similar containers have heights of 30 cm and 75 cm.
The larger container has a capacity of 5.5 litres.

Calculate the capacity of the smaller container.
Give your answer in millilitres.

..... ml [3]

46. Question | 0580 Oct-Nov 2019 P2 V3 Q9

- 9** A cuboid measures 5 cm by 7 cm by 9.5 cm.



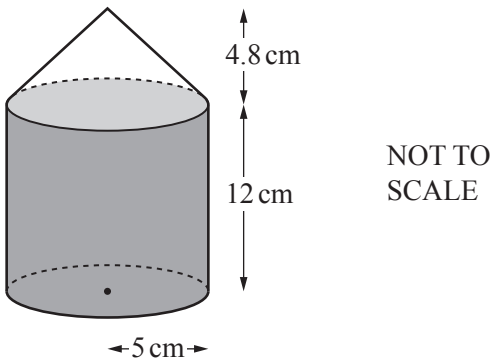
NOT TO
SCALE

Work out the surface area of this cuboid.

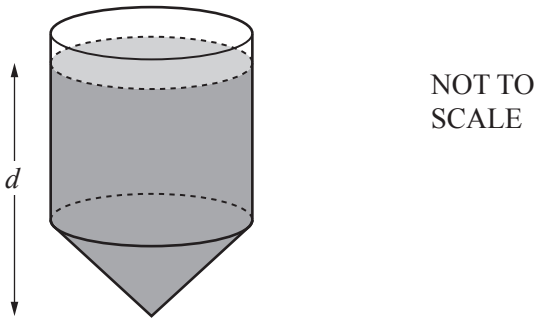
..... cm² [3]

47. Question | 0580 Oct-Nov 2019 P2 V3 Q22

- 22 A container is made from a cylinder and a cone, each of radius 5 cm.
The height of the cylinder is 12 cm and the height of the cone is 4.8 cm.



The cylinder is filled completely with water.
The container is turned upside down as shown below.

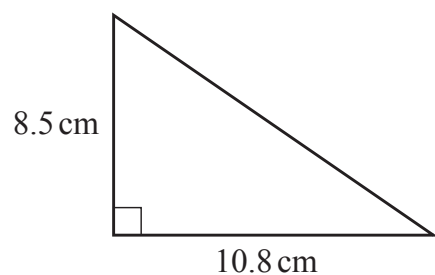


Calculate the depth, d , of the water.
[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

$d = \dots\dots\dots$ cm [5]

Question 23 is printed on the next page.

7

NOT TO
SCALE

The diagram shows a right-angled triangle.

(a) Calculate the area.

..... cm^2 [2]

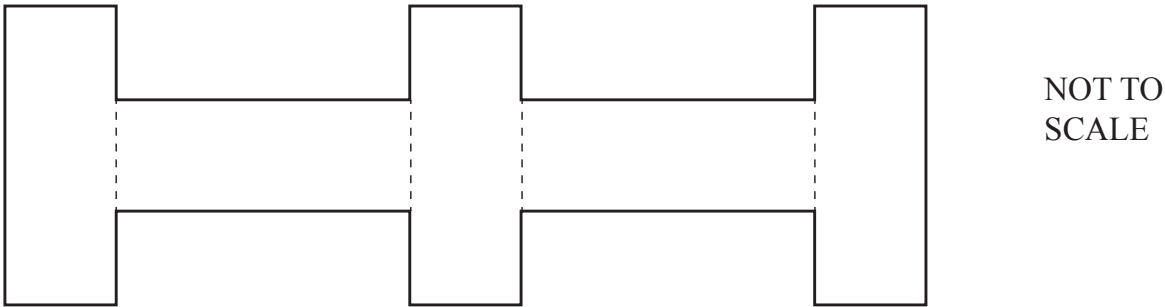
(b) Calculate the perimeter.

..... cm [3]

1 Rectangle A measures 3 cm by 8 cm.



Five rectangles congruent to A are joined to make a shape.



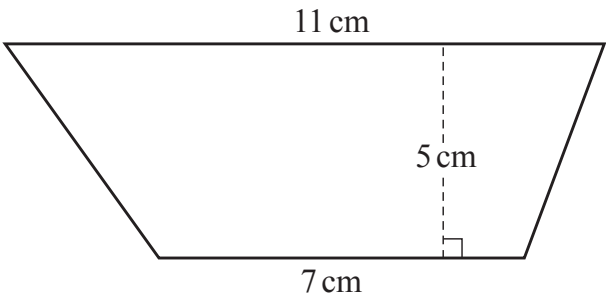
Work out the perimeter of this shape.

..... cm [2]

22 Find the area of a regular hexagon with side length 7.4 cm.

..... cm² [3]

6

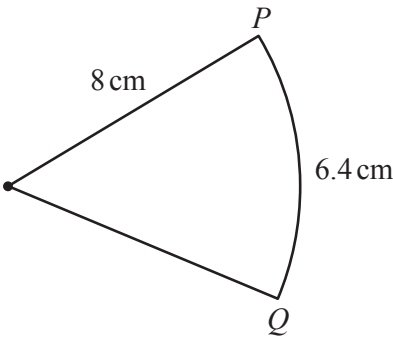


NOT TO
SCALE

Calculate the area of the trapezium.

..... cm² [2]

24



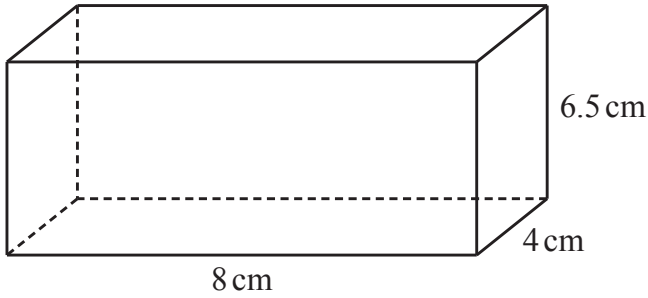
NOT TO
SCALE

The diagram shows a sector of a circle of radius 8 cm.
The length of the arc PQ is 6.4 cm.

Find the area of the sector.

..... cm^2 [4]

2



NOT TO
SCALE

The diagram shows a cuboid.

Calculate the volume of the cuboid.

..... cm³ [1]

54. Question | 0580 May-June 2020 P2 V3 Q9

- 9 Calculate the area of the sector of a circle with radius 65 mm and sector angle 42° .
Give your answer in square centimetres.

..... cm^2 [3]

55. Question | 0580 May-June 2020 P2 V3 Q10

- 10 A solid cylinder has radius 3 cm and height 4.5 cm.

Calculate the **total** surface area of the cylinder.

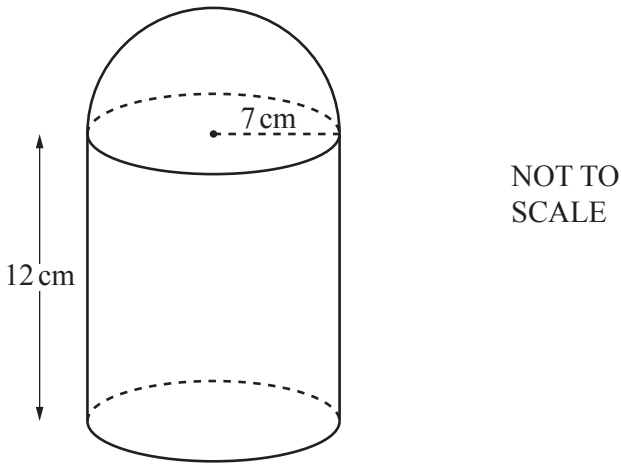
..... cm^2 [4]

12 The total perimeter of a semicircle is 19.02 cm.

Calculate the radius of the semicircle.

