

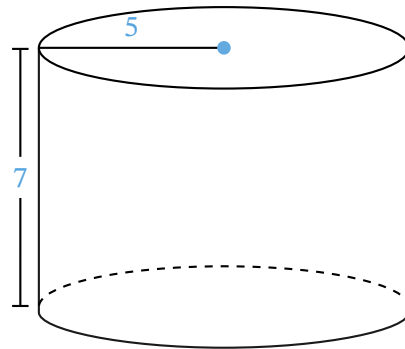
Worksheet: Volume of a Cylinder



Q1: Work out the volume of the cylinder, giving your answer accurate to two decimal places.



Question Video



A 256.56 units^3

B 183.26 units^3

C 733.04 units^3

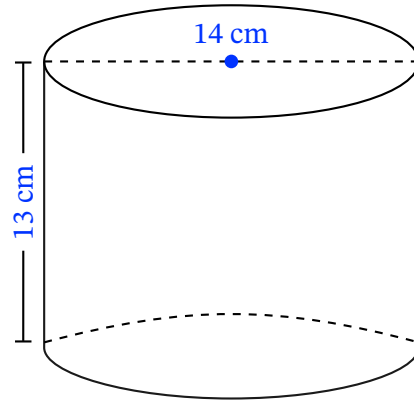
D 769.69 units^3

E 549.78 units^3

Q2: Work out the volume of the cylinder, giving your answer accurate to two decimal places.



Question Video



- A 571.77 cm^3
- B 2001.19 cm^3
- C 667.06 cm^3
- D 2668.26 cm^3
- E 8004.77 cm^3

Q3: A cylinder has a volume of $54\pi \text{ cm}^3$. Given that its height is equal to the radius of its base, find its height.

- A 3 cm
- B $3\sqrt[3]{2}$ cm
- C $2\sqrt[3]{3}$ cm
- D $\sqrt[3]{2}$ cm



Question Video

Q4: Work out the volume of a cylinder with a radius of 7 and a height of 5. Give your solution to two decimal places.

- A 1 099.56
- B 109.96
- C 769.69
- D 549.78
- E 219.91

Q5: Which has the greater volume, a cube whose edges are 4 cm long or a cylinder with a radius of 3 cm and a height of 8 cm?

- A the cylinder
- B the cube

Q6: A tree trunk is 14 feet long and has a circumference of 4 feet. By modeling the trunk as a perfect cylinder, work out the volume of wood in the trunk. Give your answer to two decimal places in cubic feet.

A 62.93 cubic feet

B 17.38 cubic feet

C 48.00 cubic feet

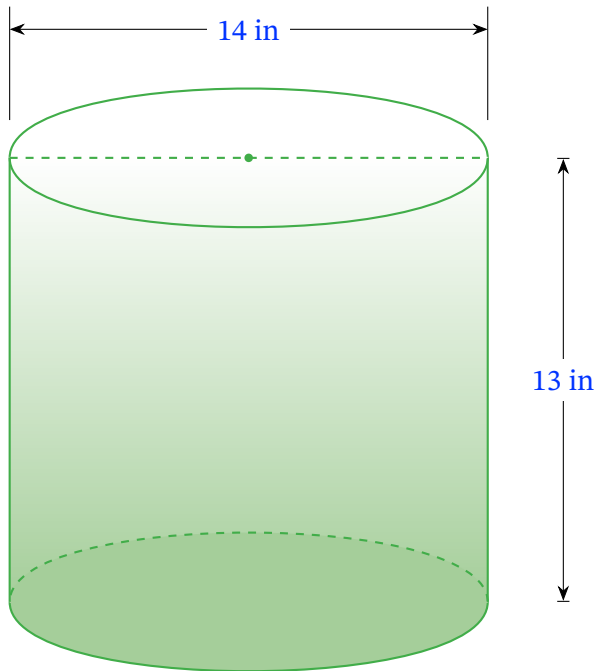
D 17.83 cubic feet

E 62.39 cubic feet

Q7: Find the volume of the cylinder. Give your answer in in^3 to one decimal place.



Question Video



- A $4,002.4 \text{ in}^3$
- B $2,001.2 \text{ in}^3$
- C $1,143.5 \text{ in}^3$
- D 571.8 in^3
- E $8,004.8 \text{ in}^3$

Q8: Find the volume of a cylinder whose base has a radius of 14 cm and whose height is 3 cm. Use $\pi = \frac{22}{7}$.

A 396 cm^3

B $1,848 \text{ cm}^3$

C $1,496 \text{ cm}^3$

D 264 cm^3

Q9: Elizabeth needs to manufacture a cylinder with a height of 3 feet and a volume of 90 cubic feet. What will be the radius of the cylinder? Give your solution to two decimal places.

A 5.48 feet

B 9.55 feet

C 3.09 feet

D 4.77 feet

E 1.78 feet



Question Video

Q10: A cylinder has a height of 19.5 cm. The base of this cylinder has a circumference of 64 cm. Find the volume of the cylinder to the nearest centimetre cubed.

