

Name _____

Answers

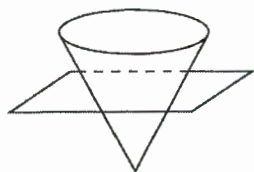
Date _____

Chapter 11 Review

For the following:

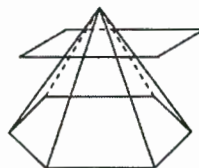
- Identify the name of the figure
- Identify if it is a polyhedron or not
- Find the number of faces, vertices, and edges if it is a polyhedron
- Describe the cross-section made by the intersecting plane

1)



- Cone
- Not a polyhedron
-
- Circle

2)



- Hexagonal pyramid or Heptahedron
- It is a polyhedron
- Faces - 7
Vertices - 7
Edges - 12

Use Euler's formula to find the missing number.

$$F + V = E + 2$$

3) Faces: 10

Edges: 24

Vertices: 16

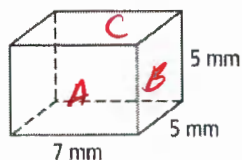
4) Faces: 8

Edges: 12

Vertices: 6

Find the volume and surface area of each of the following. Round to nearest 0.1.

5)



$$A = 7 \times 5 = 35 \times 2 = 70$$

$$B = 5 \times 5 = 25 \times 2 = 50$$

$$C = 7 \times 5 = 35 \times 2 = 70$$

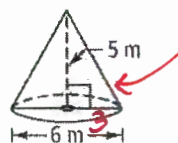
190 sq mm

$$V = BH$$

$$= 7 \times 5 \times 5$$

$$= 175 \text{ mm}^3$$

6)



$$5^2 + 3^2 = 1^2$$

$$25 + 9 = 1^2$$

$$\approx 5.8$$

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

$$= 3.14 \times 3 \times 5.8 + 3.14 \times 3^2$$

$$\approx 54.6 + 28.3$$

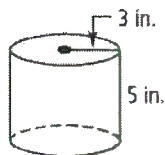
$$\boxed{\approx 82.9 \text{ m}^2}$$

$$V = \frac{1}{3} \pi r^2 H$$

$$= \frac{1}{3} \times 3.14 \times 3^2 \times 5$$

$$\boxed{= 47.1 \text{ m}^3}$$

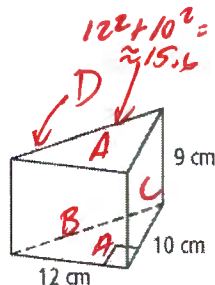
7)



$$\begin{aligned}
 SA &= 2\pi r^2 + \pi dH \\
 &= (2 \times 3.14 \times 3^2) + (3.14 \times 6 \times 5) \\
 &\approx 56.52 + 94.2 \\
 &\approx 150.7 \text{ in}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= \pi r^2 H \\
 &= 3.14 \times 3^2 \times 5 \\
 &= 141.3 \text{ in}^3
 \end{aligned}$$

8)



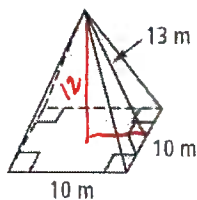
$$\begin{aligned}
 A &= \frac{1}{2} \times 12 \times 10 = 60 \times 2 = 120 \\
 B &= 12 \times 9 = 108 \\
 C &= 9 \times 10 = 90
 \end{aligned}$$

$$D = 15.6 \times 9 = 140.4$$

$$SA \approx 458.4 \text{ cm}^2$$

$$\begin{aligned}
 V &= (\frac{1}{2}bh)H \\
 &= (\frac{1}{2} \times 12 \times 10) \times 9 \\
 &= 540 \text{ cm}^3
 \end{aligned}$$

9)

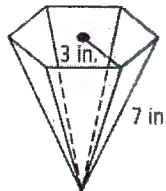


$$\begin{aligned}
 x^2 + 5^2 &= 13^2 \\
 x &= 12
 \end{aligned}$$

$$\begin{aligned}
 SA &= 4\Delta + \square \\
 &= 4(\frac{1}{2} \times 10 \times 13) + (10 \times 10) \\
 &= 260 + 100 \\
 &= 360 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= \frac{1}{3}BH \\
 &= \frac{1}{3} \times (10 \times 10) \times 12 \\
 &= 400 \text{ m}^3
 \end{aligned}$$