..... cm [3]

18

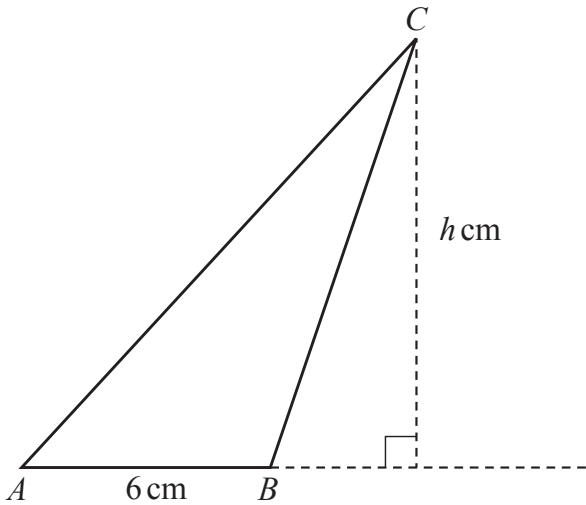


The diagram shows a solid made from a cylinder and a hemisphere, both of radius 7 cm.
The cylinder has length 12 cm.

Work out the total surface area of the solid.
[The surface area, A , of a sphere with radius r is $A = 4\pi r^2$.]

..... cm² [4]

7



NOT TO
SCALE

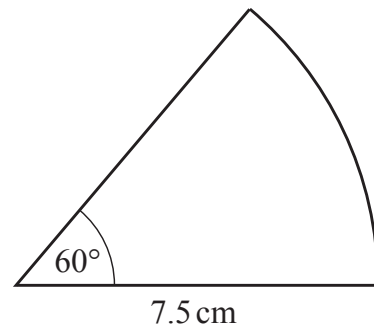
The area of triangle ABC is 27 cm^2 and $AB = 6\text{ cm}$.
Calculate the value of h .

$h = \dots\dots\dots$ [2]

13 The length of one side of a rectangle is 12 cm .
The length of the diagonal of the rectangle is 13 cm .
Calculate the area of the rectangle.

$\dots\dots\dots\text{ cm}^2$ [3]

15



NOT TO
SCALE

Calculate the area of this sector of a circle.

..... cm^2 [2]

61. Question | 0580 Oct-Nov 2020 P2 V2 Q20

- 20** A model of a statue has a height of 4 cm.
The volume of the model is 12 cm^3 .
The volume of the statue is $40\,500\text{ cm}^3$.

Calculate the height of the statue.

..... cm [3]

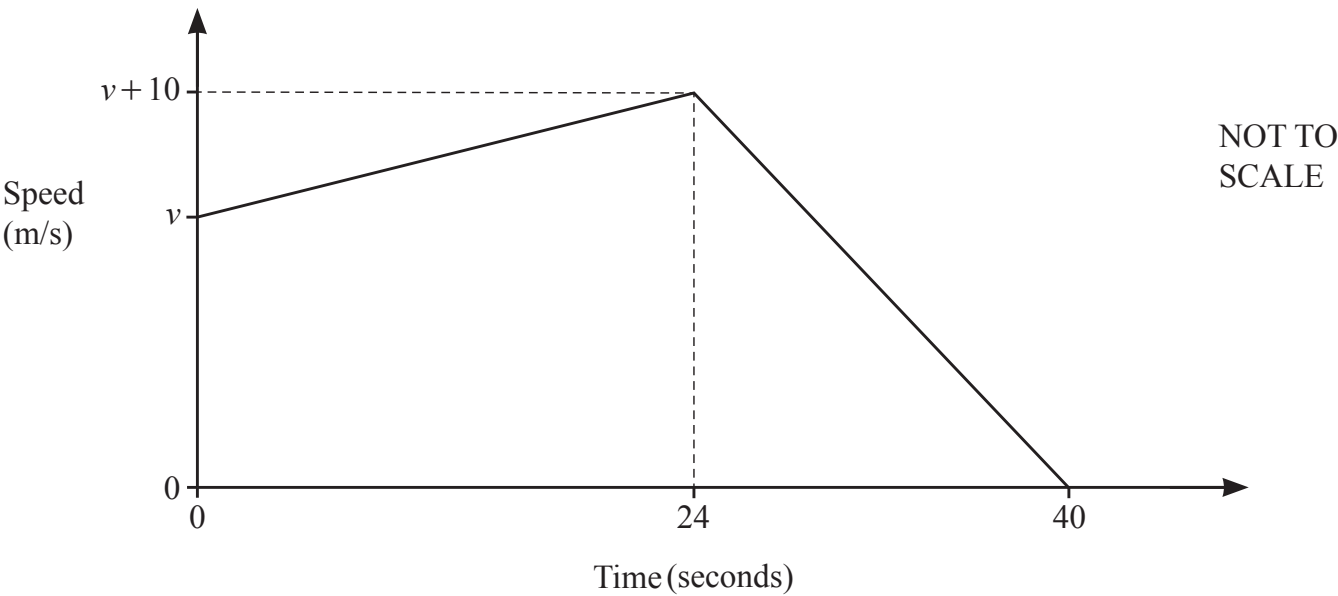
62. Question | 0580 Oct-Nov 2020 P2 V3 Q16

- 16** A paperweight has height 4 cm and volume 38.4 cm^3 .
A mathematically similar paperweight has height 7 cm.

Calculate the volume of this paperweight.

..... cm^3 [3]

19



The diagram shows the speed–time graph for the final 40 seconds of a car journey.
At the start of the 40 seconds the speed is v m/s.

(a) Find the acceleration of the car during the first 24 seconds.

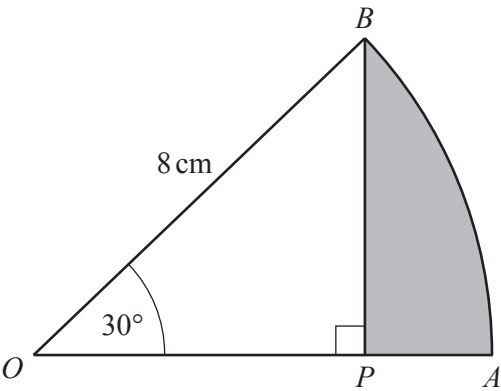
..... m/s^2 [1]

(b) The total distance travelled during the 40 seconds is 1.24 kilometres.

Find the value of v .

$v =$ [4]

21



NOT TO
SCALE

OAB is the sector of a circle, centre O .
 $OB = 8\text{ cm}$ and angle $AOB = 30^\circ$.
 BP is perpendicular to OA .

(a) Calculate AP .

$AP = \dots\dots\dots\text{ cm}$ [3]

(b) Work out the area of the shaded region APB .

$\dots\dots\dots\text{ cm}^2$ [3]

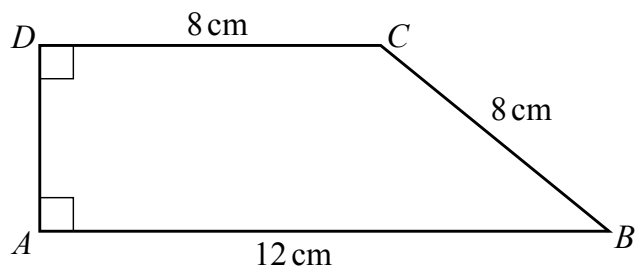
4 Chai says that 8 cm^2 is the same as 80 mm^2 .

Explain why Chai is wrong.

..... [1]

66. Question | 0580 Specimen 2020 P2 Q17

17 Calculate the area of this trapezium.



NOT TO
SCALE

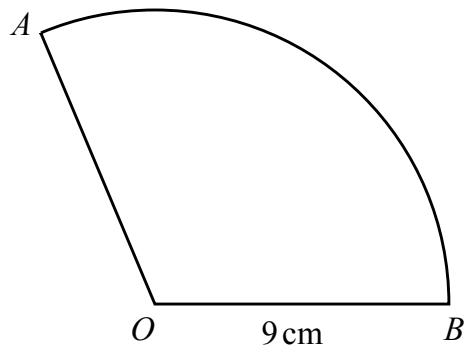
..... cm^2 [4]

67. Question | 0580 Specimen 2020 P2 Q23

23 AB is an arc of a circle, centre O , radius 9 cm .

The length of the arc AB is $6\pi\text{ cm}$.
The area of sector AOB is $k\pi\text{ cm}^2$.