A 624 cm^3

B $12,168 \text{ cm}^3$

C $6,356 \text{ cm}^3$

D $12,712 \text{ cm}^3$

Q11: Work out the volume of a cylinder with a diameter of 15 inches and a perpendicular height of 5 inches. Give your answer as a fraction, in terms of π , in its simplest form.

A 75π cubic inches

B $\frac{1\ 125\pi}{2}$ cubic inches

C $\frac{1\ 125\pi}{4}$ cubic inches

D $1\ 125\pi$ cubic inches

E $\frac{75\pi}{2}$ cubic inches

Q12: Jennifer wants to fill up a cylindrical fish tank with water. It has a radius of 7 inches and a height of 14 inches. Work out how much water she will need, in cubic inches, giving your solution to two decimal places if needed.

- A 307.88 cubic inches
- B 718.38 cubic inches
- C 2 873.51 cubic inches
- D 686 cubic inches
- E 2 155.13 cubic inches

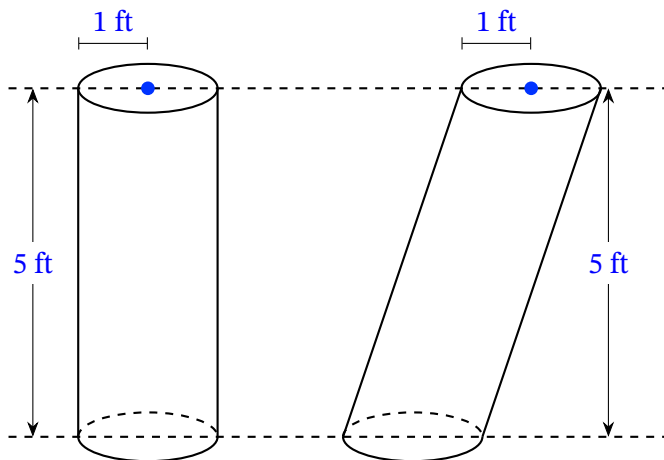
Q13: The Density of a material is calculated by dividing its mass by its volume. A particular cylinder has a height of 3 feet, a radius of 2 feet, and a mass of 200 pounds. Calculate the density of the cylinder giving your answer to two decimal places.

- A 10.61 lb/ft^3
- B 15.92 lb/ft^3
- C 5.31 lb/ft^3
- D 1.33 lb/ft^3
- E 0.19 lb/ft^3

Q14: A right circular cylinder and an oblique circular cylinder have the same radius and height, as seen in the given figure.



Question Video



► What does Cavalieri's principle tell us about the volumes of the two shapes?

A The volumes are equal.

B The volume of the right cylinder is greater than that of the oblique cylinder.

C The volume of the oblique cylinder is greater than that of the right cylinder.

► Work out the volume of the oblique cylinder. Give your answer in terms of

π .

A 10π

B $\frac{25}{\pi}$

C 5π

D $\frac{\pi}{5}$

E 25π

Q15: Find the dimensions of the right circular cylinder that is described as follows: the radius and height differ by *two* meters, the height is greater than the radius, and the volume is 28.125π cubic meters.

A radius = 4.5 m, height = 2.5 m

B radius = 2.5 m, height = 4.5 m

C radius = 2.742 m, height = 0.742 m

D radius = 2.742 m, height = 4.742 m

E radius = 3.874 m, height = 1.874 m

Q16: Work out the volume of a cylinder with a diameter of 11 and a height of 3.4. Give your solution as a fraction in terms of π in its simplest form.

A $\frac{2057\pi}{20}$

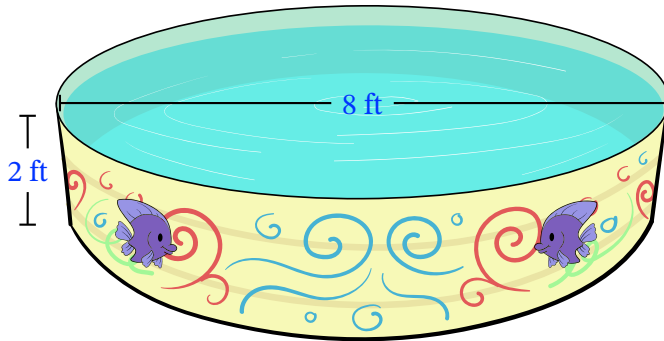
B $\frac{187\pi}{10}$

C $\frac{374\pi}{5}$

D $\frac{2057\pi}{5}$

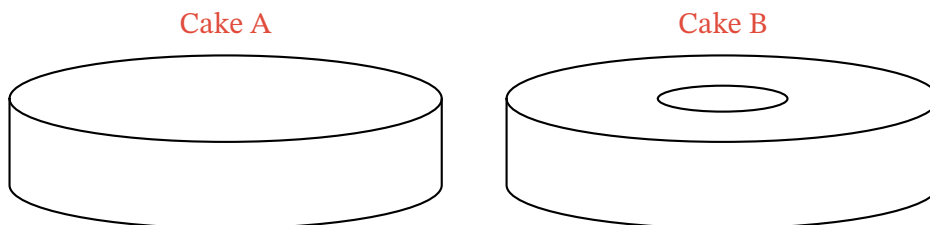
E $\frac{187\pi}{5}$

Q17: A cylindrical paddling pool is 2 feet deep and has a diameter of 8 feet as seen in the given figure. How many cubic feet of water would be needed to completely fill the pool? Give your answer to the nearest cubic foot.



