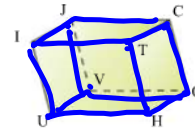


Student: _____	Instructor: Dawn Nolan	Assignment: Chapter 11 Review
Date: _____	Course: P4 Geometry Honors	

1. How many vertices, faces, and edges are in the polyhedron to the right? List them.



How many vertices in the polyhedron? List them.

- A. There are eight vertices: H, O, V, U, Q, T, C, and J.
- B. There are seven vertices: U, I, T, C, O, H, and J.
- C. There are seven vertices: O, I, J, H, C, U, and V.
- D. There are eight vertices: I, J, C, T, U, V, O, and H.

How many edges in the polyhedron? List them.

- A. There are nine edges: \overline{IJ} , \overline{JC} , \overline{CT} , \overline{IT} , \overline{OH} , \overline{UH} , \overline{IU} , \overline{CO} , and \overline{TH} .
- B. There are twelve edges: \overline{IJ} , \overline{JC} , \overline{CT} , \overline{IT} , \overline{UV} , \overline{VO} , \overline{OH} , \overline{UH} , \overline{IU} , \overline{JV} , \overline{CO} , and \overline{TH} .
- C. There are twelve edges: \overline{IH} , \overline{UT} , \overline{IV} , \overline{JU} , \overline{JO} , \overline{VC} , \overline{TO} , \overline{HC} , \overline{JT} , \overline{IC} , \overline{UO} , and \overline{VH} .
- D. There are nine edges: \overline{IT} , \overline{TH} , \overline{TC} , \overline{IH} , \overline{UT} , \overline{IC} , \overline{JT} , \overline{TO} , and \overline{CH} .

How many faces in the polyhedron? List them.

- A. There are six faces: quadrilateral $IJVU$, quadrilateral $CTHO$, quadrilateral $IJCT$, quadrilateral $JCOV$, quadrilateral $VOHU$, and quadrilateral $ITHU$.
- B. There are three faces: quadrilateral $ITHU$, quadrilateral $CTHO$, and quadrilateral $IJCT$.
- C. There are six faces: quadrilateral $IVJU$, quadrilateral $CTOH$, quadrilateral $ITJC$, quadrilateral $JOCV$, quadrilateral $VHOU$, and quadrilateral $TIHU$.
- D. There are three faces: quadrilateral $TIHU$, quadrilateral $CTOH$, and quadrilateral $ITJC$.

2. For the polyhedron, use Euler's Formula to find the missing number.

faces: ____
edges: 12
vertices: 9

The number of faces is 5.
(Type a whole number.)

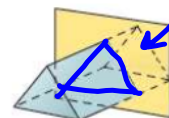
$$F + V = E + 2$$

$$F + 9 = 12 + 2$$

$$F + 9 = 14$$

$$F = 5$$

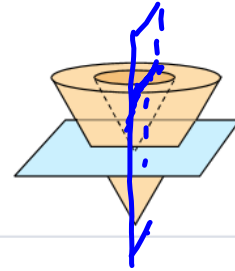
3. Describe the cross section of the figure to the right.



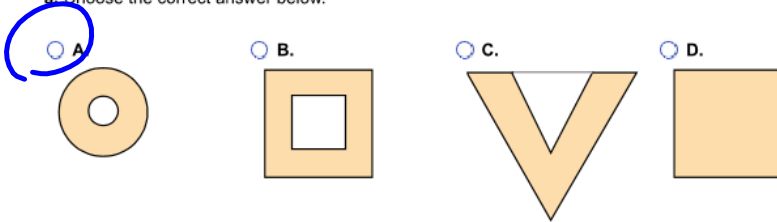
Choose the correct answer below.

- A. The cross section is a trapezoid.
- B. The cross section is a triangle.
- C. The cross section is a rectangle.
- D. The cross section is a pentagon.