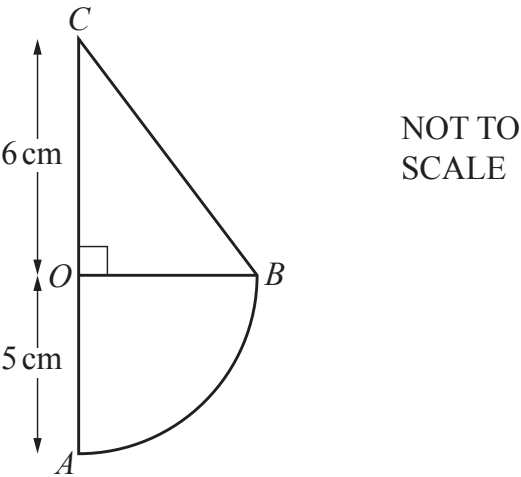
Find the value of k .



NOT TO
SCALE

$k =$ [3]

12

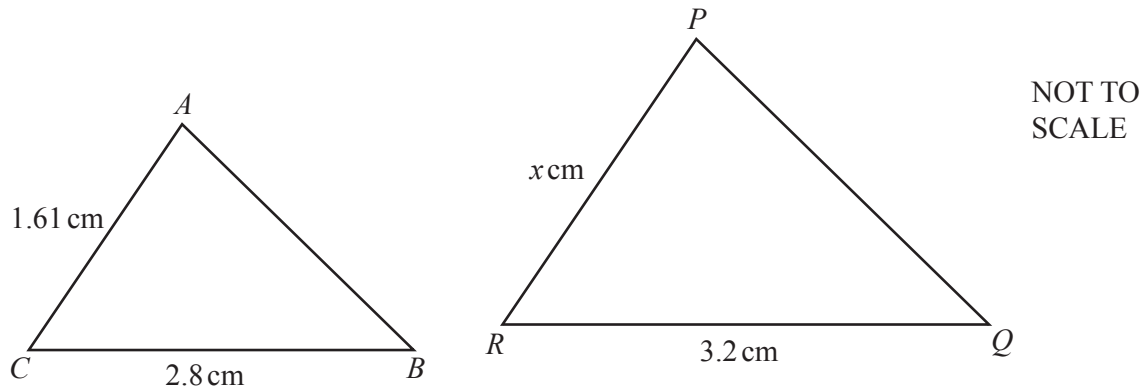


The diagram shows a shape made from a quarter-circle, OAB , and a right-angled triangle OBC . The radius of the circle is 5 cm and $OC = 6$ cm.

Calculate the area of the shape.

..... cm² [3]

20 (a)



Triangle ABC is mathematically similar to triangle PQR .

Find the value of x .

$x = \dots\dots\dots$ [2]

(b)



The diagram shows two mathematically similar bowls.

The larger bowl has capacity 7.8 litres and height 11.5 cm.

The smaller bowl has capacity 4 litres.

Calculate the height of the smaller bowl.

$\dots\dots\dots$ cm [3]

0580 Mathematics Paper 2 - Mensuration

Topical questions | 130 questions

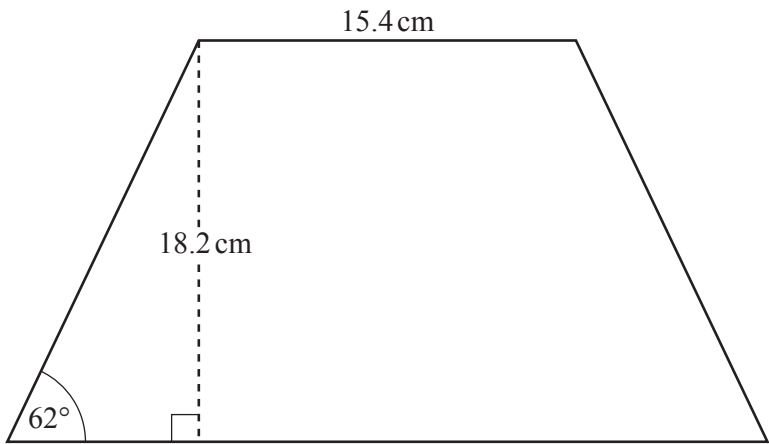
70. Question | 0580 May-June 2021 P2 V1 Q13

- 13** On a map, a lake has an area of 32 cm^2 .
The scale of the map is 1 : 24 000.

Calculate the actual area of the lake.
Give your answer in km^2 .

..... km^2 [2]

14



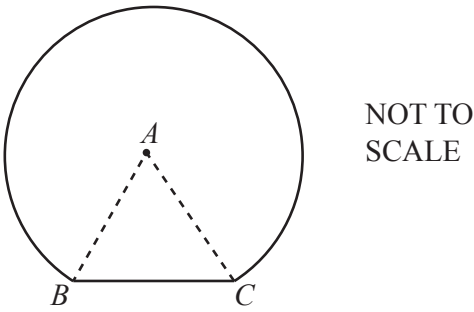
NOT TO
SCALE

The diagram shows a trapezium.
The trapezium has one line of symmetry.

Work out the area of the trapezium.

..... cm² [4]

19 (a)

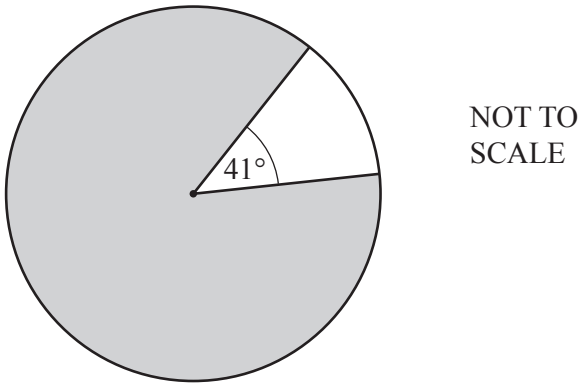


The diagram shows a shape made from an equilateral triangle ABC and a sector of a circle.
Points B and C lie on the circle, centre A .
The side length of the equilateral triangle is 12.4 cm.

Work out the perimeter of the shape.

..... cm [3]

(b)

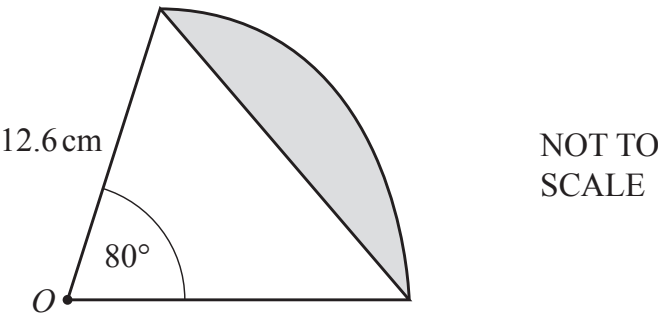


The diagram shows two sectors of a circle.
The major sector is shaded.
The area of the major sector is 74.5 cm^2 .

Calculate the radius of the circle.

..... cm [3]

19



The diagram shows a sector of a circle, centre O , radius 12.6 cm .
Calculate the perimeter of the shaded segment.

