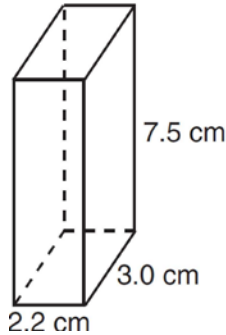


G.MG.A.3: Surface Area

- 1 The rectangular prism shown below has a length of 3.0 cm, a width of 2.2 cm, and a height of 7.5 cm.



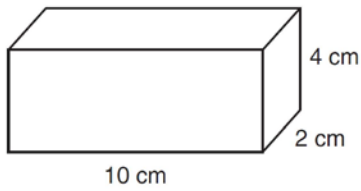
What is the surface area, in square centimeters?

- 1) 45.6
 - 2) 49.5
 - 3) 78.0
 - 4) 91.2
- 2 If the volume of a cube is 8 cubic centimeters, what is its surface area, in square centimeters?
- 1) 32
 - 2) 24
 - 3) 12
 - 4) 4
- 3 The volume of a cube is 64 cubic inches. Its total surface area, in square inches, is
- 1) 16
 - 2) 48
 - 3) 96
 - 4) 576

- 4 Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?
- 1) 9.0 ft^2
 - 2) 13.5 ft^2
 - 3) 22.5 ft^2
 - 4) 27.0 ft^2
- 5 How many square inches of wrapping paper are needed to entirely cover a box that is 2 inches by 3 inches by 4 inches?
- 1) 18
 - 2) 24
 - 3) 26
 - 4) 52
- 6 A gallon of paint will cover approximately 450 square feet. An artist wants to paint all the outside surfaces of a cube measuring 12 feet on each edge. What is the *least* number of gallons of paint he must buy to paint the cube?
- 1) 1
 - 2) 2
 - 3) 3
 - 4) 4
- 7 The length and width of the base of a rectangular prism are 5.5 cm and 3 cm. The height of the prism is 6.75 cm. Find the *exact* value of the surface area of the prism, in square centimeters.

8 A plastic storage box in the shape of a rectangular prism has a length of $x + 3$, a width of $x - 4$, and a height of 5. Represent the surface area of the box as a trinomial in terms of x .

9 Find the volume, in cubic centimeters, *and* the surface area, in square centimeters, of the rectangular prism shown below.



10 The base of a closed right circular cylinder has a diameter of 5 cm. If the height of the cylinder is 8 cm, what is the surface area of the cylinder, to the *nearest square centimeter*?

- 1) 157
- 2) 165
- 3) 408
- 4) 628

11 The surface area of a sphere is 2304π square inches. The length of a radius of the sphere, in inches, is

- 1) 12
- 2) 24
- 3) 288
- 4) 576

12 If the surface area of a sphere is 144π square centimeters, what is the length of the diameter of the sphere, in centimeters?

- 1) 36
- 2) 18
- 3) 12
- 4) 6

13 The diameter of a sphere is 5 inches. Determine and state the surface area of the sphere, to the *nearest hundredth of a square inch*.

14 Tim is going to paint a wooden sphere that has a diameter of 12 inches. Find the surface area of the sphere, to the *nearest square inch*.

G.MG.A.3: Surface Area**Answer Section**

1 ANS: 4

$$SA = 2lw + 2hw + 2lh = 2(3)(2.2) + 2(7.5)(2.2) + 2(3)(7.5) = 91.2$$

REF: 081216ia

2 ANS: 2

$$s^3 = 8. \quad 6 \times (2 \times 2) = 24$$

$$s = 2$$

REF: 081325ia

3 ANS: 3

$$V = s^3. \quad SA = 6s^2 = 6(4)^2 = 96.$$

$$64 = s^3$$

$$4 = s$$

REF: 080007a

4 ANS: 4

$$SA = 2lw + 2hw + 2lh = 2(3)(1.5) + 2(2)(1.5) + 2(3)(2) = 27$$

REF: 060827ia

5 ANS: 4

$$SA = 2lw + 2hw + 2lh = 2(2)(3) + 2(4)(3) + 2(2)(4) = 52$$

REF: 011029ia

6 ANS: 2

$$SA = 6 \cdot 12^2 = 864$$

$$\frac{864}{450} = 1.92$$

REF: 061519geo

7 ANS:

$$147.75 \quad 2 \times 5.5 \times 3 + 2 \times 6.75 \times 3 + 2 \times 5.5 \times 6.75 = 147.75$$

REF: 011231ia

8 ANS:

$$2(x+3)(x-4) + 2(5)(x-4) + 2(x+3)(5)$$

$$2(x^2 - 4x + 3x - 12) + 10(x-4) + 10(x+3)$$

$$2x^2 - 2x - 24 + 10x - 40 + 10x + 30$$

$$2x^2 + 18x - 34$$

REF: 061136ia

9 ANS:

$$80, 136 \quad V = lwh = 10 \cdot 2 \cdot 4 = 80 \quad SA = 2lw + 2hw + 2lh = 2 \cdot 10 \cdot 2 + 2 \cdot 4 \cdot 2 + 2 \cdot 10 \cdot 4 = 136$$

REF: 081035ia

10 ANS: 2

$$SA = 2\pi(2.5)^2 + 2\pi(2.5)(8) \approx 165$$

REF: 061514ia

11 ANS: 2

$$2304\pi = 4\pi r^2$$

$$576 = r^2$$

$$24 = r$$

REF: 011606ge

12 ANS: 3

$$144\pi = 4\pi r^2$$

$$36 = r^2$$

$$6 = r$$

REF: 061415ge

13 ANS:

$$SA = 4\pi r^2 = 4\pi \cdot 2.5^2 = 25\pi \approx 78.54$$

REF: 011429ge

14 ANS:

$$452. \quad SA = 4\pi r^2 = 4\pi \cdot 6^2 = 144\pi \approx 452$$

REF: 061029ge