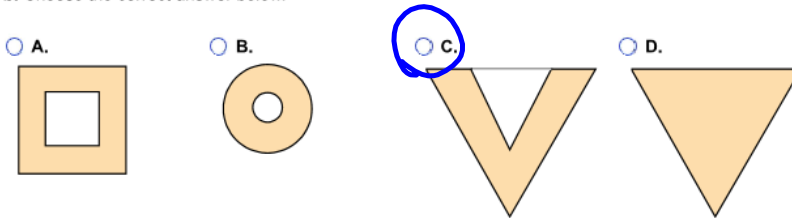
4. Use the figure to the right to complete parts a and b.
 a. Sketch a horizontal cross section.
 b. Sketch a vertical cross section that contains the vertical line of symmetry.



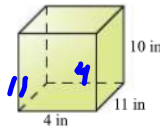
a. Choose the correct answer below.



b. Choose the correct answer below.



5. Find the surface area of the prism.



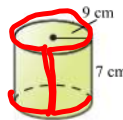
$$SA = LA + 2B$$

$$P \cdot h$$

$$30 \cdot 10 + 2(4 \cdot 11)$$

The surface area of the prism is 388 in². $2 \cdot 4 \cdot 11 + 2 \cdot 10 \cdot 11 + 300 + 88 = 388$

6. Find the surface area of the cylinder.



$$A = \pi r^2 = 81\pi$$

$$2 \cdot 4 \cdot 10 = 88 + 220 + 80 = 388$$

$$SA = LA + 2B$$

$$P \cdot h$$

The surface area of the cylinder is 126π cm².
 (Simplify your answer. Type an exact answer in terms of π .)

$$C = 2\pi r$$

$$C = 18\pi$$

$$126\pi$$

7. Use formulas to find the lateral area and surface area of the prism.

$$SA = LA + 2B = 840 + 2(30)$$

$$C = 81\pi$$

$$126\pi$$

$$+ 162\pi$$

$$\hline 288\pi$$



$$LA = P \cdot h$$

$$= 30(28)$$

$$840$$

The lateral area of the prism is 840 in².
 (Round to the nearest whole number as needed.)

The surface area of the prism is 900 in².
 (Round to the nearest whole number as needed.)

$$P = 12 + 13 + 5$$

$$30$$

$$\frac{1}{2} \cdot 12 \cdot 5$$

$$30$$



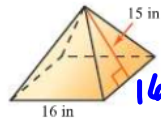
$$x^2 + 12^2 = 13^2$$

$$x^2 + 144 = 169$$

$$x^2 = 25$$

$$x = 5$$

8. Find the surface area of the pyramid.



$$SA = LA + B$$

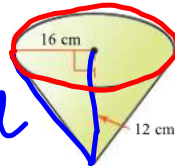
$$4 \left(\frac{1}{2} (16)(15) \right) + 16^2$$

$$16 \cdot 30$$

$$480 + 256$$

The surface area of the pyramid is 736 in².
(Type a whole number.)

9. Find the lateral area of the cone.



$$A = \frac{1}{2} b h$$

$$16^2 + 12^2 = l^2$$

$$256 + 144 = l^2$$

$$400 = l^2$$

$$20 = l$$

$$LA = \pi r l = \pi (16)(20) = 320\pi$$

$$C = 2\pi r = 2\pi(16) = 32\pi$$

The lateral area of the cone is 974 cm².
(Do not round until the final answer. Then round to the nearest whole number as needed.)

10. The lateral area of a cone is 3.6π in². The radius is 1.2 in. Find the slant height.

$$LA = \pi r l$$

$$3.6\pi = \pi(1.2)l$$

$$3 = l$$

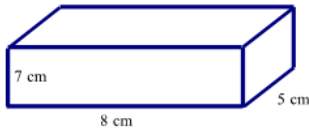
$$SA = \frac{1}{2}(2\pi r)l$$

$$SA = \pi r l + \pi r^2$$

$$LA = \pi r l$$

The slant height is 3 in.
(Type a whole number.)

11.



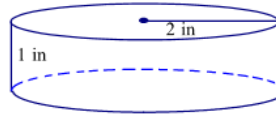
Find the volume of the rectangular prism.

