

Volume and Surface Area of Composite Solids

Name: _____ Date: _____ Score: _____ / 30

Quick Review and Helpful Hints

A *composite solid* is built from simpler solids. Find the volume of each piece and *add* them – or *subtract* a hollowed-out part. Use $V = lwh$ for boxes. Answers are in cubic units.

▷ **Example:** A solid is a $4 \times 3 \times 2$ box stacked on a $4 \times 3 \times 1$ box. Find the total volume. **Work:** Top box = $4 \times 3 \times 2 = 24$. Bottom box = $4 \times 3 \times 1 = 12$. Add: $24 + 12$. ★ **Answer:** 36



Add the volume of each piece.

Practice Problems

Find each total volume.

- | | | | |
|---|-------|--|-------|
| 1. Box $2 \times 2 \times 2$ plus $2 \times 2 \times 1$ | _____ | 8. Box $4 \times 4 \times 1$ plus $4 \times 4 \times 2$ | _____ |
| 2. Box $3 \times 3 \times 3$ plus $3 \times 3 \times 1$ | _____ | 9. Box $2 \times 2 \times 5$ minus $2 \times 2 \times 2$ | _____ |
| 3. Box $4 \times 2 \times 2$ plus $4 \times 2 \times 1$ | _____ | 10. Box $5 \times 5 \times 2$ plus $5 \times 5 \times 1$ | _____ |
| 4. Box $5 \times 2 \times 2$ plus $5 \times 2 \times 3$ | _____ | 11. Box $8 \times 1 \times 1$ plus $8 \times 1 \times 1$ | _____ |
| 5. Box $6 \times 1 \times 1$ plus $6 \times 1 \times 2$ | _____ | 12. Box $6 \times 2 \times 2$ plus $6 \times 2 \times 1$ | _____ |
| 6. Box $10 \times 2 \times 1$ plus $10 \times 2 \times 2$ | _____ | 13. Box $3 \times 2 \times 4$ plus $3 \times 2 \times 1$ | _____ |
| 7. Box $3 \times 3 \times 2$ plus $3 \times 3 \times 2$ | _____ | 14. Box $10 \times 1 \times 2$ plus $10 \times 1 \times 3$ | _____ |

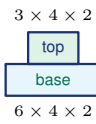
Word Problems

15. A bench is a $6 \times 2 \times 1$ seat on a $6 \times 1 \times 2$ base. Find the total volume. _____
16. A $4 \times 4 \times 3$ box has a $2 \times 2 \times 3$ hole cut through it. Find the remaining volume. _____
17. Two boxes $5 \times 3 \times 2$ and $5 \times 3 \times 1$ are stacked. Find the total volume. _____
18. A $3 \times 3 \times 3$ cube sits on a $3 \times 3 \times 2$ box. Find the total volume. _____

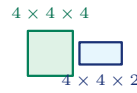


◆ Illustrated Practice

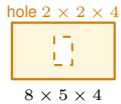
Use each picture. Break the solid into boxes, then add or subtract volumes.



19. A platform is made from two stacked rectangular prisms. Find the total volume.



25. A cube is attached to a short prism. Find the total volume.



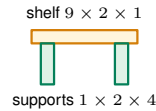
20. A box has a tunnel cut straight through it. Find the remaining volume.



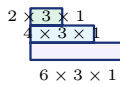
26. A square tunnel is cut through a large block. Find the remaining volume.



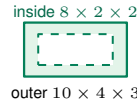
21. Two connected blocks form one solid. Find the total volume.



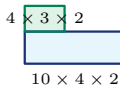
27. A shelf has a top board and two side supports. Find the total volume.



22. A display has three step layers. Find the total volume.



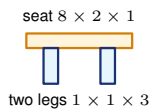
28. A planter is hollow inside. Find the volume of the material.



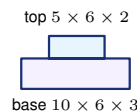
23. An L-shaped block is made from two rectangular prisms. Find its volume.



29. A storage unit has a base and a raised back section. Find the total volume.



24. A bench has one seat and two legs. Find the total volume.



30. A two-level display stand is built from two prisms. Find the total volume.



Answer Keys

- | | | |
|--------|---------|---------|
| 1. 12 | 11. 16 | 21. 42 |
| 2. 36 | 12. 36 | 22. 36 |
| 3. 24 | 13. 30 | 23. 104 |
| 4. 50 | 14. 50 | 24. 22 |
| 5. 18 | 15. 24 | 25. 96 |
| 6. 60 | 16. 36 | 26. 160 |
| 7. 36 | 17. 45 | 27. 34 |
| 8. 48 | 18. 45 | 28. 88 |
| 9. 12 | 19. 72 | 29. 152 |
| 10. 75 | 20. 144 | 30. 240 |

