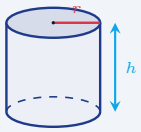
Volume of a Cylinder

Name: _____	Date: _____	Score: _____ / 18

Quick Review and Helpful Hints

A cylinder's *volume* is the area of the circular base times the height: $V = \pi r^2 h$. First find the base area πr^2, then multiply by the height h. Use $\pi \approx 3.14$ and give the answer in cubic units.

▷ **Example:** Find the volume of a cylinder with $r = 3$ and $h = 5$ (use $\pi \approx 3.14$). **Work:** Base area $= \pi r^2 = 3.14(9) = 28.26$. Multiply by the height: 28.26×5. ★ **Answer:** 141.3

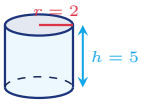


$V = \pi r^2 h.$

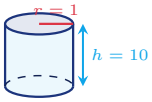
Practice Problems

Use $\pi \approx 3.14$. Use each cylinder diagram to find the volume.

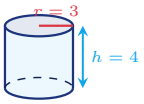
1. Find the volume.



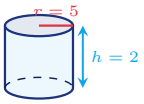
2. Find the volume.



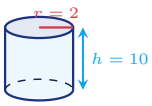
3. Find the volume.



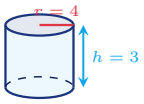
4. Find the volume.



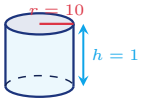
5. Find the volume.



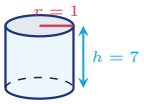
6. Find the volume.



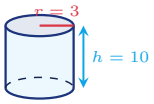
7. Find the volume.



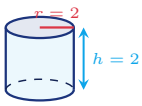
8. Find the volume.



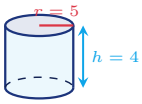
9. Find the volume.



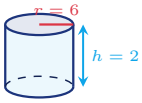
10. Find the volume.



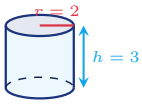
11. Find the volume.



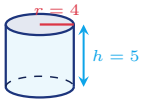
12. Find the volume.



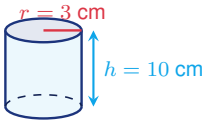
13. Find the volume.



14. Find the volume.



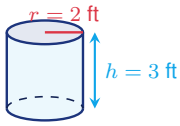
Word Problems



15. A soup can has radius 3 cm and height 10 cm. How many cubic centimeters of soup can it hold?

Use $V = \pi r^2 h$, $\pi \approx 3.14$

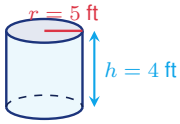
Work: _____



17. A concrete form for a small post has radius 2 ft and height 3 ft. Find the volume needed.

Use $V = \pi r^2 h$, $\pi \approx 3.14$

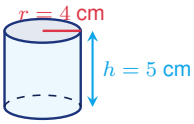
Work: _____



16. A rain barrel has radius 5 ft and height 4 ft. What volume of water does it hold?

Use $V = \pi r^2 h$, $\pi \approx 3.14$

Work: _____



18. A candle mold has radius 4 cm and height 5 cm. How many cubic centimeters of wax does it contain?

Use $V = \pi r^2 h$, $\pi \approx 3.14$

Work: _____

Answer Keys

1. 62.8	**7.** 314	**13.** 37.68
2. 31.4	**8.** 21.98	**14.** 251.2
3. 113.04	**9.** 282.6	**15.** $282.6\ \text{cm}^3$
4. 157	**10.** 25.12	**16.** $314\ \text{ft}^3$
5. 125.6	**11.** 314	**17.** $37.68\ \text{ft}^3$
6. 150.72	**12.** 226.08	**18.** $251.2\ \text{cm}^3$

Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Volume is $\pi r^2 h$. Base area $= 3.14 \times 2^2 = 3.14 \times 4 = 12.56$; times the height 5: $12.56 \times 5 = 62.8$. So the final answer is 62.8.

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 1 = 3.14$; times 10: 31.4. So the final answer is 31.4.

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 9 = 28.26$; times 4: 113.04. So the final answer is 113.04.

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 25 = 78.5$; times 2: 157. So the final answer is 157.

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 4 = 12.56$; times 10: 125.6. So the final answer is 125.6.

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 16 = 50.24$; times 3: 150.72. So the final answer is 150.72.

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 100 = 314$; times 1: 314. So the final answer is 314.

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 1 = 3.14$; times 7: 21.98. So the final answer is 21.98.

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 9 = 28.26$; times 10: 282.6. So the final answer is 282.6.

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 4 = 12.56$; times 2: 25.12. So the final answer is 25.12.

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 25 = 78.5$; times 4: 314. So the final answer is 314.

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 36 = 113.04$; times 2: 226.08. So the final answer is 226.08.

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 4 = 12.56$; times 3: 37.68. So the final answer is 37.68.

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Base area $= 3.14 \times 16 = 50.24$; times 5: 251.2. So the final answer is 251.2.

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is $V = \pi r^2 h = 3.14 \times 3^2 \times 10 = 3.14 \times 9 \times 10 = 282.6\ \text{cm}^3$. So the final answer is $282.6\ \text{cm}^3$.

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is $V = 3.14 \times 5^2 \times 4 = 3.14 \times 25 \times 4 = 314\ \text{ft}^3$. So the final answer is $314\ \text{ft}^3$.

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is $V = 3.14 \times 2^2 \times 3 = 3.14 \times 4 \times 3 = 37.68\ \text{ft}^3$. So the final answer is $37.68\ \text{ft}^3$.

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is $V = 3.14 \times 4^2 \times 5 = 3.14 \times 16 \times 5 = 251.2\ \text{cm}^3$. So the final answer is $251.2\ \text{cm}^3$.

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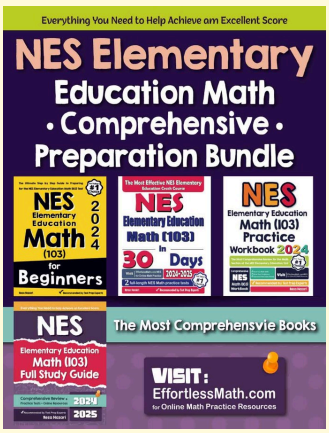

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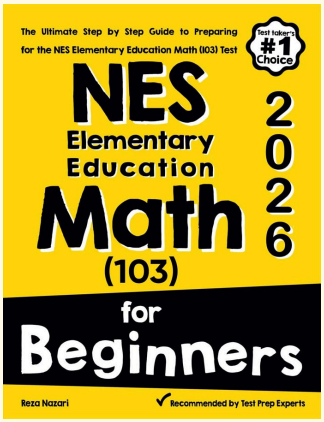

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