Volume of Pyramids

Name: _____	Date: _____	Score: _____ / 24

Quick Review

A **pyramid** has a flat base and triangular faces that meet at a single point on top. Its volume is $V = \frac{1}{3}Bh$, where B is the **area of the base** and h is the **height** (the straight-up distance from the base to the tip). A pyramid holds exactly *one third* as much as a prism with the same base and height. The trick is always to find the base area B first: for a square base it is side^2, for a rectangular base it is length $\times$ width. Volume is in *cubic* units.

◇ **Example:** Find the volume of a pyramid with a square base of side 6 cm and a height of 10 cm.
⇒ Start with the base area. The base is a square with side 6, so $B = 6^2 = 36$ square cm. Now use $V = \frac{1}{3}Bh$ with $B = 36$ and $h = 10$: $V = \frac{1}{3} \times 36 \times 10$. Multiply $36 \times 10 = 360$, then take a third: $360 \div 3 = 120$. The volume is 120 cubic centimeters.

Answer: $V = 120$ cm^3

PRACTICE

Find the volume of each pyramid.

1. Square base side 3, $h = 5$ _____
2. Square base side 6, $h = 8$ _____
3. Square base side 9, $h = 7$ _____
4. Square base side 10, $h = 12$ _____
5. Square base side 5, $h = 9$ _____
6. Square base side 4, $h = 6$ _____
7. Square base side 12, $h = 5$ _____
8. Square base side 2, $h = 9$ _____
9. Rect. base 6×4, $h = 10$ _____
10. Rect. base 5×9, $h = 4$ _____
11. Rect. base 8×3, $h = 5$ _____
12. Rect. base 10×6, $h = 9$ _____
13. Base area 27, $h = 5$ _____
14. Base area 48, $h = 9$ _____
15. Base area 75, $h = 8$ _____
16. Base area 30, $h = 10$ _____
17. Triangular base area 12, $h = 6$ _____
18. Triangular base area 18, $h = 4$ _____
19. Square base side 7, $h = 6$ _____
20. Square base side 1, $h = 9$ _____

♦ Word Problems

21. A glass paperweight is a pyramid with a square base of side 6 cm and a height of 8 cm. What is its volume? _____

22. A tent shaped like a pyramid has a rectangular floor 6 ft by 4 ft and a peak height of 10 ft. How much air does the tent hold? _____

23. A pyramid-shaped sandbox display has a base area of 75 ft^2 and a height of 8 ft. Find its volume. _____

24. A chocolate is molded as a pyramid with a square base of side 3 cm and height 5 cm. A box holds 24 of these chocolates. What total volume of chocolate is in the box? _____

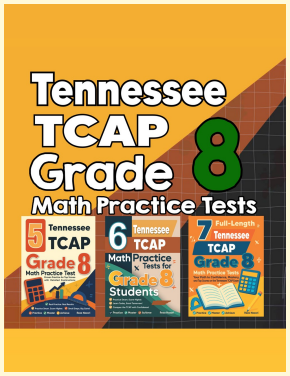
Answer Keys

1. 15	**13.** 45
2. 96	**14.** 144
3. 189	**15.** 200
4. 400	**16.** 100
5. 75	**17.** 24
6. 32	**18.** 24
7. 240	**19.** 98
8. 12	**20.** 3
9. 80	**21.** 96 cm^3
10. 60	**22.** 80 ft^3
11. 40	**23.** 200 ft^3
12. 180	**24.** 360 cm^3

Step-by-Step Explanations

1. $B = 9$, so $V = \frac{1}{3}(9)(5) = 15$.
2. $B = 36$, so $V = \frac{1}{3}(36)(8) = 96$.
3. $B = 81$, so $V = \frac{1}{3}(81)(7) = 189$.
4. $B = 100$, so $V = \frac{1}{3}(100)(12) = 400$.
5. $B = 25$, so $V = \frac{1}{3}(25)(9) = 75$.
6. $B = 16$, so $V = \frac{1}{3}(16)(6) = 32$.
7. $B = 144$, so $V = \frac{1}{3}(144)(5) = 240$.
8. $B = 4$, so $V = \frac{1}{3}(4)(9) = 12$.
9. $B = 24$, so $V = \frac{1}{3}(24)(10) = 80$.
10. $B = 45$, so $V = \frac{1}{3}(45)(4) = 60$.
11. $B = 24$, so $V = \frac{1}{3}(24)(5) = 40$.
12. $B = 60$, so $V = \frac{1}{3}(60)(9) = 180$.
13. $V = \frac{1}{3}(27)(5) = 45$.
14. $V = \frac{1}{3}(48)(9) = 144$.
15. $V = \frac{1}{3}(75)(8) = 200$.
16. $V = \frac{1}{3}(30)(10) = 100$.
17. $V = \frac{1}{3}(12)(6) = 24$.
18. $V = \frac{1}{3}(18)(4) = 24$.
19. $B = 49$, so $V = \frac{1}{3}(49)(6) = 98$.
20. $B = 1$, so $V = \frac{1}{3}(1)(9) = 3$.
21. The base area is $6^2 = 36$ cm^2, so $V = \frac{1}{3}(36)(8) = 96$ cubic centimeters.
22. The base area is $6 \times 4 = 24$ ft^2, so $V = \frac{1}{3}(24)(10) = 80$ cubic feet.
23. With $B = 75$ and $h = 8$, $V = \frac{1}{3}(75)(8) = 200$ cubic feet.
24. One chocolate has $V = \frac{1}{3}(3^2)(5) = \frac{1}{3}(9)(5) = 15$ cm^3. For 24 of them, $24 \times 15 = 360$ cm^3.

Want Even More Practice? Check Out Our Other Tennessee TCAP Test Books!



Tennessee TCAP Grade 8 Math Preparation Bundle

18 full-length practice tests across three books (5 + 6 + 7)

No repeated questions—maximum practice value!

18 Tests!
3 Books
One Bundle

Important: All our test books contain **unique, completely different tests** from each other! Each book offers fresh practice questions—no repeats!

5 Practice Tests

- ✓ 5 complete practice tests with detailed explanations
- ✓ Perfect foundation for TCAP test preparation
- ✓ Builds confidence and test-taking skills
- ✓ High-quality questions aligned with state standards

Start your practice journey!

6 Practice Tests

- ✓ 6 complete practice tests with detailed explanations
- ✓ **Unique tests**—different from the 5 tests book
- ✓ Perfect for more practice after mastering 5 tests
- ✓ Builds even more confidence and test-taking skills
- ✓ Same high-quality questions aligned with standards

Take your practice to the next level!

7 Practice Tests

- ✓ 7 complete practice tests for maximum preparation
- ✓ **Unique tests**—different from 5 and 6 tests books
- ✓ The most comprehensive practice for Grade 8
- ✓ Ideal for students aiming for top scores
- ✓ Extensive practice builds mastery and confidence

Go all the way with comprehensive practice!