

KS3 – Volume & Surface Area

Section A – Cubes & Cuboids

Q1 (4 marks)

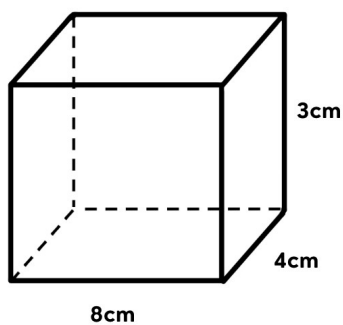
Answer these questions.

- a) Write the formula for the volume of a cuboid.
- b) Write the formula for the volume of a cube.
- c) What units should be used for volume if the lengths are measured in centimetres?
- d) What does surface area mean?

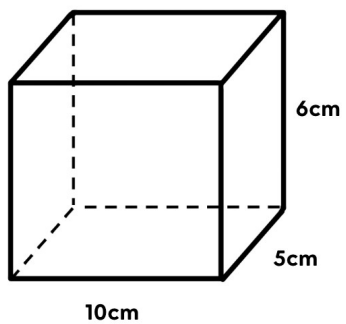
Q2 (4 marks)

Find the volume of each shape.

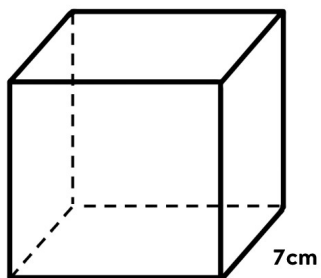
a)



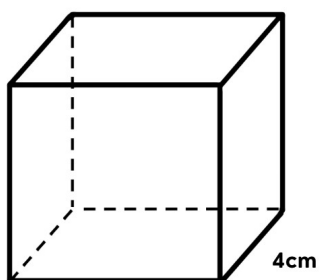
b)



c)



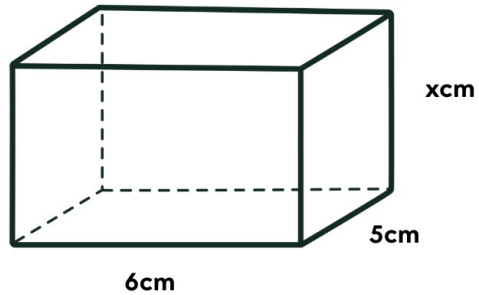
d)



Q3 (3 marks)

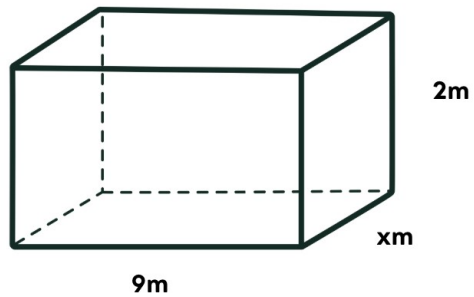
Find the missing dimension.

a) The volume of this cuboid is 120 cm^3 .



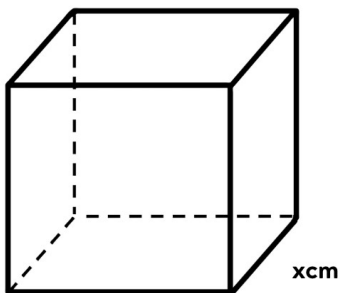
Work out x

b) The volume of this cuboid is 108 m^3 .



Work out x

c) The volume of this cube is 125 cm^3 .



Work out x

Q4 (3 marks)

Find the surface area of each shape.

a) A cube has side length 5 cm.

b) A cuboid measures 8 cm by 3 cm by 2 cm.

c) A cuboid measures 6 m by 4 m by 3 m.

Q5 (3 marks)

Solve each problem.

a) A storage box is 40 cm long, 25 cm wide and 20 cm high. Find its volume.

b) A cube-shaped gift box has side length 12 cm. Find its volume.

c) A cuboid aquarium is 60 cm long, 30 cm wide and 40 cm high. Find its volume.

Challenge

Q6 (3 marks)

A cuboid has volume 360 cm^3 . Its length is 10 cm and its width is 6 cm.

Find its height.

Section B – Prisms

Q7 (4 marks)

Answer these questions about prisms.

a) What stays the same all the way through the length of a prism?

b) Write the formula for the volume of a prism.

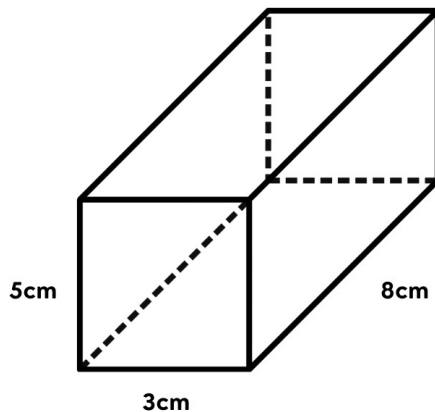
c) What is the cross-section of a triangular prism?

d) A rectangular prism is also commonly called what?