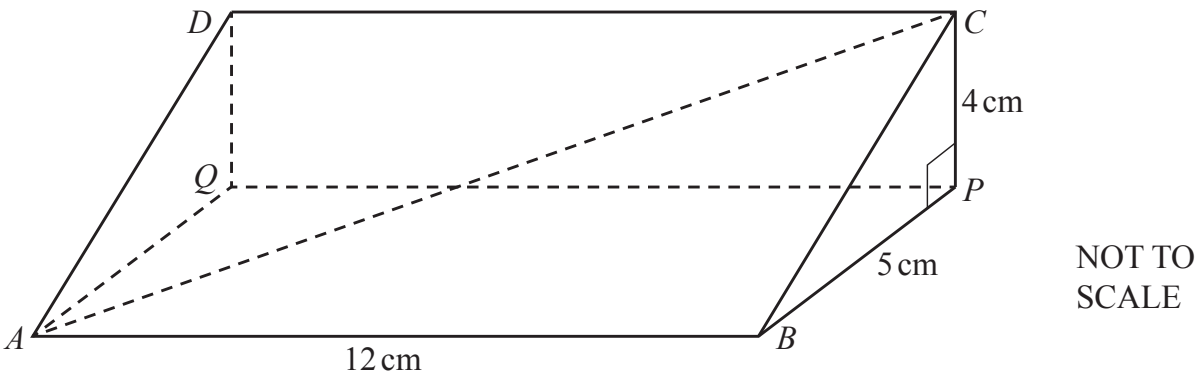
..... cm [4]

20 A lake has an area of 3 km^2 .
On a map the area of the lake is 18.75 cm^2 .

Find the scale of the map in the form $1 : n$.

1 : [3]

23



The diagram shows a triangular prism.
Angle $BPC = 90^\circ$.

(a) Calculate AC .

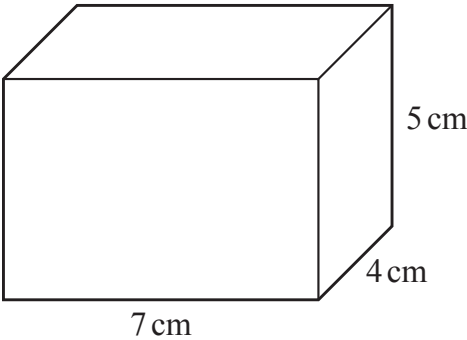
$AC = \dots\dots\dots$ cm [3]

(b) Calculate the angle between AC and the base $ABPQ$.

$\dots\dots\dots$ [3]

76. Question | 0580 Feb-March 2022 P2 V2 Q4

4



NOT TO
SCALE

Calculate the **total** surface area of this cuboid.

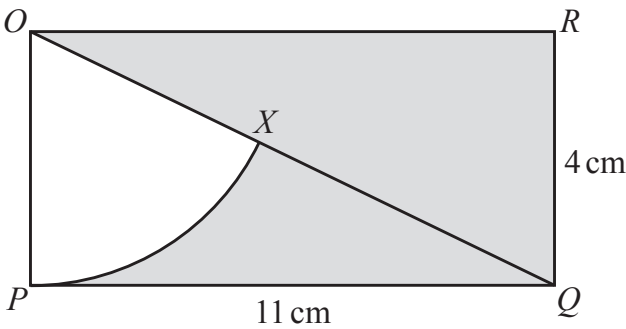
..... cm^2 [3]

77. Question | 0580 Feb-March 2022 P2 V2 Q14

14 Calculate the circumference of a circle with radius 4.7 cm.

..... cm [2]

17



NOT TO
SCALE

The diagram shows a rectangle $OPQR$ with length 11 cm and width 4 cm.
 OQ is a diagonal and OPX is a sector of a circle, centre O .

Calculate the percentage of the rectangle that is shaded.

..... % [5]

17 Find the radius of a hemisphere of volume 80 cm^3 .

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm [3]

80. Question | 0580 May-June 2022 P2 V1 Q24

24 A cuboid measures 24 cm by 12 cm by 8 cm.

Calculate the length of a diagonal of the cuboid.

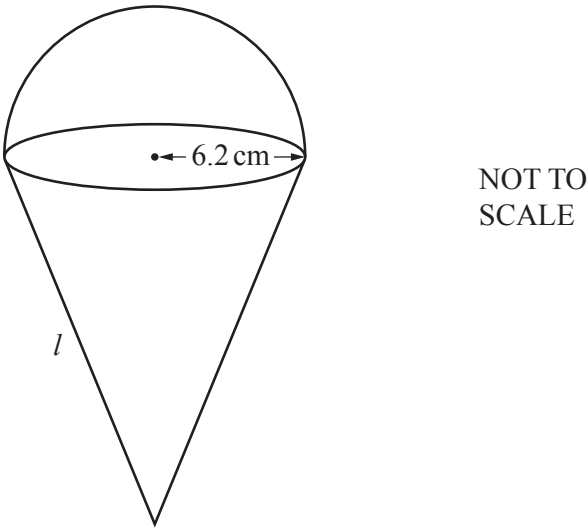
..... cm [3]

81. Question | 0580 May-June 2022 P2 V2 Q5

5 Find the total surface area of a cuboid with length 8 cm, width 6 cm and height 3 cm.

..... cm² [3]

23



The diagram shows a solid metal shape made from a cone and a hemisphere, both with radius 6.2 cm. The total surface area of the solid shape is 600 cm^2 .

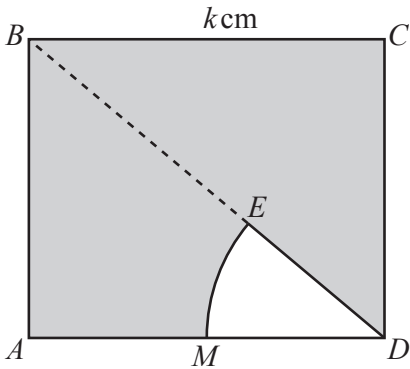
Calculate the slant height, l , of the cone.

[The surface area, A , of a sphere with radius r is $A = 4\pi r^2$.]

[The curved surface area, A , of a cone with radius r and slant height l is $A = \pi rl$.]

$l = \dots\dots\dots\text{ cm}$ [4]

20



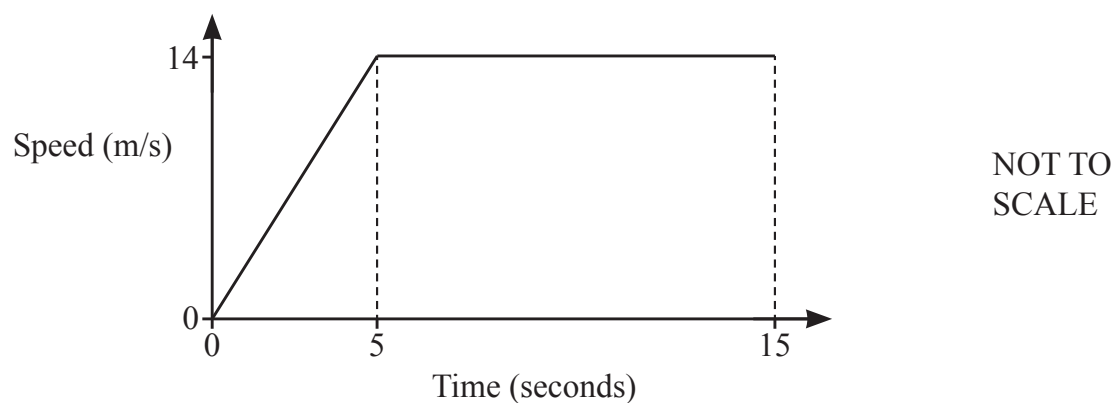
NOT TO
SCALE

The diagram shows a square $ABCD$ with side length k cm.
 MDE is a sector of a circle, centre D .
 E lies on the diagonal, BD , of the square.
 M is the midpoint of AD .

Find the percentage of the square that is shaded.

..... % [4]

13



The diagram shows the speed–time graph of the first 15 seconds of a car journey.

(a) Find the acceleration of the car during the first 5 seconds.

..... m/s^2 [1]

(b) Find the distance travelled during the 15 seconds.

