Area Volume and Surface Area

Unit 8 Test

Standards 6.EE.B.7, 6.EE.B.6, 6.EE.B.8, 6.EE.C.9, 6.G.A.1, 6.G.A.3, 6.G.A.2, 6.G.A.4

Learning target I can apply the skills taught so far, show my reasoning, and check my answers.

Assessment 20 open-response questions. Questions 1–4 review Unit 7; the remaining 16 assess this unit. Review accounts for exactly 20% of questions and points.

Administration

0–5 minutes Distribute only the attached student assessment pages. Read directions and confirm students have pencils, rulers, and extra plotting paper when needed. Ask for calculations, models, labels, and explanations where requested.

5–45 minutes Students complete the unit test independently. Allow an extended block for model-heavy responses as needed. Follow the course policy of doing arithmetic by hand unless an established classroom accommodation applies.

Final minutes Collect responses and ask students to note one item they want to revisit. Use the next teaching session for corrections and focused reteaching.

Scoring and Feedback

5 points each, 100 total: 2 for setup or model, 2 for calculation or reasoning, 1 for units, interpretation, or the requested check.

Score prior-unit review separately from current-unit work. Accept equivalent exact answers and valid alternate methods. For drawings, use the coordinate, face, frequency, or summary information in the attached key to check the representation.

Suggested follow-up based on current-unit items: 80% or above, continue with brief corrections; 60–79%, provide targeted small-group support; below 60%, reteach with models. These are instructional suggestions, not state proficiency cut scores.

Likely misconceptions Watch perpendicular height, missing faces, and square versus cubic units.

Name _____ Date _____

Area Volume and Surface Area

Unit 8 Test

Standards assessed 6.EE.B.7, 6.EE.B.6, 6.EE.B.8, 6.EE.C.9, 6.G.A.1, 6.G.A.3, 6.G.A.2, 6.G.A.4

Questions 1–4 review Unit 7 (20%). The remaining questions assess this unit. Show work, simplify exact answers, label units, and justify models or explanations. 5 points per question; 100 points total.

1. [Review] Solve x - 7 = 5/2. Check in the original equation.

2. [Review] A collection grows by 8 cards to 32 cards. Let x be the starting count. Write and solve an equation.

3. [Review] Let x be any real number. Write and graph: x is less than 16. Label the endpoint and shade the solution ray.

4. [Review] For y = 6x + 4, make a table for x = 0, 1, 2, 6. Plot the ordered pairs and label both axes.

5. [Current unit] Sketch a triangle with base 10 cm and perpendicular height 6 cm. Find its area.

6. [Current unit] Sketch a triangle with base 10 cm and perpendicular height 2 cm. Find its area.

7. [Current unit] A parallelogram has base 3 m and perpendicular height 3 m. Sketch how it can be rearranged into a rectangle and find its area.

Name _____ Date _____

Area Volume and Surface Area

Unit 8 Test

Standards assessed 6.EE.B.7, 6.EE.B.6, 6.EE.B.8, 6.EE.C.9, 6.G.A.1, 6.G.A.3, 6.G.A.2, 6.G.A.4

8. [Current unit] An L-shaped garden is a 9 m by 8 m rectangle with an 7 m by 6 m corner rectangle removed. Sketch and find the garden area.

9. [Current unit] Plot and connect (-8,-6), (2,-6), (2,2), (-8,2). Find the side lengths and area.

10. [Current unit] A rectangular prism has edges 4, 2, and 5 cm. Sketch it and find its volume.

11. [Current unit] A rectangular prism has edges 4, 2 1/2, and 2 cm. Sketch it and find its volume.

12. [Current unit] Fill a prism 2 × 2 × 3/2 units with cubes of edge 1/2 unit. How many cubes fit? Use their volumes to verify lwh.

13. [Current unit] Draw a net for a closed 2 × 3 × 4 cm rectangular prism. Label the six faces and calculate total area.

