Volume of prism

Mana Maths

Te reo Māori terms

poro
prism
Open in Te Aka

tapahanga
cross-section
Open in Te Aka

hōhonu
depth
Open in Te Aka

rōrahi
volume
Open in Te Aka

Foundation

1. A rectangular prism has a base area of 12 cm^2 and a depth of 5 cm. Find its volume.

2. A triangular prism has a triangular face area of 8 m^2 and a length of 10 m. Calculate its volume.

3. The volume of a prism is 60 cm^3 and its cross-sectional area is 15 cm^2. Find its depth.

4. A prism has a depth of 7 m and a volume of 84 m^3. What is the area of its face?

5. A square prism has a base side length of 3 cm and a depth of 8 cm. Find its volume.

6. A rectangular prism is 4 cm long, 5 cm wide, and 6 cm high. Calculate its volume.

7. A triangular prism has a triangular base with area 9 cm^2 and a length of 12 cm. What is its volume?

8. The volume of a prism is 150 m^3 and its depth is 6 m. Find the area of its cross-section.

9. A prism has a cross-sectional area of 20 cm^2 and a volume of 100 cm^3. How long is it?

10. A hexagonal prism has a face area of 18 m^2 and a depth of 5 m. Find its volume.

11. A rectangular prism has dimensions 2 m $\times$ 3 m $\times$ 4 m. Calculate its volume.

12. A prism has volume 72 cm^3 and depth 9 cm. What is the area of its face?

13. A triangular prism has a base area of 14 cm^2 and a length of 8 cm. Find its volume.

14. A square prism has volume 125 cm^3 and depth 5 cm. Find the side length of its square base.

15. A rectangular prism has volume 240 cm^3, length 10 cm, and width 6 cm. Find its height.

16. A prism has a cross-sectional area of 25 m^2 and a depth of 3 m. Calculate its volume.

Proficient

1. A chocolate bar is a triangular prism. The triangular end has a base of 4 cm and a height of 3 cm. The length of the bar is 20 cm. Calculate the volume of the chocolate bar in cm^3.

2. A hexagonal prism has a cross-sectional area of 25 m^2. If its volume is 300 m^3, what is the length of the prism?

3. A rectangular prism has a volume of 480 cm^3. Its length is 12 cm and its width is 5 cm. Find its height.

4. A triangular prism has a volume of 180 cm^3. The area of its triangular face is 15 cm^2. How long is the prism?

5. A square prism has a volume of 512 cm^3 and a depth of 8 cm. Find the side length of its square base.

6. A prism has a cross-section that is a trapezium with area 18 cm^2. If the prism is 25 cm long, what is its volume?

7. A rectangular prism has dimensions 2.5 m by 3.2 m by 4.1 m. Calculate its volume to the nearest cubic metre.

8. A triangular prism has a base triangle with base 6 cm and height 4 cm. If the prism is 15 cm long, find its volume.

9. The volume of a prism is 1.2 m^3 and its depth is 0.8 m. Find the area of its cross-section.

10. A prism has a cross-sectional area of 36 cm^2 and a volume of 432 cm^3. What is its depth?

11. A rectangular prism has a volume of 960 cm^3. If its length is 16 cm and its height is 10 cm, find its width.

12. A square prism has a base side length of 7 cm and a volume of 441 cm^3. Find its depth.

Excellence

1. A prism has a cross-section that is a right-angled triangle with legs 5 cm and 12 cm. If the prism is 30 cm long, calculate its volume.

2. A rectangular prism has a volume of 1.5 m^3. Its length is 2 m and its width is 0.75 m. Find its height in centimetres.

3. Two prisms have the same cross-sectional area. Prism A has depth 8 cm and volume 200 cm^3. Prism B has depth 12 cm. What is the volume of prism B?

4. A square prism and a rectangular prism have the same volume. The square prism has base side 6 cm and depth 10 cm. The rectangular prism has length 9 cm and width 5 cm. Find the height of the rectangular prism.

5. A triangular prism has a volume of 240 cm^3. The area of its triangular face is 20 cm^2. The prism is cut into two equal shorter prisms. What is the volume of each shorter prism?

6. A prism has a cross-section that is a trapezium with parallel sides 4 cm and 6 cm, and height 5 cm. If the prism is 15 cm long, find its volume.

7. A rectangular prism has dimensions in the ratio 2:3:5. Its volume is 810 cm^3. Find the actual dimensions.

8. A square prism has a volume that is 4 times the volume of a cube with side length 3 cm. If the square prism has depth 8 cm, find the side length of its base.

9. A triangular prism has a base triangle with area 18 cm^2. The prism is 25 cm long. If the prism is melted down and recast into a cube, what is the side length of the cube?

10. A prism has a cross-sectional area of 24 cm^2. Its volume is 360 cm^3. The prism is cut perpendicular to its length into three equal pieces. What is the volume of each piece?

11. A rectangular prism has a volume of 720 cm^3. Its length, width, and height are consecutive even numbers. Find the dimensions.

12. A square prism has a volume of 1000 cm^3. If its depth is increased by 20% without changing the base, what is the new volume?

13. A triangular prism and a square prism have the same volume. The triangular prism has base area 16 cm^2 and depth 15 cm. The square prism has base side length 4 cm. Find the depth of the square prism.

14. A prism has a cross-section that is a regular hexagon with area $54\sqrt{3}$ cm^2. If the prism is 20 cm long, calculate its volume.

15. A rectangular prism has length l, width w, and height h. If $l = 2w$ and $h = w + 2$, and the volume is 192 cm^3, find the dimensions.

16. A square prism has a volume of 512 cm^3. If both the side length of the base and the depth are doubled, what is the new volume?

17. A triangular prism has a base triangle with sides 5 cm, 12 cm, and 13 cm (a right-angled triangle). If the prism is 18 cm long, find its volume.

18. A prism has a volume of 2.4 m^3 and a depth of 1.2 m. The cross-section is a rectangle with length twice its width. Find the dimensions of the cross-section.

19. A square prism and a rectangular prism have equal depths. The square prism has base side 8 cm. The rectangular prism has base dimensions 10 cm by 6.4 cm. If their volumes are equal, find the common depth.

20. A prism has a cross-sectional area that varies along its length. The average cross-sectional area is 15 cm^2 and the length is 40 cm. Estimate the volume of the prism.