**Geometry Unit 9—Surface Area & Volume Test**

Good Luck To: _____

Period: _____

1. Define ***polyhedron:***

   _____

   _____

2. Define ***surface area:***

   _____

   _____

3. Define ***volume***:

   _____

   _____

Classify the following as polyhedra or not. Circle yes or no.
If you circle no, then explain why that figure is not a polyhedron.

4a. Cylinder
4b. Pyramid

4a. Yes or No

_____

_____

4b. Yes or No

_____

_____

5. What are Platonic Solids? _____

   Why are they called that? _____

List them.

6. _____

7. _____

8. _____

Bonus if you can get them all! _____ _____

9. Is it possible for a polyhedron to have 6 faces, 6 vertices, and 6 edges? Why or why not?

10 – 12. When we use the surface area and volume formulas studied in this chapter, we sometimes have a "B" in the formula. That stands for the area of the base. List 3 real-life examples of a geometric solid, tell which formula you would use (it has to be one of the formulas that has a "B" in it), and then identify the shape of the base for each of your examples.

For instance: (You can't use this example by the way!) ☺

Real life example: The Luxor

Volume formula for a Pyramid is $V = \frac{1}{3}Bh$

The shape of the base is a square, so in place of "B" I would use the area formula for a square which is $s^2$.

10. Real life example: _____

    Surface Area or Volume formula for a _____ is _____

    The shape of the base is a _____ so in place of "B" I would use the area formula for a _____

    which is _____.

11. Real life example: _____

    Surface Area or Volume formula for a _____ is _____

    Shape of the base is a _____ so in place of "B" I would use the area formula for a _____

    which is _____.

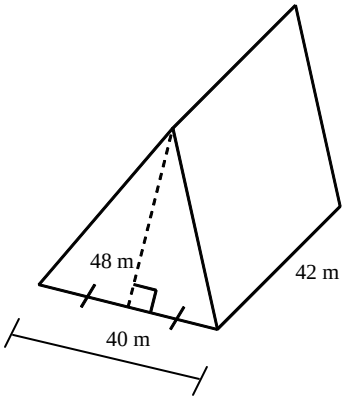
12. Real life example: _____

    Surface Area or Volume formula for a _____ is _____

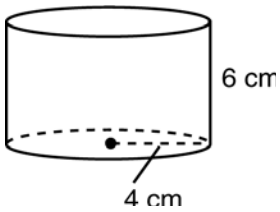
    Shape of the base is a _____ so in place of "B" I would use the area formula for a _____

    which is _____.

13. Find the surface area of the right prism. Surface area = _____



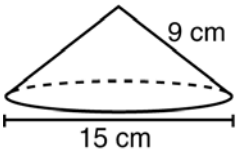
14. Find the surface area and volume of the right cylinder below. (Leave your answer in terms of $\pi$.)




14. Surface Area = _____

Volume = _____

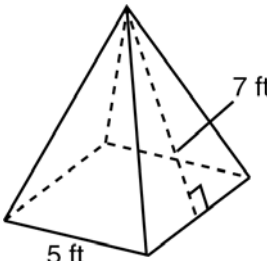
15. Find the surface area and volume of the right cone below. (Round the result to one decimal place.)




15. Surface Area = _____

Volume = _____

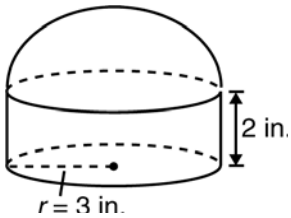
16. The pyramid below has a square base and a slant height of 7 ft. Find its surface area and volume. (If necessary, round your answer to one decimal place.)




16. Surface Area = _____

Volume = _____

17. The top of the cylindrical container below has the shape of a hemisphere. The total volume of the container is _____. (Leave your answer in terms of $\pi$.)



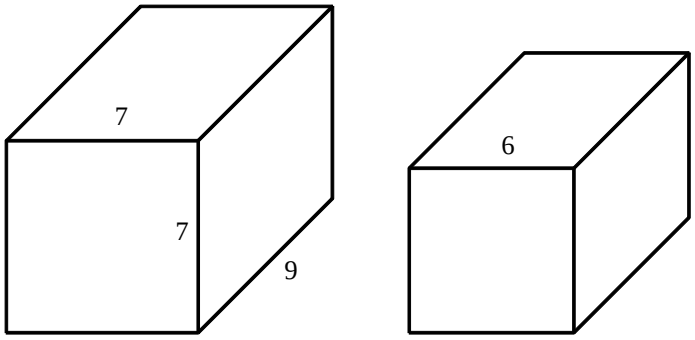

17. Volume = _____

18. Find the diameter of a sphere that has a surface area of $64\pi$ $\text{in}^2$.

18. Diameter = _____

19. The shipping crates shown are similar.

A. Find the similarity ratio of the crate on the left to the crate on the right.
B. Find the ratio of their surface areas.
C. Find the ratio of their volumes.




19.