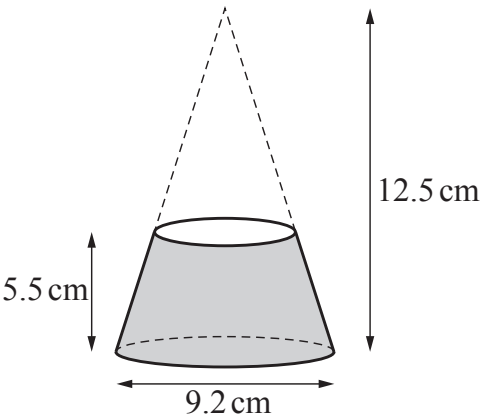
..... m [2]

15 The perimeter of a sector of a circle with radius 8 cm is 26 cm.

Calculate the angle of this sector.

..... [3]

21



NOT TO
SCALE

A solid is made by cutting a small cone from a larger cone, as shown in the diagram.
The height of the larger cone is 12.5 cm.
The height of the solid is 5.5 cm.
The diameter of the base of the larger cone is 9.2 cm.

Work out the volume of the solid.
[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

..... cm³ [4]

Questions 22 and 23 are printed on the next page.

87. Question | 0580 Oct-Nov 2022 P2 V2 Q22

22 The volumes of two mathematically similar objects are 56 cm^3 and 875 cm^3 .
The height of the smaller object is 18 cm.

Find the height of the larger object.

..... cm [3]

88. Question | 0580 Oct-Nov 2022 P2 V3 Q14

14 A map has a scale of 1 : 200 000.

Find the area, in square kilometres, of a lake that has an area of 12.4 cm^2 on the map.

..... km^2 [2]

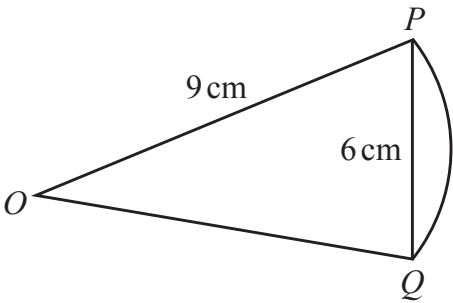
89. Question | 0580 Oct-Nov 2022 P2 V3 Q18

18 Two bottles are mathematically similar.
The small bottle has a capacity of 324 ml and a height of 12 cm.
The large bottle has a capacity of 768 ml.

Calculate the height of the large bottle.

..... cm [3]

14



NOT TO
SCALE

The diagram shows a sector of a circle with centre O and radius 9 cm.
The length of the chord PQ is 6 cm.

Calculate the length of the arc PQ .

..... cm [3]

91. Question | 0580 Feb-March 2023 P2 V2 Q18

- 18** Two solids are mathematically similar and have volumes 81 cm^3 and 24 cm^3 .
The surface area of the smaller solid is 44 cm^2 .

Calculate the surface area of the larger solid.

..... cm^2 [3]

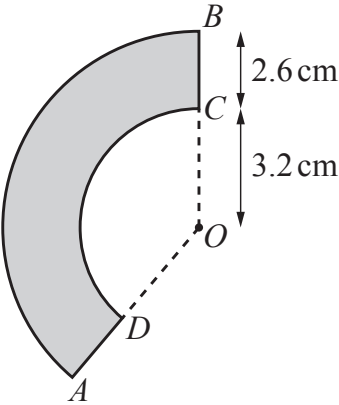
92. Question | 0580 May-June 2023 P2 V1 Q6

- 6** Calculate the volume of a sphere with diameter 4.8 cm .

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm^3 [2]

11



NOT TO
SCALE

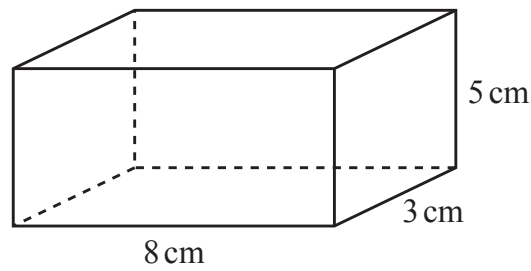
The diagram shows a shape, $ABCD$, formed by the sectors of two circles with the same centre O . Both sector angles are 140° , $OC = 3.2\text{ cm}$ and $CB = 2.6\text{ cm}$. The area of the shape is $k\pi\text{ cm}^2$.

Find the value of k .

$k = \dots\dots\dots$ [3]

94. Question | 0580 May-June 2023 P2 V3 Q3

3



NOT TO
SCALE

Find the total surface area of the cuboid.

..... cm² [3]

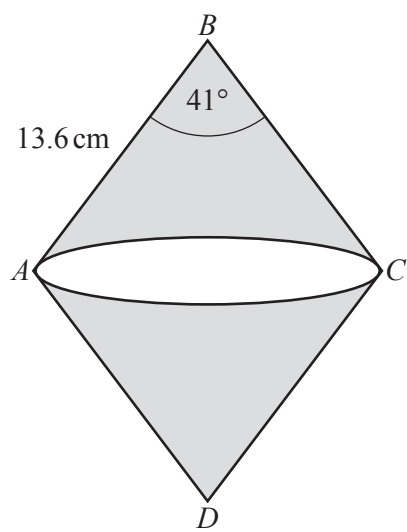
95. Question | 0580 May-June 2023 P2 V3 Q16

16 The volume of a cylinder is 1970 cm³.
The height of the cylinder is 12.8 cm.

Calculate the radius of the cylinder.

..... cm [3]

22



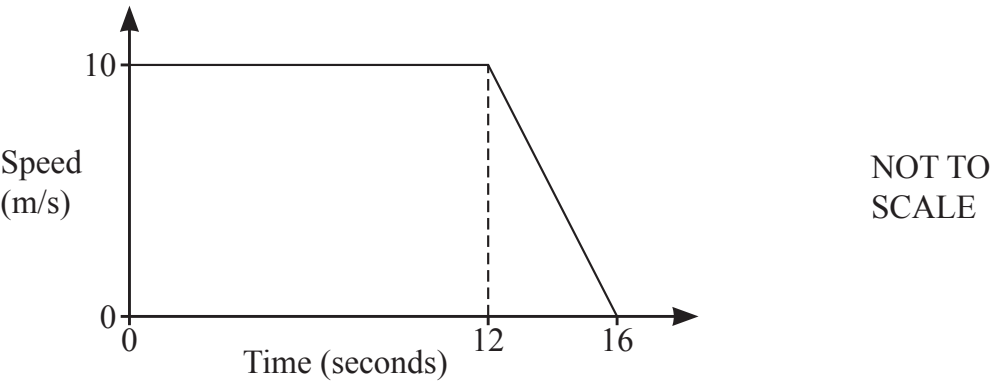
NOT TO
SCALE

$ABCD$ is a rhombus with side length 13.6 cm .
Angle $ABC = 41^\circ$.
 BAC is a sector of a circle with centre B .
 DAC is a sector of a circle with centre D .

Calculate the shaded area.

..... cm^2 [4]

12



The diagram shows a speed–time graph for 16 seconds of a car journey.

(a) Find the deceleration of the car in the final 4 seconds.

..... m/s^2 [1]

(b) Find the total distance travelled during the 16 seconds.

..... m [2]

98. Question | 0580 Oct-Nov 2023 P2 V2 Q18

18 A solid cylinder has radius 5 cm and height 8 cm.

Calculate the total surface area of the cylinder.

..... cm² [4]

99. Question | 0580 Oct-Nov 2023 P2 V3 Q11

11 A bronze sphere has radius 3.6 cm.
The density of bronze is 8.05 g/cm³.

Find the mass of the sphere.
Give your answer **in kilograms**, correct to the nearest gram.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]
[Density = mass ÷ volume.]

