

Area, Surface Area, Volume

Polygon area, prism reasoning, scale effects, and measurement formulas that matter.

Name _____ Date _____

32 main 2-up grid 3 pages

Completion Reward



Shown here as a small pack artifact, not a preview destination.

1. What does the volume formula for a prism measure?

- A. How far around the prism it goes
- B. How many cubic units fill the prism
- C. Only the area of the top face
- D. The angle of the prism

4. Which statement is true?

- A. Area and volume both use linear units.
- B. Volume uses square units only.
- C. Area uses square units and volume uses cubic units.
- D. Perimeter uses cubic units.

7. A figure is dilated and you want the new area. What is the best next step?

- A. Double the scale factor.
- B. Square the scale factor.
- C. Add the scale factor to the old area.
- D. Use the old perimeter instead.

10. A student uses the slanted side of a parallelogram as the height in the area formula. What is the problem?

- A. The slanted side is always twice the base.
- B. Parallelograms do not have area.
- C. Height must be perpendicular to the base.
- D. Area should use perimeter instead.

13. A square has side length 9. What is its area? Answer with a number.

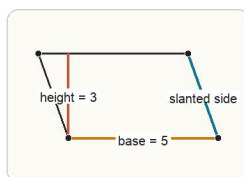
2. If every side length in a figure doubles, what happens to the area?

- A. It doubles.
- B. It becomes eight times as large.
- C. It stays the same.
- D. It becomes four times as large.

5. Which quantity is measured in square units?

- A. Perimeter
- B. Volume
- C. Angle measure
- D. Area

8. A student multiplies the base of a parallelogram by its slanted side to find area. What is wrong?



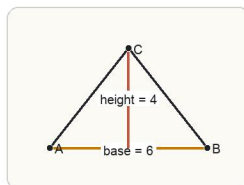
Area comes from base times perpendicular height. The slanted side is only useful if it also gives the true height.

- A. Area should use the perimeter instead.
- B. Area uses the perpendicular height, not the slanted side unless the slanted side is perpendicular.
- C. Parallelograms do not have area.
- D. The slanted side should always be added, not multiplied.

11. A student says if every side length triples, the area also triples. What is the problem?

- A. Area scales by the cube of the scale factor, so it should be multiplied by 27.
- B. Area does not change under dilation.
- C. Area scales by the square of the scale factor, so it should be multiplied by 9.
- D. Only volume changes under dilation.

14. What is the area of the triangle in the figure? Answer with a number.



Triangle area is one-half the product of a chosen base and its perpendicular height.

3. If every side length in a solid doubles, what happens to the volume?

- A. It doubles.
- B. It becomes four times as large.
- C. It becomes eight times as large.
- D. It stays the same.

6. Which formula gives the area of a trapezoid?

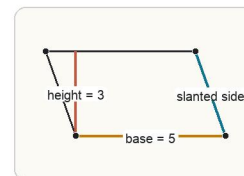
- A. $\frac{1}{2} * (b_1 + b_2) * h$
- B. $b * h$
- C. $\frac{1}{2} * b * h$
- D. $l * w * h$

9. A student reports a volume of 24 square units. What is the issue?

- A. Volume should be measured in degrees.
- B. Square units are always larger than cubic units.
- C. Only area can equal 24.
- D. Volume should be measured in cubic units, not square units.

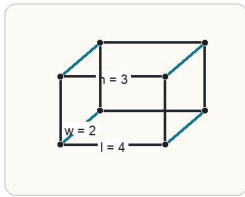
12. A rectangle has length 7 and width 4. What is its perimeter? Answer with a number.

15. What is the area of the parallelogram in the figure? Answer with a number.



A parallelogram's area uses the base and the perpendicular height, not the slanted edge length.

16. What is the volume of the rectangular prism in the figure? Answer with a number.



Volume multiplies the three dimensions because it counts how many unit cubes fit inside the prism.

17. A prism has base area 12 and height 5. What is its volume? Answer with a number.

18. A triangle has base 10 and height 6. What is its area? Answer with a number.

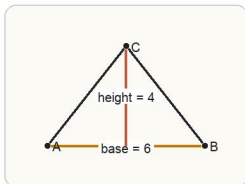
19. A parallelogram has base 8 and height 5. What is its area? Answer with a number.

20. A rectangular prism has length 4, width 3, and height 2. What is its volume? Answer with a number.

21. Student A says the area of a triangle is base * height. Student B says it is $1/2 * \text{base} * \text{height}$. Who is correct?

- A. Student B
- B. Student A
- C. Both students
- D. Neither student

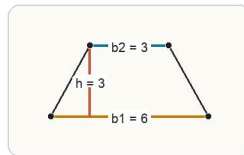
22. Before using $A = 1/2 bh$, what must you identify correctly?



Before using $A = 1/2 bh$, make sure the height is perpendicular to the base rather than just another side of the figure.

- A. Any two sides of the triangle
- B. The triangle's perimeter
- C. A base and its perpendicular height
- D. The midpoint of the base

23. What is the area of the trapezoid in the figure? Answer with a number.



Trapezoid area uses the average of the two bases and then multiplies by the height.

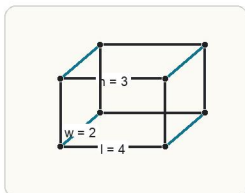
24. A cube has edge length 4. What is its surface area? Answer with a number.

25. A triangle has area 10. A similar triangle is made with scale factor 3. What is the new area? Answer with a number.

26. A trapezoid has bases 10 and 6 and height 4. What is its area? Answer with a number.

27. A rectangular prism has dimensions 2 by 2 by 3. What is its surface area? Answer with a number.

28. What is the surface area of the rectangular prism in the figure? Answer with a number.



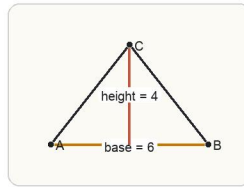
Surface area comes from adding the areas of every outside face, not from multiplying the three dimensions together.

29. A rectangular prism has dimensions 4 by 3 by 2. What is its surface area? Answer with a number.

30. A solid is enlarged by scale factor 2. If the original volume is 5, what is the new volume? Answer with a number.

31. A triangle has area 12. A similar triangle is made with scale factor 3. What is the new area? Answer with a number.

32. Which explanation is best for finding the area of a triangle?



A triangle is half of a matching parallelogram with the same base and height, which is why the formula includes one-half.

- A. Use base plus height because area is one-dimensional.
- B. Use one-half times base times height because a triangle is half of a matching parallelogram.
- C. Use length times width because every shape is a rectangle.
- D. Use the slope formula because triangles have vertices.