A. _____

B. _____

C. _____

20. An aquarium in a restaurant is a rectangular prism and measures 3.5 feet by 4 feet by 4 feet. If the optimum fish to water ratio is 1 fish to every 6 cubic feet of water, how many fish can the restaurant have? (Remember…you can't have a partial fish so round correctly!)

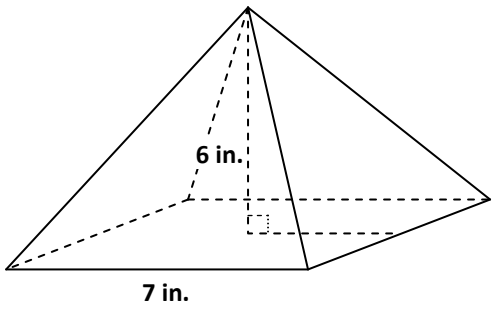
20. _____

(SE) 21. A cylindrical can has a volume of $12\pi$ cubic inches with a radius of 2 inches. How many inches tall is the cylindrical can?

**A.** 3
**B.** 6
**C.** 236.8
**D.** 473.5

21. _____

(SE) 22. A regular pyramid has height of 6 inches and the measure of the base edge is 7 inches.




What is the volume of the pyramid?

**A.** 49 in.$^3$

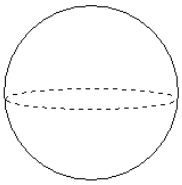
**B.** 98 in.$^3$

**C.** 147 in.$^3$

**D.** 294 in.$^3$

22. _____

(SE) 23. A group of students wants to make a fabric toy ball to donate to the canine rescue. The diameter of the ball is 3 inches.



Approximately how many square inches of fabric will they need for each ball?

**A.** 29 in.$^2$

**B.** 57 in.$^2$

**C.** 76 in.$^2$

**D.** 114 in.$^2$

23. _____

(PE) 24. The formula for the volume of a cylinder is $V = \pi r^2 h$. Given *V* and *h*, which formula would be used to find *r*?

**A.** $r = \sqrt{\pi V h}$

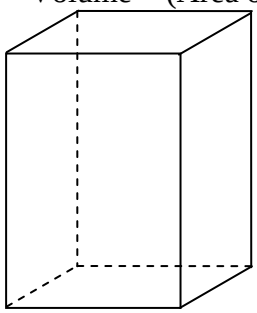
**B.** $r = \sqrt{\dfrac{V}{\pi h}}$

**C.** $r = \pi V h$

**D.** $r = \dfrac{V}{\pi h}$

24. _____

(PE) 25. A cereal box is 18 inches by 3 inches by 12 inches. After breakfast, the box is one-third full.
Volume = (Area of Base) × height



How many cubic inches of cereal are left inside?

**A.** 36 in.$^3$

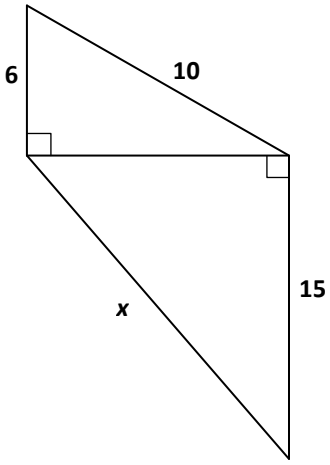
**B.** 72 in.$^3$

**C.** 216 in.$^3$

**D.** 648 in.$^3$

25. _____

(LTMR) 26. Use the dimensions given in the diagram below.




What is the value of $x$?

**A.** 25

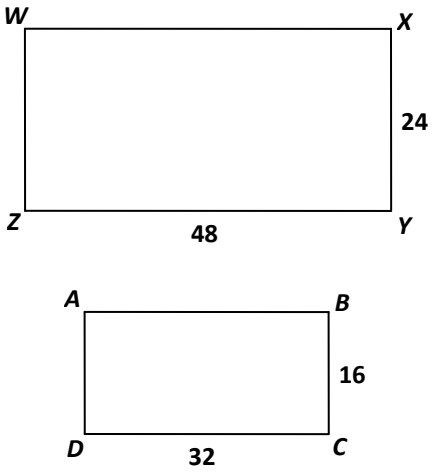
**B.** 21

**C.** 17

**D.** 8

26. _____

(LTMR) 27. The following figures are similar.




What is the scale factor of *WXYZ* to *ABCD*?

**A.** 3 to 2

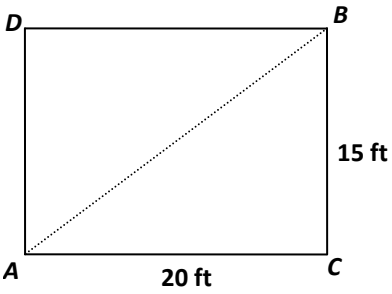
**B.** 3 to 1

**C.** 4 to 3

**D.** 1 to 2

27. _____

(LTMR) 28. Gina stands at the corner of the rectangular garden shown below.




How much **shorter** in feet is it to walk diagonally through the garden (*A* to *B*) instead of walking around its edge (*A* to *C* and *C* to *B*)?

**A.** 5 ft

**B.** 10 ft

**C.** 15 ft

**D.** 25 ft

28. _____