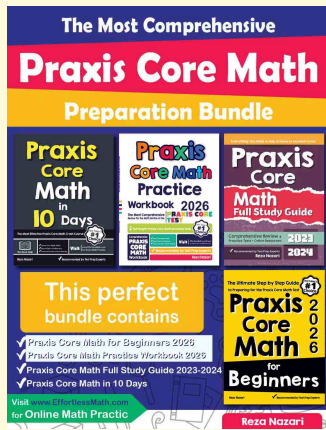
Step-by-Step Explanations

1. Start by naming the process: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $8 + 4 = 12$. So the final answer is 12.
2. A good way to think about this is: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $27 + 9 = 36$. So the final answer is 36.
3. Step by step: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $16 + 8 = 24$. So the final answer is 24.
4. Take it one move at a time: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $20 + 30 = 50$. So the final answer is 50.
5. Start by naming the process: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $6 + 12 = 18$. So the final answer is 18.
6. A good way to think about this is: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $20 + 40 = 60$. So the final answer is 60.
7. Step by step: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $18 + 18 = 36$. So the final answer is 36.
8. Take it one move at a time: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $16 + 32 = 48$. So the final answer is 48.
9. Start by naming the process: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $20 - 8 = 12$. So the final answer is 12.
10. A good way to think about this is: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $50 + 25 = 75$. So the final answer is 75.
11. Step by step: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $8 + 8 = 16$. So the final answer is 16.
12. Take it one move at a time: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $24 + 12 = 36$. So the final answer is 36.
13. Start by naming the process: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $24 + 6 = 30$. So the final answer is 30.
14. A good way to think about this is: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $20 + 30 = 50$. So the final answer is 50.
15. Step by step: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is Seat $6 \times 2 \times 1 = 12$, base $6 \times 1 \times 2 = 12$; total 24. So the final answer is 24.
16. Take it one move at a time: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is Whole $4 \times 4 \times 3 = 48$ minus hole $2 \times 2 \times 3 = 12$; 36. So the final answer is 36.
17. Start by naming the process: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $30 + 15 = 45$. So the final answer is 45.
18. A good way to think about this is: Break the composite solid into simpler pieces, calculate each piece, and combine the results. The setup/work is $27 + 18 = 45$. So the final answer is 45.
19. The solid is two boxes stacked together. Find each volume first: the base is $6 \cdot 4 \cdot 2 = 48$, and the top is $3 \cdot 4 \cdot 2 = 24$. Add them: $48 + 24 = 72$.
20. Start with the full box, then subtract the tunnel. The full box is $8 \cdot 5 \cdot 4 = 160$, the tunnel is $2 \cdot 2 \cdot 4 = 16$, and $160 - 16 = 144$.
21. Treat the two connected blocks as separate prisms. Block A is $5 \cdot 3 \cdot 2 = 30$, block B is $2 \cdot 3 \cdot 2 = 12$, so the total is $30 + 12 = 42$.
22. For the steps, add the volume of each layer. The layers are $6 \cdot 3 \cdot 1 = 18$, $4 \cdot 3 \cdot 1 = 12$, and $2 \cdot 3 \cdot 1 = 6$, giving $18 + 12 + 6 = 36$.
23. Split the L-shape into the long base and the upright block. Their volumes are $10 \cdot 4 \cdot 2 = 80$ and $4 \cdot 3 \cdot 2 = 24$, so the total volume is 104.
24. The bench has one seat plus two legs. The seat is $8 \cdot 2 \cdot 1 = 16$, each leg is $1 \cdot 1 \cdot 3 = 3$, and $16 + 3 + 3 = 22$.
25. Add the cube and the short prism. The cube volume is $4^3 = 64$, the prism volume is $4 \cdot 4 \cdot 2 = 32$, and $64 + 32 = 96$.
26. Use subtraction because a tunnel is removed. The whole block is $6 \cdot 6 \cdot 5 = 180$, the tunnel is $2 \cdot 2 \cdot 5 = 20$, so the remaining volume is $180 - 20 = 160$.
27. The shelf is a top board plus two supports. The board is $9 \cdot 2 \cdot 1 = 18$, each support is $1 \cdot 2 \cdot 4 = 8$, and $18 + 8 + 8 = 34$.
28. For a hollow planter, subtract the empty inside from the outside. Outside volume is $10 \cdot 4 \cdot 3 = 120$, inside volume is $8 \cdot 2 \cdot 2 = 32$, and $120 - 32 = 88$.
29. Add the base and the raised back section. The base is $8 \cdot 5 \cdot 3 = 120$, the raised section is $8 \cdot 2 \cdot 2 = 32$, so the total is 152.
30. The stand has a large base and a smaller top block. The base volume is $10 \cdot 6 \cdot 3 = 180$, the top volume is $5 \cdot 6 \cdot 2 = 60$, and $180 + 60 = 240$.



Keep Building Praxis Core Math Skills

Recommended Effortless Math resources



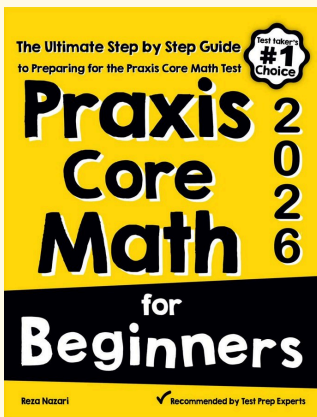
The Most Comprehensive Praxis Core Math Preparation Bundle

Use the complete Praxis Core Math resource for review, worked examples, extra practice, and test-style questions after each worksheet.



Scan Me
Download Instantly

STUDENT FAVORITE - Praxis Core Math for Beginners



Praxis Core Math for Beginners 2026

Step-by-step lessons, topic practice, and full review support for students who want a calm path through Praxis Core Math preparation.

A strong companion for self-study, tutoring, homework, and targeted review.

PDF Edition



Scan Me
Download Instantly

For more Praxis Core Math prep, visit [EffortlessMath.com/Praxis-Core](https://www.EffortlessMath.com/Praxis-Core)