

BLM Answers

BLM 9.GR.1: Get Ready

Pythagorean Theorem

1. a) 5.4 cm b) 17.2 mm c) 2.7 cm
d) 6.9 in e) 84.9 m f) 40.0 yd

Nets

2. a) square-based pyramid
b) cube
c) pentagonal prism
d) triangular-based pyramid

Convert Measurements

3. a) 184 cm = 1.84 m
b) 27 gallons = 216 pints
c) 6.8 yards = 20.4 feet
d) 12.3 L = 12300 milliliters
e) $5.2 \text{ yd}^3 = 140.4 \text{ cubic feet}$
f) $4200 \text{ cm}^2 = 0.42 \text{ square metres}$

Area

4. a) 6 cm^2 b) 150 yd^2 c) 212 mm^2 d) 25.13 cm^2

BLM 9.1.1: Volume of Prisms and Pyramids

1. a) 12 yd^3 b) 50.4 m^3 c) 62.5 ft^3 d) 21.6 cm^3
2. a) 3.6 m^3 b) 720 mm^3 c) 240 in^3
d) 52 ft^3 (height of triangle = 3.46 ft)
3. a) 2000 m^3 b) 8.064 mm^3 c) 806.7 yd^3
d) 2.16 ft^3
4. a) 10 yd^3 b) 16.2 in^3 c) 72 in^3 d) 420 mm^3
5. $24 \text{ } 624 \text{ in}^3$
6. a) 1088 cm^3 b) 48 cm^3
7. a) 1800 in^3
b) 7500 in^3

BLM 9.2.1: Surface Area of Prisms and Pyramids

1. Nets may vary.
a) 38 m^2 b) 36.8 m^2 c) 384 cm^2 d) 1332 mm^2
2. Nets may vary.
a) 156 ft^2 b) 150 cm^2 c) 151.0 yd^2 d) 144.7 m^3
3. Nets may vary.
a) 150.5 cm^2 b) 569.5 yd^2
c) 29.1 m^2 d) 31.7 in^2
4. Nets may vary.
a) 573.2 ft^2 b) 76.6 m^2
c) 15.2 cm^2 d) 253.1 yd^2
5. a) Since the formula for volume is $s \times s \times s$, then the volume is $2^3 = 8$ times the volume of the original cube.
b) When each side is decreased in half, the volume is $(\frac{1}{2})^3 = \frac{1}{8}$ times the volume of the original pyramid.

6. The surface areas of the two pyramids are 61.3 cm^2 and 67.7 cm^2 respectively. So the pyramid with the greater surface area is the one with a base of $6 \text{ cm} \times 6 \text{ cm}$.
7. a) 2100 ft^2 b) 1200 ft^2

BLM 9.3.1: Surface Area and Volume of Cylinders

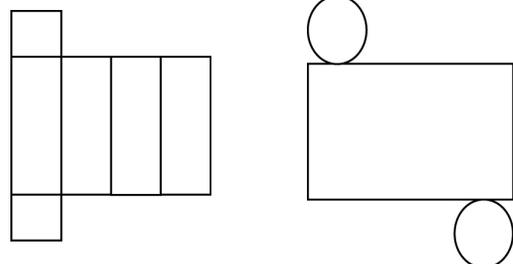
1. a) $SA = 1406.7 \text{ m}^2$, $V = 4019.2 \text{ m}^3$
b) $SA = 213.5 \text{ mm}^2$, $V = 188.4 \text{ mm}^3$
c) $SA = 268.5 \text{ mm}^2$, $V = 317.9 \text{ mm}^3$
d) $SA = 189.9 \text{ cm}^2$, $V = 196.9 \text{ cm}^3$
2. a) $SA = 82.9 \text{ cm}^2$
b) $SA = 207.2 \text{ ft}^2$ or 23.0 yd^2
3. a) $V = 75360 \text{ mm}^3$ or 75.36 cm^3
b) $V = 3815.1 \text{ ft}^3$ or 141.3 yd^3
4. a) When the height is doubled, the volume is doubled.
b) When the radius is doubled, the volume is $2^2 = 4$ times the volume of the original cylinder.
c) The volume will be 2 times the volume of the original cylinder.
d) The volume will be $\frac{1}{2}$ times the volume of the original cylinder.
5. 4578.12 in^3
6. a) 5652 cm^3
b) $V = 6430.72 - 5652 = 778.72 \text{ cm}^3$

BLM 9.4.1: Volume of Cones and Spheres

1. a) 113.0 cm^3 b) 9.4 in^3
c) 25.1 m^3 d) 75.4 ft^3
2. a) 11488.2 in^3 b) 113040 yd^3
c) 65.4 mm^3 d) 33.5 ft^3
3. a) 113.0 mm^3 b) 1436.0 in^3
c) 4186.7 cm^3 d) 523.3 mm^3
4. 5.5 cm
5. 1.2 in
6. 8177.1 cm^3