10)



$$\begin{aligned}
 h^2 + 1.5^2 &= 7^2 \\
 h &\approx 6.8
 \end{aligned}$$



$$1.5\sqrt{3} \approx 2.6$$

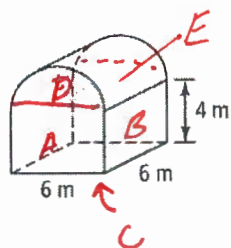


$$\begin{aligned}
 H^2 + 2.6^2 &= 7^2 \\
 H &\approx 6.3
 \end{aligned}$$

$$\begin{aligned}
 SA &= 6\Delta + \text{Hexagon} \\
 &= 6 \times (\frac{1}{2}bh) + \frac{1}{2}san \\
 &= 6 \times (\frac{1}{2} \times 3 \times 6.8) + (\frac{1}{2} \times 3 \times 2.6) \times 6 \\
 &= 61.2 + 23.4 \\
 &= 84.6 \text{ in}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= \frac{1}{3}(\frac{1}{2}san)H \\
 &= \frac{1}{3}(\frac{1}{2} \times 3 \times 2.6 \times 6) 6.3 \\
 &\approx 49.1 \text{ in}^3
 \end{aligned}$$

11)



$$A = 6 \times 4 = 24 \times 2 = 48$$

$$B = 6 \times 4 = 24 \times 2 = 48$$

$$C = 6 \times 6 = 36$$

$$D = \pi r^2 = 3.14 \times 3^2 \approx 28.26$$

$$E = \frac{1}{2} \pi d h = \frac{1}{2} \times 3.14 \times 6 \times 6 \approx 56.52$$

$$V = \text{Prism} + \frac{1}{2} \text{cylinder}$$

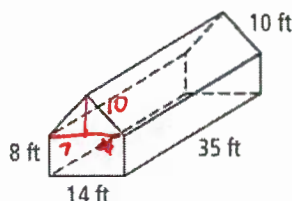
$$= (6 \times 6 \times 4) + \frac{1}{2} (3.14 \times 3^2 \times 6)$$

$$= 144 + 84.78$$

$$\approx 228.8 \text{ m}^3$$

$$SA \approx 216.8 \text{ m}^2$$

- 12) A greenhouse has the dimensions shown in the figure. What is the volume of the greenhouse? Round to the nearest 0.1 of a foot.



$$h^2 + 7^2 = 10^2$$

$$h \approx 7.1$$

$$V = \text{Rectangular Prism} + \text{Triangular Prism}$$

$$= (14 \times 35 \times 8) + \left(\frac{1}{2} \times 14 \times 7.1 \times 35 \right)$$

$$= 3920 + 1739.5$$

$$\approx 5659.5 \text{ ft}^3$$

Find the volume and surface area of a sphere with the given radius or diameter. Give each answer in terms of π and rounded to the nearest whole number.

13) $r = 5 \text{ cm}$

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

$$= 4 \times \pi \times 5^2$$

$$= 100\pi \text{ cm}^2$$

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

$$\approx 167\pi \text{ cm}^3$$

14) $d = 9 \text{ m}$

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

$$= 4 \times \pi \times 4.5^2$$

$$= 81\pi \text{ m}^2$$

$$V = \frac{4}{3} \times \pi \times (4.5)^3$$

$$\approx 121\pi \text{ m}^3$$

The surface area of each sphere is given. Find the volume of each sphere in terms of π .

13) $64\pi \text{ m}^2$

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

$$64\pi = 4\pi r^2$$

$$16 = r^2$$

$$4 = r$$

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

$$= \frac{4}{3} \times \pi \times 4^3$$

$$= \frac{256}{3} \pi \text{ m}^3 \approx 85.3\pi \text{ m}^3$$

14) $49\pi \text{ ft}^2$

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

$$49\pi = 4\pi r^2$$

$$12.25 = r^2$$

$$3.5 = r$$

$$V = \frac{4}{3} \times \pi \times 3.5^3$$

$$\approx 57.2\pi \text{ ft}^3$$

- 15) The surface areas of two similar figures are given. The volume of the larger figure is given. Find the volume of the smaller figure.

S.A. = 160 ft^2

S.A. = 250 ft^2

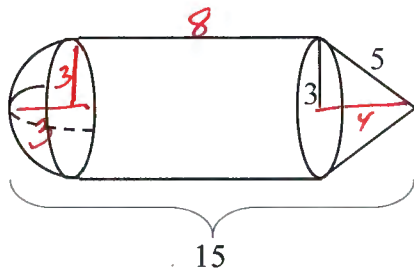
$V = 600 \text{ ft}^3$

$$\frac{160}{250} \Rightarrow \frac{16}{25} \rightarrow \frac{4}{5} \text{ scale factor}$$

$$\text{Ratio of volumes} \frac{64}{125} = \frac{x}{600}$$

$$x = 307.2 \text{ ft}^3$$

- 16) The submarine consists of a hemisphere, a cylinder, and a cone. Find the **volume** of the submarine in terms of π . All measurements are in meters.



$$V = \text{Hemisphere} + \text{Cylinder} + \text{Cone}$$

$$= \frac{1}{2} \left(\frac{4}{3} \cdot \pi \cdot 3^3 \right) + \pi \cdot 3^2 \cdot 8 + \frac{1}{3} \cdot \pi \cdot 3^2 \cdot 4$$

$$= 18\pi + 72\pi + 12\pi$$

$$= 102\pi \text{ m}^3$$