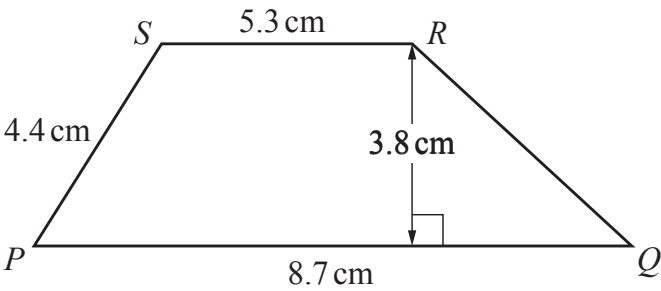
..... kg [4]

16 A cylinder with height 12.5 cm has a curved surface area of $105\pi\text{ cm}^2$.

Calculate the volume of the cylinder.

..... cm^3 [4]

10



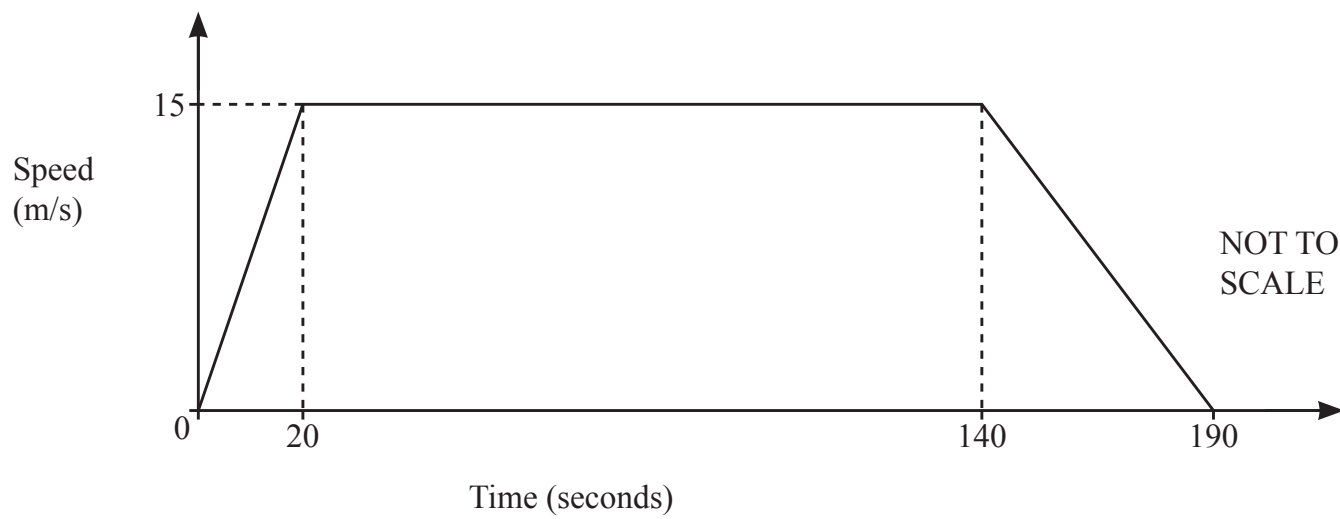
NOT TO
SCALE

The diagram shows a trapezium $PQRS$.

Calculate the area of the trapezium.

..... cm^2 [2]

19

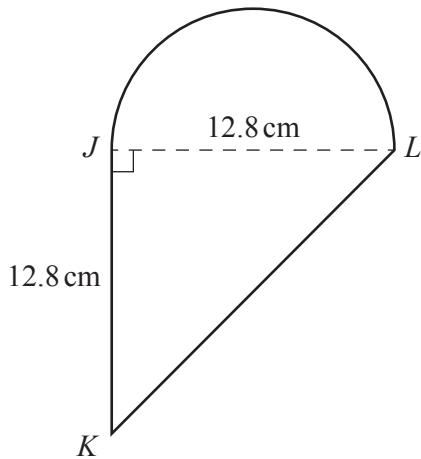


The speed–time graph shows information about a bus journey.

Calculate the total distance travelled by the bus.

..... m [3]

7



NOT TO
SCALE

The diagram shows a shape made from a triangle JKL and a semicircle with diameter JL .
 JKL is an isosceles right-angled triangle with $JK = JL = 12.8\text{ cm}$.

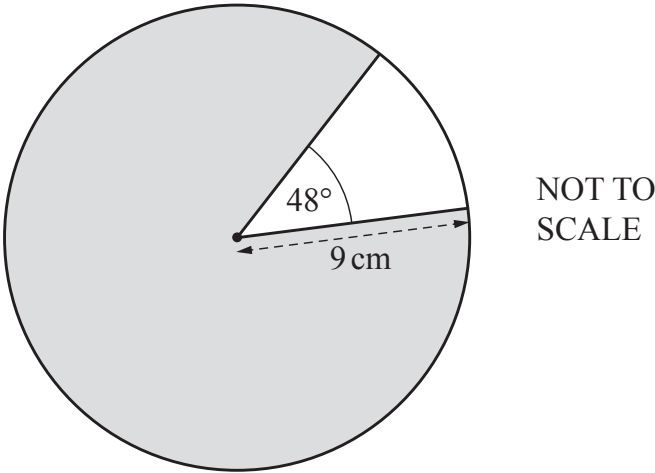
(a) Calculate the area of this shape.

..... cm^2 [3]

(b) Calculate the perimeter of this shape.

..... cm [4]

14



The diagram shows a circle with radius 9 cm.

Calculate the area of the shaded major sector.

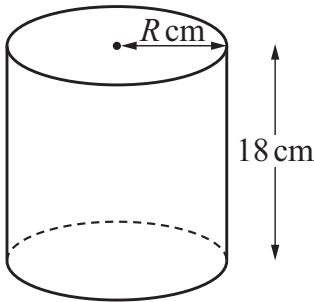
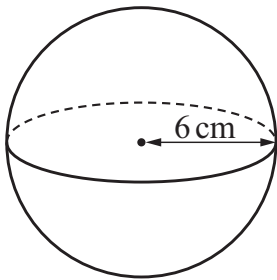
..... cm² [3]

- 4 The base of a cuboid measures 10 cm by 7 cm.
The volume of the cuboid is 280 cm³.

Calculate the height of the cuboid.

..... cm [2]

16



NOT TO
SCALE

The diagram shows a sphere of radius 6 cm and a cylinder of height 18 cm and radius R cm.
The volume of the sphere is equal to the volume of the cylinder.

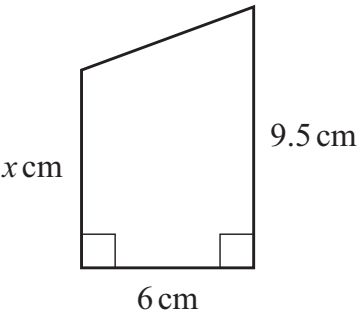
Calculate the curved surface area of the cylinder.
Give your answer in terms of π .
[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$]

..... cm^2 [4]

5 Convert 7.51 m^2 into cm^2 .

..... cm^2 [1]

6 The diagram shows a trapezium.



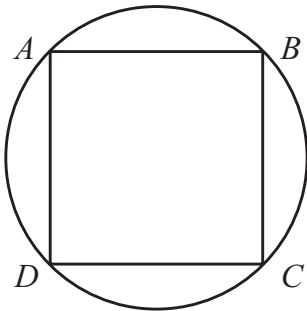
NOT TO
SCALE

The area of the trapezium is 42 cm^2 .

Calculate the value of x .

$x = \dots\dots\dots$ [2]

9



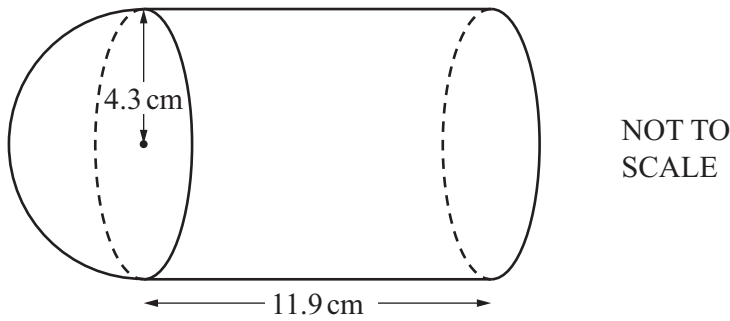
NOT TO
SCALE

Points A , B , C and D lie on a circle.
 $ABCD$ is a square with area 72 cm^2 .

