# MODULE 3 Visualizing Solids

LESSON 3-1

Practice and Problem Solving: A/B

1. none
2. hexagonal prism
3. rectangular prism
4. triangular prism
5. none
6. triangular pyramid (or tetrahedron)
7. rectangle
8. circle
9. circle
10. square
11. triangle
12. trapezoid
13. rectangle
14. It has the same shape as the base (is congruent or similar).
15. Rotate a right triangle around a line that contains one of its legs.
16. Rotate a half-circle around a line that contains its diameter.
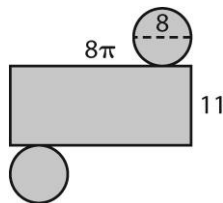17. Rotate a rectangle around a line that contains one of its sides.
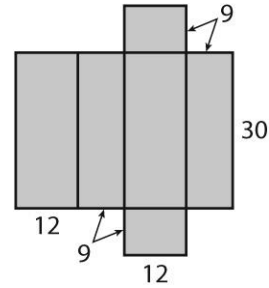
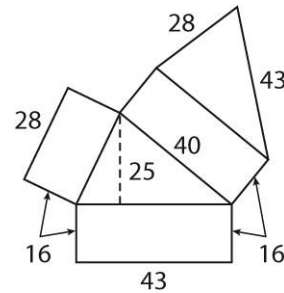## LESSON 3-2

Practice and Problem Solving: A/B

1. 96

2. 120π

3. 1476

4. 2851

5. 62π
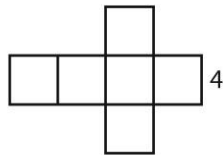
6. 864

7. Surface area = prism surface area + cylinder lateral area
   Prism surface area = 2(30)(12) + 2(30)(10) + 2(10)(12) = 1560
   Cylinder lateral area = 40π
   Surface area = $1560 + 40\pi$

8. Surface area = cube surface area + cylinder lateral area – cylinder base area
   Cube surface area = $6(5^2)$ = 150
   Cylinder lateral area = $2\pi(5) = 10\pi$
   Cylinder base areas = 2π
   Surface area = $150 + 10\pi - 2\pi =$ $150 + 8\pi$

LESSON 3-3

Practice and Problem Solving: A/B

1. 324π; 576π; 900π

2. 16π; 50.4π; 66.4π

3. 64; 163.2; 227.2

4. 35.1; 120.2; 155.3

5. 90π

6. 454.3 cm^2

7. Base of cylinder: 4π;
   Lateral surface of cylinder: 6π;
   Slant height of cone: 2.5
   Lateral surface of cone: 5π
   Total: $4\pi + 6\pi + 5\pi = 15\pi$

8. Base of prism: 121
   Lateral surface of prism: 880
   Lateral surface of pyramid: 235.4
   Total: 1236.4

LESSON 3-4

Practice and Problem Solving: A/B

1. 900π. $SA = 4\pi r^2 = 4\pi(15^2) = 900$

2. 1296π. $SA = 4\pi r^2 = 4\pi(18^2) = 1296$

3. 972π. $SA = 2\pi r^2 + \pi r^2 = 3\pi r^2 = 3\pi(18^2)$
   $= 972$

4. $SA = 3\pi r^2 = 3\pi(5^2) = 75\pi$

5. It quadruples. $SA = 4\pi r^2$. If the new radius
   is $2r$, the new surface area is $4\pi(2r)^2 =$
   $4\pi 2^2 r^2 = 4\pi 4r^2 = 16\pi r^2$, which is 4 times
   as great as the original area.

6. Because doubling the radius doubles its
   size 3 ways: left to right, front to back, top
   to bottom.

7. Surface area of hemisphere $= 2\pi r^2$
   $= 2\pi(6^2) = 72\pi$
   Surface area of figure $= 150\pi + 72\pi$
   $= 222\pi$

8. Surface area of hemisphere $= 2\pi r^2$
   $= 2\pi(6^2) = 72\pi$
   Surface area of figure $= 138\pi$