- A 402 cubic feet
- B 204 cubic feet
- C 101 cubic feet
- D 100 cubic feet
- E 16 cubic feet

Q18: Olivia is baking cakes. She will make two cakes using a cake tin that has a depth of 4 inches and a diameter of 20 inches. She will cut a circular hole with a diameter of 6 inches from the centre of one of the cakes. The two cakes are modelled in the diagram.



► She wants to cover the top and sides of Cake A in frosting. What is the total surface area of the cake that will be covered in frosting? Give your answer to the nearest square inch.

A 180 in^2

B 880 in^2

C 280 in^2

D 565 in^2

E $1\,508 \text{ in}^2$

► What is the volume of Cake B? Give your answer to the nearest cubic inch.

A 176 in^3

B $4\,913 \text{ in}^3$

C $1\,228 \text{ in}^3$

D $1\,144 \text{ in}^3$

E $4\,998 \text{ in}^3$

► She wants to cover the top and sides of Cake B in frosting. What is the total surface area of the cake that will be covered in frosting? Give your answer to the nearest square inch.

A 537 in^2

B 898 in^2

C 641 in^2

D 613 in^2

E 927 in^2

► It costs \$3.98 to buy frosting to cover 150 square inches of cake. How much money must Olivia spend in total to frost both of the cakes?

A \$7.86

B \$16.26

C \$14.99

D \$31.26

E \$29.98

► What is the volume of Cake A, to the nearest cubic inch?

A 251 in^3

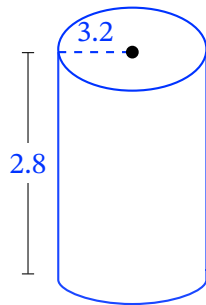
B $2\,513 \text{ in}^3$

C 503 in^3

D $1\,257 \text{ in}^3$

E $5\,027 \text{ in}^3$

Q19: Work out the volume of the cylinder, giving your answer accurate to two decimal places.



A 120.10 cubic units

B 26.28 cubic units

C 78.82 cubic units

D 30.03 cubic units

E 90.08 cubic units

Q20: A cylinder has a diameter of 8 cm and a height of 12 cm. Work out the volume of the cylinder, giving your answer in terms of π .

A $64\pi \text{ cm}^3$

B $768\pi \text{ cm}^3$

C $48\pi \text{ cm}^3$

D $192\pi \text{ cm}^3$

E $256\pi \text{ cm}^3$

Q21: Find the dimensions of the right circular cylinder whose radius is 3 meters longer than the height and volume is 16π cubic meters.

A radius = 7 m, height = 4 m

B radius = 5 m, height = 2 m

C radius = 4 m, height = 1 m

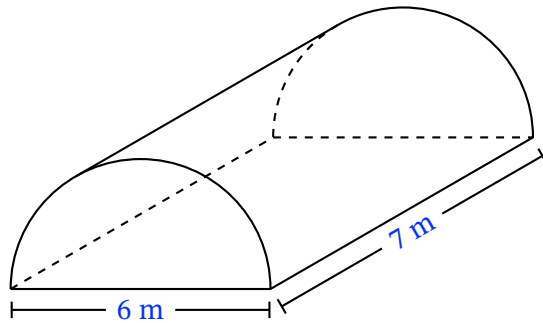
D radius = 1 m, height = 4 m

E radius = 10 m, height = 7 m

Q22: A cylinder has a radius of 9 cm and a height of 14 cm. Work out the volume of the cylinder, giving your answer in terms of π .

- A $378\pi \text{ cm}^3$
- B $252\pi \text{ cm}^3$
- C $1\,134\pi \text{ cm}^3$
- D $126\pi \text{ cm}^3$
- E $63\pi \text{ cm}^3$

Q23: Work out the volume of the half cylinder, giving your answer accurate to two decimal places.



- A 98.96 m^3
- B 65.97 m^3
- C 197.92 m^3
- D 791.68 m^3
- E 395.84 m^3

Q24: A cylindrical tube of sweets has a diameter of 4 cm and a length of 15 cm. Work out the volume of the tube, giving your answer accurate to two decimal places.

A 753.98 cm^3

B 188.50 cm^3

C 376.99 cm^3

D 62.83 cm^3

E 3015.93 cm^3

Q25: A cylinder has a circular base of radius r and height h . The cylinder can be dissected into a series of horizontal slices of height 1 which would have volume πr^2 . There would then be h layers of these cylinders. What would the total volume of the cylinder be?

A $V = 2\pi rh$

B $V = \pi rh^2$

C $V = \pi r^2 h$

D $V = \pi rh$

E $V = 2\pi rh^2$