The volume is 280 cm³.
(Simplify your answer.)

$$V = Bh$$

$$8 \cdot 5 \cdot 7$$

12. Find the volume of the cylinder in terms of π and to the nearest tenth.



The volume in terms of π is $V =$ 4π $$ in³.
(Type an exact answer in terms of π .)

The volume to the nearest tenth is $V =$ 12.6 $$ in³.
(Round to the nearest tenth as needed.)

$$V = Bh$$

$$= \pi r^2 h$$

$$= \pi (2)^2 \cdot 1$$

$$4\pi$$

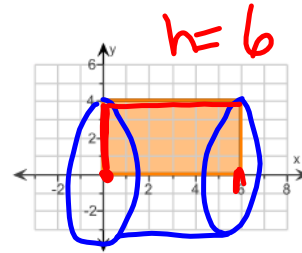
13. The plane region is revolved completely about the x-axis to sweep out a solid of revolution. Describe the solid and find its volume in terms of π .

$$V = Bh$$

$$= \pi r^2 h$$

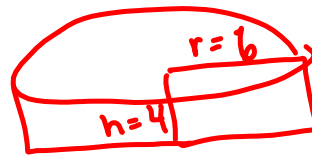
$$= \pi \cdot 4^2 \cdot 6 = \pi \cdot 16 \cdot 6 = 96\pi$$

$r = 4$



Describe the solid. Choose the correct answer below.

- A. The solid is a rectangular prism with a base length of 6.
- B. The solid is a cylinder with a radius of 4.
- C. The solid is a rectangular prism with a base length of 4.
- D. The solid is a cylinder with a radius of 6.



Find the volume of the solid of revolution in terms of π .

The volume of the solid is 96π units³.
(Simplify your answer. Type an exact answer, using π as needed.)

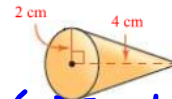
14. What is the volume of the figure?

$$V = \frac{1}{3} Bh$$

$$= \frac{1}{3} \pi r^2 h = \frac{1}{3} \pi (2)^2 \cdot 4$$

$$= \frac{1}{3} \pi \cdot 4 \cdot 4 = \frac{16}{3} \pi$$

$V = \underline{16.8}$ cm³
(Round to the nearest tenth as needed.)



15. Find the volume of a square pyramid with a height of 9 m and base edges of 7 m.

$$V = \frac{1}{3} Bh = \frac{1}{3} s^2 h = \frac{1}{3} \cdot 49 \cdot 9 = 147$$

$V = \underline{147}$ m³
(Round to the nearest tenth as needed.)

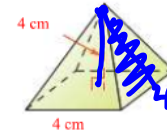
16. What is the volume of the square pyramid?

$$V = \frac{1}{3} B \cdot h$$

$$V = \frac{1}{3} \cdot 16 \cdot 4$$

$$= \frac{64}{3} = 21.3$$

$V = \underline{21.3}$ cm³
(Round to the nearest tenth as needed.)



17. Find the surface area of the ball shown to the right.



d = 18 cm

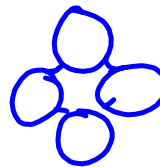
$$SA = 4\pi r^2$$

$$= 4\pi \cdot 9^2$$

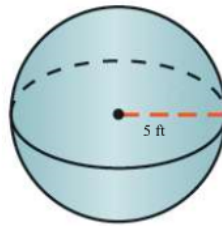
$$= 324\pi$$

The ball has a surface area of 324π cm².
(Simplify your answer. Type an exact answer in terms of π .)

$r = 9$



18. Find the volume of the sphere. Give the answer in terms of π and rounded to the nearest cubic foot.



$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} \pi (5)^3$$

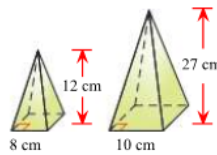
$$\frac{4\pi \cdot 125}{3}$$

$$\frac{500\pi}{3}$$

The volume in terms of π is $V = \frac{500\pi}{3}$ ft³.
(Simplify your answer. Type an exact answer in terms of π .)