Calculate the area of the circle.
Give your answer as a multiple of π .

..... cm^2 [3]

19



A solid is made from a cylinder and a hemisphere, both of radius 4.3 cm.
The cylinder has length 11.9 cm.

- (a) Calculate the volume of the solid.
[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm³ [3]

- (b) Calculate the total surface area of the solid.
[The surface area, A , of a sphere with radius r is $A = 4\pi r^2$.]

..... cm² [4]

111. Question | 0580 Oct-Nov 2024 P2 V3 Q18

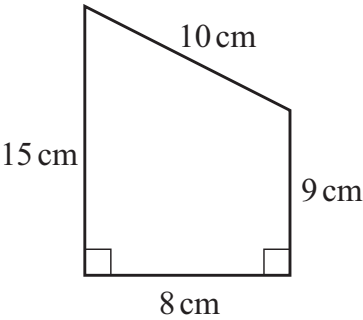
- 18
- Two mathematically similar solids have volumes 81 cm^3 and 24 cm^3 .
The height of the smaller solid is 4.8 cm .

Calculate the height of the larger solid.

..... cm [3]

112. Question | 0580 Feb-March 2025 P2 V2 Q6

6



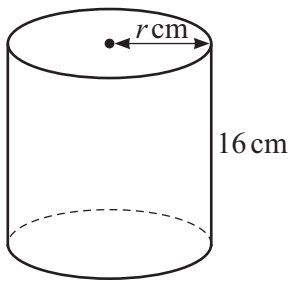
NOT TO
SCALE

Work out the area of the trapezium.

..... cm^2 [2]

113. Question | 0580 Feb-March 2025 P2 V2 Q13

13



NOT TO
SCALE

The diagram shows a cylinder with radius $r\text{ cm}$ and height 16 cm .
A sphere has radius 3 cm .
The volume of the cylinder is equal to the volume of the sphere.

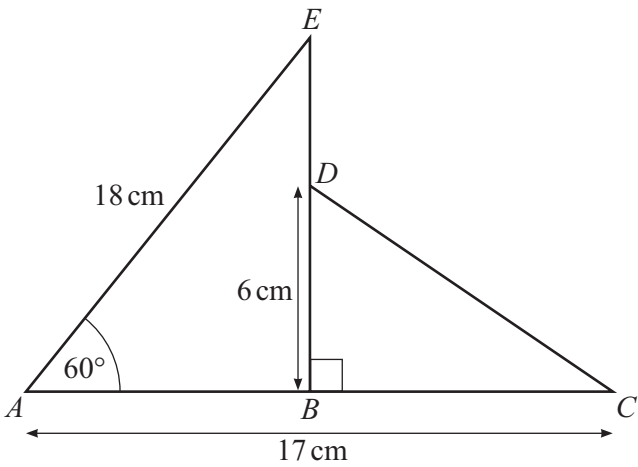
Find the value of r .

$r = \dots\dots\dots [4]$

114. Question | 0580 Feb-March 2025 P2 V2 Q18

18

NOT TO
SCALE



The quadrilateral $ACDE$ is formed by two right-angled triangles ABE and BCD .
 $AC = 17$ cm, $AE = 18$ cm and $BD = 6$ cm.

(a) Show that $CD = 10$ cm.

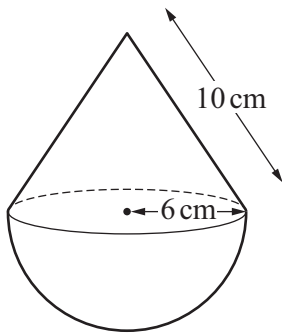
[5]

(b) Find the perimeter of the quadrilateral $ACDE$.
Give your answer in the form $p + k\sqrt{q}$.

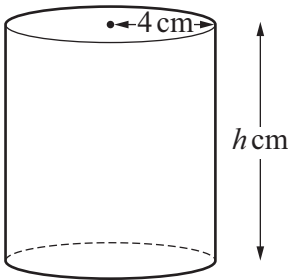
..... cm [4]

115. Question | 0580 May-June 2025 P2 V1 Q13

13



Solid *A*



Solid *B*

NOT TO
SCALE

The diagram shows solid *A* and solid *B*.
Solid *A* is made from a hemisphere and a cone each with radius 6 cm.
The cone has sloping edge 10 cm.
Solid *B* is a cylinder with radius 4 cm and height *h* cm.

The **total** surface area of solid *A* is equal to the **total** surface area of solid *B*.

(a) Work out the value of *h*.

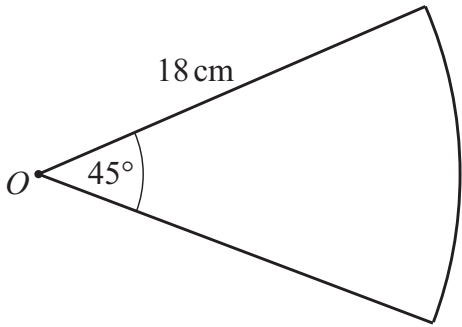
$h = \dots\dots\dots$ [5]

(b) Work out the height of solid *A*.

$\dots\dots\dots$ cm [3]

116. Question | 0580 May-June 2025 P2 V2 Q10

10



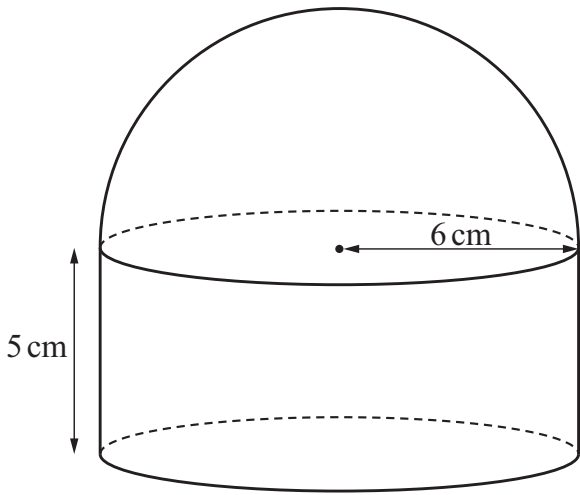
NOT TO
SCALE

The diagram shows a sector of a circle, centre O .
The length of the arc is $n\pi\text{ cm}$.

Find the value of n .

$n = \dots\dots\dots$ [2]

16



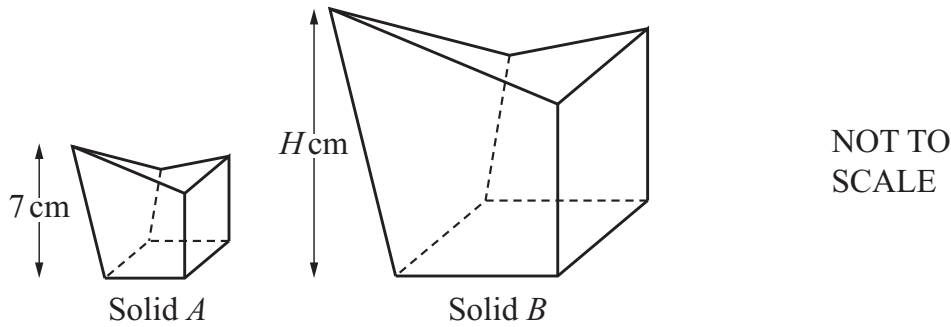
NOT TO
SCALE

The diagram shows a solid made by joining a hemisphere to a cylinder.
The radius of both the hemisphere and the cylinder is 6 cm.
The height of the cylinder is 5 cm.

Find the **total** surface area of the solid.
Give your answer in terms of π .