BLM 9.5.1: Solve Problems Involving Surface Area and Volume

1. The taller container holds 78.5 cm^3 of face cream, while the shorter container holds 70.65 cm^3 . Since both containers cost the same, then the taller container is a better buy.
2. 28000 ft^3
3. a) 457.812 mm^3 b) 649.98 mm^3 c) 41.3%
4. a) 1007 cm^2 b) 1697.1 cm^3
5. a) $126 \text{ mm} \times 42 \text{ mm} \times 42 \text{ mm}$



BLM Answers

- b) radius 21 mm and height 126 mm
c) SA of prism = $24\,696\text{ mm}^2$, SA of cylinder = $19\,386.36\text{ mm}^2$. The cylinder requires less cardboard to make than the prism.
6. a) 4710 ft^3 b) 1890 ft^3

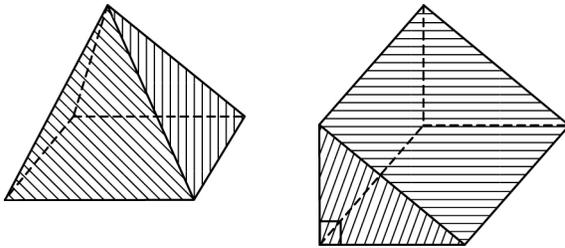
BLM 9.CR.1: Chapter 9 Review

9.1.1 Volume of Prisms and Pyramids

1. a) 360 m^3 b) 31.7 in^3
2. a) 1120 yd^3 b) 24 mm^3
3. The X349 has a smaller volume.

9.2.1 Surface Area of Prisms and Pyramids

4. a) SA = 99.5 cm^2 b) SA = 66.2 ft^2



5. a) The wedge of cheese on the left has volume = 35 cm^3 . The wedge of cheese on the right has volume = 27 cm^3 .
b) The cheese on the left costs $\$2.50$ for 35 cm^3 or $\$0.071/\text{cm}^3$. The cheese on the right costs $\$2$ for 27 cm^3 or $\$0.074/\text{cm}^3$. So the cheese on the left is a better buy.

9.3.1 Surface Area and Volume of Cylinders

6. a) SA = 70.65 cm^2 , V = 39.25 cm^3
b) SA = 207.24 ft^2 , V = 226.08 ft^3
7. The diameter of the batteries is 2.8 cm

9.4.1 Volume of Cones and Spheres

8. a) 18.84 cm^3 b) 10 ft c) 6.8 yd
9. a) 4.0 ft b) 8.4 cm

9.5.1 Solve Problems Involving Surface Area and Volume

10. 215048.1 ft^3
11. SA = 190.3 in^2 – area of the hole = 187.16 in^2

BLM 9.PT.1: Chapter 9 Practice Test

Multiple Choice

1. D
2. C
3. D
4. A

Short Response

5. a) Volume of cube = 343 in^3 , Volume of rectangular prism = 288 in^3
b) SA of cube = 294 in^2 , SA of rectangular prism = 264 in^2
6. a) 42 ft^3 b) 90.48 ft^2
7. a) Volume of taller can = 423.9 cm^3 , Volume of shorter can = 785 cm^3
b) The taller can costs $\$0.99$ for 423.9 cm^3 or $\$0.0023/\text{cm}^3$. The shorter can costs $\$1.49$ for 785 cm^3 or $\$0.0019/\text{cm}^3$. So the shorter can is the better buy.
8. a) 6.28 ft^3 b) 0.79 ft

Extended Response

9. Volume of soup = 200.96 in^3 , volume of ladle = 16.75 in^3
Number of ladles of soup = 12.0

BLM 9.CT.1: Chapter 9 Test

Multiple Choice

1. D
2. B
3. B
4. C

Short Response

5. a) Volume of cube = 125 in^3 , Volume of rectangular prism = 108 in^3
b) SA of cube = 150 in^2 , SA of rectangular prism = 144 in^2
6. a) SA = 61.9 cm^2 b) V = 27.7 cm^3
7. a) Volume of taller can = 1413 cm^3 , Volume of shorter can = 2813.44 cm^3
b) The taller can costs $\$1.49$ for 1413 cm^3 or $\$0.00105/\text{cm}^3$. The shorter can costs $\$1.99$ for 2813.44 cm^3 or $\$0.0007/\text{cm}^3$. So the shorter can is the better buy.
8. a) 200.96 mm^3 b) 2.3 mm

Extended Response

9. Volume of lemonade = 1808.64 cm^3 , volume of cup = 20.93 cm^3
Number of cups of lemonade = 86.4