14. [Current unit] A 5 cm by 2 cm base and 5 cm height form an open-top box. Draw its net and find the material area. Ignore tabs and overlap.

Name _____ Date _____

Area Volume and Surface Area

Unit 8 Test

Standards assessed 6.EE.B.7, 6.EE.B.6, 6.EE.B.8, 6.EE.C.9, 6.G.A.1, 6.G.A.3, 6.G.A.2, 6.G.A.4

15. [Current unit] A square pyramid has base edge 12 cm. Each triangular face has perpendicular face height 12 cm. Draw a net and calculate total surface area. Explain why the vertical pyramid height is not needed.

16. [Current unit] A 4 cm by 7 cm base and 4 cm height form an open-top box. Draw its net and find the material area. Ignore tabs and overlap.

17. [Current unit] Sketch a triangle with base 14 cm and perpendicular height 2 cm. Find its area. Explain why the slanted side is not needed.

18. [Current unit] Sketch a triangle with base 6 cm and perpendicular height 7/2 cm. Find its area. Explain why the slanted side is not needed.

19. [Current unit] A trapezoid has parallel bases 8 m and 20 m and perpendicular height 4 m. Sketch it and find its area.

20. [Current unit] A 9 m by 10 m rectangle has a right-triangle corner removed with perpendicular legs 5 m and 5 m. Sketch the remaining polygon and find its area.

Unit 8 Test

Area Volume and Surface Area

1. x = 19/2
Reasoning Add 7 on both sides. Then x = 19/2; substitution gives 5/2 on each side.

2. x + 8 = 32; x = 24 cards
Reasoning Subtract 8 from both sides; 24 + 8 = 32.

3. x < 16; open circle at 16, shade left
Reasoning “less than” means <; exclude the endpoint.

4. (0, 4); (1, 10); (2, 16); (6, 40)
Reasoning Substitute each input into y = 6x + 4; x is horizontal and y vertical.

5. 30 cm²
Reasoning A = bh/2 = 10 × 6 ÷ 2 = 30. Two such triangles make a parallelogram.

6. 10 cm²
Reasoning A = bh/2 = 10 × 2 ÷ 2 = 10. Two such triangles make a parallelogram.

7. 9 m²
Reasoning Cut and shift a corner; A = bh = 3 × 3 = 9.

8. 30 m²
Reasoning Outer area 72 minus cutout 42 = 30.

9. Sides 10 and 8; area 80 square units
Reasoning Horizontal length 2 - (-8) = 10; vertical length 2 - (-6) = 8; area = 10 × 8.

10. 40 cm³
Reasoning B = 4 × 2 = 8 cm²; V = B × 5 = 40 cm³.

11. 20 cm³
Reasoning B = 4 × 5/2 = 10 cm²; V = B × 2 = 20 cm³.

12. 48 cubes; each 1/8 cubic unit; prism 6 cubic units
Reasoning Counts along edges: 4, 4, 3. Product 48; 48 × 1/8 = 6, also lwh.

13. 2 faces each of 2×3, 2×4, 3×4; 52 cm²
Reasoning Add 2(6) + 2(8) + 2(12) = 52.

14. 80 cm²
Reasoning Closed surface area = 2(10+25+10) = 90. Remove the top area 10: 80.

15. 432 cm²
Reasoning Base = 144; each triangle = 12 × 12 ÷ 2 = 72; add four triangles to get 432.

16. 116 cm²
Reasoning Closed surface area = 2(28+16+28) = 144. Remove the top area 28: 116.

17. 14 cm²
Reasoning A = bh/2 = 14 × 2 ÷ 2 = 14. Two such triangles make a parallelogram.

18. 21/2 cm²
Reasoning A = bh/2 = 6 × 7/2 ÷ 2 = 21/2. Two such triangles make a parallelogram.

19. 56 m²
Reasoning A = (8 + 20) × 4 ÷ 2 = 56.

20. 155/2 m²
Reasoning Whole rectangle 90; remove triangle 25/2; difference 155/2.