The volume to the nearest cubic foot is approximately $V \approx 524$ ft³.
(Round to the nearest cubic foot as needed.)

19. Are the two figures similar? If so, give the scale factor of the first figure to the second figure.



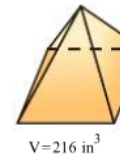
$$\frac{8}{10} = \frac{12}{27}$$

$$\frac{5}{4} = \frac{9}{4}$$

Are the two figures similar? Select the correct choice and fill in any answer boxes in your choice below.

- A. They are similar. The scale factor is _____ . (Simplify your answer.)
 B. They are not similar.

20. The pair of square pyramids are similar. Use the given information to find the scale factor of the smaller square pyramid to the larger square pyramid.



$$\sqrt[3]{\frac{125}{216}} = \sqrt[3]{\frac{a^3}{b^3}}$$

$$\frac{5}{6} = \frac{a}{b}$$

The scale factor is 5 : 6.
(Type whole numbers.)

21. The volumes of two similar figures are given. The surface area of the larger figure is given. Find the surface area of the smaller figure.

$V = 1984 \text{ m}^3$
 $V = 3875 \text{ m}^3$
 $S.A. = 1350 \text{ m}^2$

$$\sqrt[3]{\frac{1984}{3875}} = \sqrt[3]{\frac{a^3}{b^3}}$$

$$\left(\frac{a}{b}\right)^2 = \left(\sqrt[3]{\frac{1984}{3875}}\right)^2 = \sqrt{\frac{2}{3}}$$

The surface area of the smaller figure is 864 m².

$$\frac{a^2}{b^2} = 1984 \div 3875 \quad \boxed{\text{2nd}} \quad \boxed{y^x}$$

22. The volume of a spherical balloon with radius 3.2 cm is about 137 cm³. Estimate the volume of a similar balloon with radius 16.0 cm.

The larger balloon has a volume of about 17,125 cm³.

$$\frac{3}{16} = \frac{137}{x}$$

$$(0.8)^2$$

$r = 3.2 \text{ cm}$ $V = 137 \text{ cm}^3$
 $r = 16 \text{ cm}$ $\times 125$

$$\frac{0.64}{1} = \frac{x}{1350}$$

$$\frac{a^2}{b^2} = 0.64$$

$$\frac{125}{1} = \frac{x}{137}$$

$$\frac{a}{b} = \left(\frac{16}{3.2}\right)^3 = \frac{4096}{32768}$$

$$x = 1350(0.64)$$

$$864$$

$$x = 125 \cdot 137 = 17,125$$

$$5^3 = 125$$

23. Complete the table for the similar solid.

Similarity Ratio	Ratio of Surface Areas	Ratio of Volumes
3 : 7	:	:
3 : 7 ↑ (Simplify your answers.)	<u>9</u> : <u>49</u>	<u>27</u> : <u>243</u>

1. D. There are eight vertices: I, J, C, T, U, V, O, and H.

B. There are twelve edges: \overline{IJ} , \overline{JC} , \overline{CT} , \overline{IT} , \overline{UV} , \overline{VO} , \overline{OH} , \overline{UH} , \overline{IU} , \overline{JV} , \overline{CO} , and \overline{TH} .

A.

There are six faces: quadrilateral IJVU, quadrilateral CTHO, quadrilateral IJCT, quadrilateral JCOV, quadrilateral VOHU, and quadrilateral ITHU.

2. 5

3. B. The cross section is a triangle.

4.



A.



C.

5. 388

6. 288π

7. 840

900

8. 736

9. 1005

10. 3

11. 280

12. 4π

12.6

13. B. The solid is a cylinder with a radius of 4.

96π

14. 16.8

15. 147

16. 21.3

17. 324π

18. $\frac{500}{3}\pi$
524

19. B. They are not similar.

20. 5
6

21. 864

22. 17,125

23. 9
49
27
343