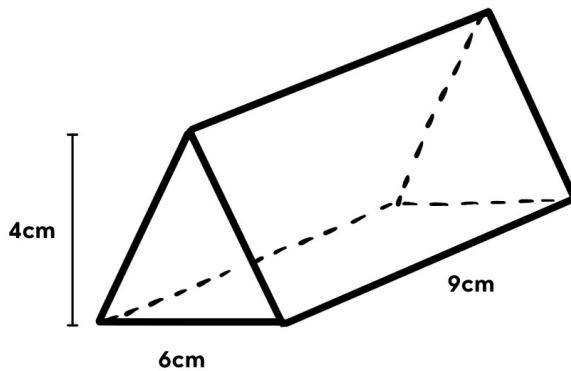
Q8 (2 marks)

Find the volume of each prism.

a)



b)



Q9 (3 marks)

Find the volume. No diagram is needed.

a) A prism has cross-sectional area 12 cm^2 and length 7 cm.

b) A prism has cross-sectional area 25 m^2 and length 6 m.

c) A prism has cross-sectional area 18 cm^2 and length 11 cm.

Q10 (3 marks)

Find the missing value.

a) A prism has volume 180 cm^3 and length 9 cm. Find its cross-sectional area.

b) A prism has volume 240 m^3 and cross-sectional area 30 m^2 . Find its length.

c) A triangular prism has volume 120 cm^3 and length 10 cm. Find the area of its triangular cross-section.

Q11 (3 marks)

Solve each problem.

a) A triangular prism has triangular cross-section base 10 cm and perpendicular height 6 cm. Its length is 12 cm. Find its volume.

b) A prism has a cross-sectional area of 35 cm^2 and length 8 cm. Find its volume.

c) A long wooden prism has cross-sectional area 24 cm^2 and length 50 cm. Find its volume.

Challenge

Q12 (3 marks)

A triangular prism has volume 180 cm^3 . Its triangular cross-section has base 6 cm and perpendicular height 5 cm.

Find the length of the prism.

Section C – Cylinders

Q13 (4 marks)

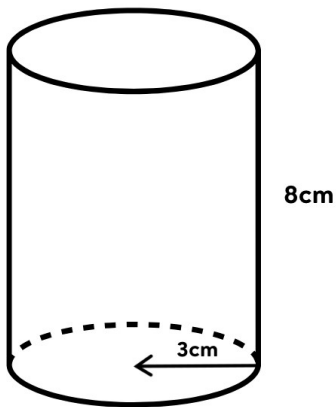
Answer these questions about cylinders.

- What shape is the cross-section of a cylinder?
- Write the formula for the area of a circle.
- Write the formula for the volume of a cylinder.
- What is the relationship between the radius and diameter of a circle?

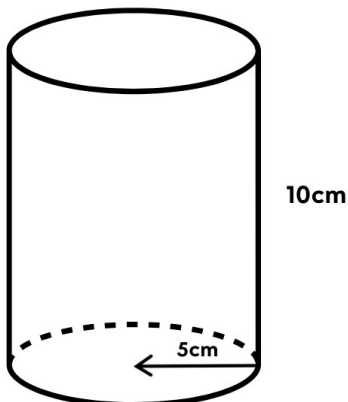
Q14 (4 marks)

Find the volume of each cylinder. Give answers to 1 decimal place.

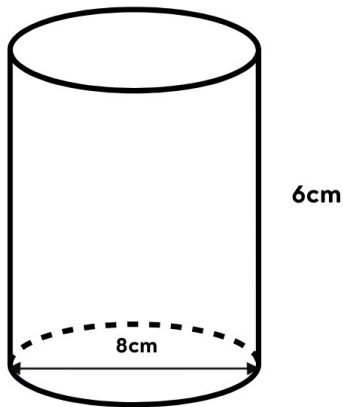
a)



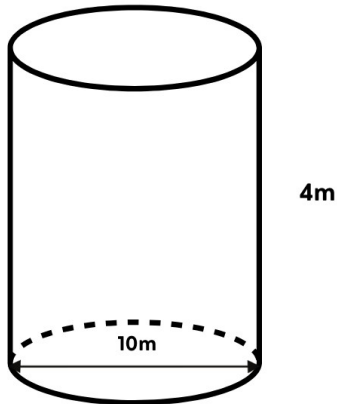
b)



c)



d)



Q15 (3 marks)

Find the volume. Give answers to 1 decimal place.

a) A cylinder has radius 4 cm and height 7 cm.

b) A cylinder has radius 6 m and height 5 m.

c) A cylinder has diameter 12 cm and height 9 cm.

Q16 (3 marks)

Find the missing height. Give answers to 1 decimal place where necessary.

a) A cylinder has volume 314.2 cm^3 and radius 5 cm.

b) A cylinder has volume 452.4 cm^3 and radius 6 cm.

c) A cylinder has volume 201.1 cm^3 and radius 4 cm.

Q17 (3 marks)

Solve each problem. Give answers to 1 decimal place.

a) A cylindrical container has radius 3 cm and height 12 cm. Find its volume.

b) A cylindrical tank has diameter 10 m and height 6 m. Find its volume.

c) A cylindrical tube has radius 2 cm and length 20 cm. Find its volume.

Challenge

Q18 (3 marks)

A cylinder has radius 5 cm and volume 785.4 cm^3 .

Find its height to 1 decimal place.

Total: ____ / 58

Percentage: ____%