..... cm^2 [4]

17 Solid A is mathematically similar to solid B .



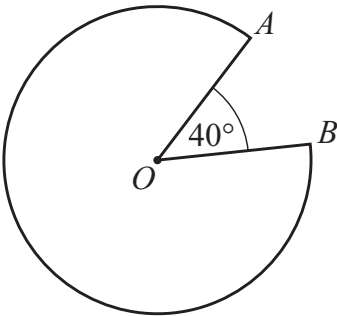
The height of solid A is 7 cm and its surface area is 60 cm^2 .
The surface area of solid B is 540 cm^2 .

Calculate the height of solid B .

..... cm [3]

119. Question | 0580 May-June 2025 P2 V3 Q20

20



NOT TO
SCALE

The diagram shows a sector of a circle, centre O .
The radius of the circle is 6 cm.

Calculate the length of the major arc AB .
Give your answer in its simplest form in terms of π .

.....cm [3]

120. Question | 0580 Oct-Nov 2025 P2 V1 Q4

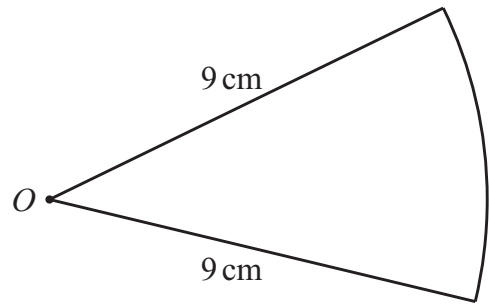
- 4 The area of a triangle is 12 cm^2 .
 The length of the base of the triangle is 8 cm.

Work out the height of the triangle.

..... cm [2]

121. Question | 0580 Oct-Nov 2025 P2 V1 Q12

12 The diagram shows a sector of a circle with centre O and radius 9 cm.



NOT TO
SCALE

The perimeter of the sector is $(18 + 2\pi)$ cm.

Find the area of the sector.
Give your answer in terms of π .

..... cm² [4]

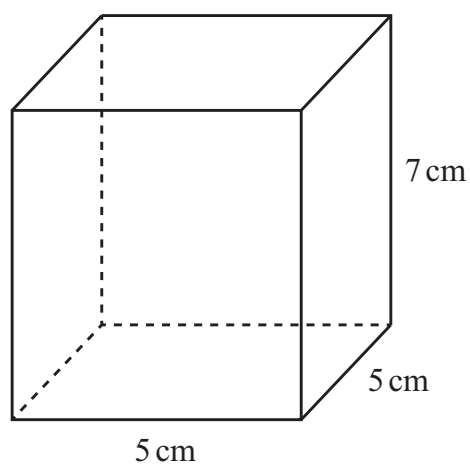
122. Question | 0580 Oct-Nov 2025 P2 V2 Q3

3 A cuboid has length 6 cm, width 5 cm and height 2.5 cm.

Work out the volume of the cuboid.

..... cm³ [2]

19

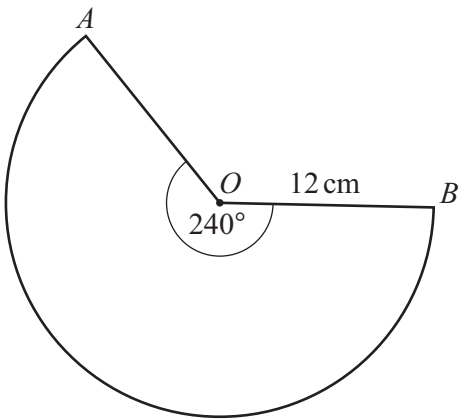
NOT TO
SCALE

The diagram shows a box in the shape of a cuboid.
Mala has a straight rod of length 10 cm.

Show that this rod does **not** fit completely inside the box.

[3]

23



NOT TO
SCALE

The diagram shows a major sector, AOB , of a circle.
The sector angle is 240° and the radius is 12 cm.

(a) Show that the length of the major arc AB is 16π cm.

[1]

(b) OA is joined to OB to form a cone.

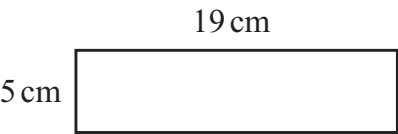
Work out the volume of the cone.

Give your answer in the form $\frac{(a\sqrt{b})\pi}{3}$ where a is an integer and b is a prime number.

..... cm^3 [6]

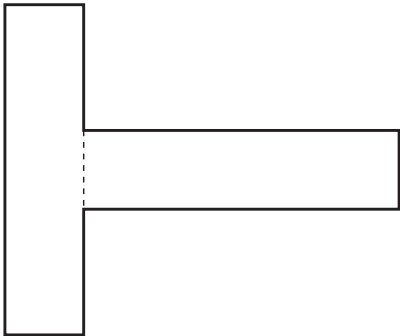
125. Question | 0580 Oct-Nov 2025 P2 V3 Q4

4 A rectangle measures 5 cm by 19 cm.



NOT TO
SCALE

Two of these rectangles are joined to make a shape.

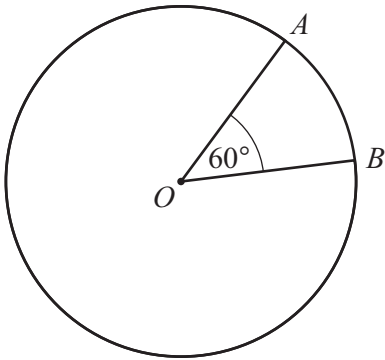


NOT TO
SCALE

Work out the perimeter of the shape.

..... cm [2]

19



NOT TO
SCALE

The diagram shows a circle, centre O , radius 12 cm.

- (a) Work out the area of the **minor** sector AOB .
Give your answer in terms of π in its simplest form.

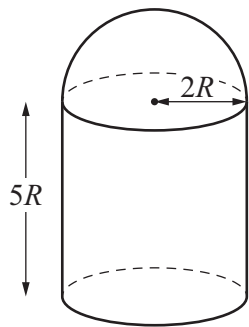
..... cm^2 [2]

- (b) Calculate the length of the **major** arc AB .
Give your answer in terms of π in its simplest form.

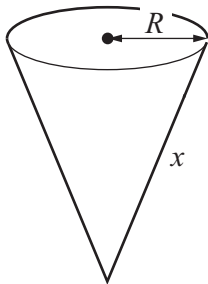
..... cm [3]

127. Question | 0580 Oct-Nov 2025 P2 V3 Q29

29 In this question all measurements are in centimetres.



Solid A



Solid B

NOT TO
SCALE

Solid A is made from a cylinder and a hemisphere, both of radius $2R$.
The cylinder has height $5R$.
Solid B is a cone of radius R and sloping edge x .

The **total** surface area of solid A is equal to the **total** surface area of solid B .

Find R in terms of x .

$R = \dots\dots\dots [5]$

128. Question | 0580 Specimen 2025 P2 Q5

5 Convert 0.17 m^2 into cm^2 .

..... cm^2 [1]

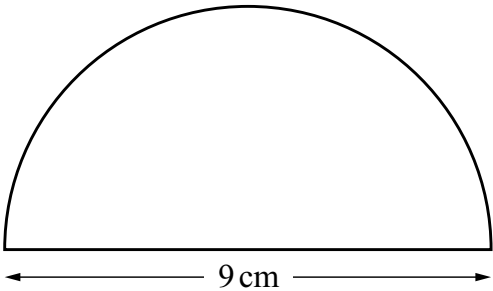
129. Question | 0580 Specimen 2025 P2 Q6

6 The mass of a solid metal cuboid is 4 kg . The volume of the cuboid is 600 cm^3 .

Calculate the density of the metal, giving your answer in **g/cm^3** .
[Density = mass $\div$ volume]

..... g/cm^3 [2]

8



NOT TO
SCALE

The diagram shows a semicircle with diameter 9 cm.

Calculate the total perimeter of this semicircle.
Give your answer in exact form.

..... cm [3]