

Name: Key
Date: _____

Lesson 2-13: Unit 2 Test Review/Practice Test

** hints in pink **

Learning Goal: How well can I demonstrate my knowledge of Unit 2: Surface Area and Volume?

Directions: Complete the following review assignment to the best of your ability. This assignment will be collected and graded on the day of the test.

To receive full credit, you must complete the following:

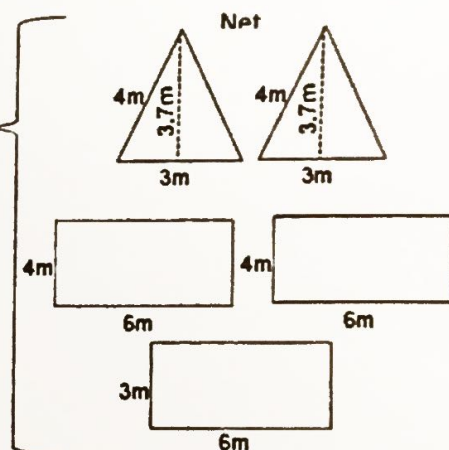
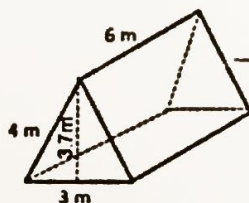
- ✓ Show *all of your work*
- ✓ Include correct units
- ✓ Check your work using the answer key
- ✓ Show evidence of checking your work (correct any mistakes in a different color. If your answer is correct, put a check mark).

Steps for finding Surface Area of Prisms: (figures without formulas)

1. Draw the net of the figure
2. Find the area of each shape in the net
3. Add all of the areas
4. Remember to include units

Surface Area for Rectangular Prisms (shortcut)

$$SA = 2(lw) + 2(wh) + 2(lh)$$



Steps for finding Surface Area: (figures with formulas)

1. Write down the formula from your reference sheet
2. Plug values into formula and solve
3. Remember to include units²!!!
4. Check what the questions asks you to leave your answer in terms of
Remember! Sometimes we are only asked for LATERAL SURFACE AREA
Only use the lateral surface area part of the formula on your reference sheet (the second term)
Lateral Surface Area of a Cylinder: πdh *Lateral Surface Area of a Cone: πrl*

Steps for finding Volume:

1. Write down the volume from the reference sheet
2. Plug in the given values into formula and solve
3. Remember to include units³!!!

Steps for finding SA and Volume: (Composite Figures)

1. Identify the two figures that make up the whole object
2. Find the SA or volume of both figures *separately*
3. Add SA or volumes together
4. Remember to include units!!!

Geometry/Trig

1. What is the radius of a sphere with a surface area of 196π square inches?

$$SA(\text{sphere}) = 4\pi r^2$$

$$\frac{196\pi}{(4\pi)} = \frac{4\pi r^2}{(4\pi)}$$

$$\sqrt{49} = \sqrt{r^2}$$

$$r = 7 \text{ in} \rightarrow \text{units!}$$

* Always write your formula 1st!

don't forget your parenthesis!

2. Soda is sold in aluminum cans that measure 6 inches in height and 2 inches in diameter. How many cubic inches of soda are contained in a full can? (Round answer to the nearest tenth of a cubic inch.)

Volume!



$$d = 2 \rightarrow r = 1$$

$$h = 6$$

$$V = \pi r^2 h$$

$$= \pi (1)^2 (6)$$

$$= 6\pi$$

$$= 18.84955592$$

$$= \boxed{18.8 \text{ in}^3}$$

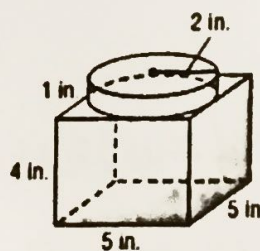
3. Find the volume of the composite figure below. Round to the nearest tenth.

$$\textcircled{1} V(\text{cylinder}) = \pi r^2 h$$

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

$$= 4\pi \text{ in}^3$$

Find each volume and add!



$$\textcircled{2} V(\text{rect. prism}) = l \times w \times h$$

$$= 5 \times 5 \times 4$$

$$= 100 \text{ in}^3$$

$$\textcircled{3} \text{ Total Volume}$$

$$4\pi + 100$$

$$= 112.5663706$$

$$= \boxed{112.6 \text{ in}^3}$$

Geometry/Trig

4. The surface area of the cone to the right is 100π square meters. What is the slant height l of the cone?

$$SA(\text{Cone}) = \pi r^2 + \pi r l$$

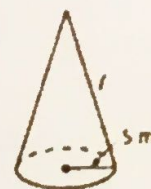
$$100\pi = \pi(5)^2 + \pi(5)l$$

$$100\pi = 25\pi + 5\pi l$$

$$\begin{array}{r} - 25\pi \\ \hline \end{array} \quad \begin{array}{r} - 25\pi \\ \hline \end{array}$$

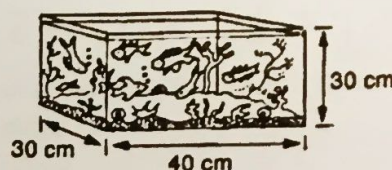
$$\frac{75\pi}{(5\pi)} = \frac{5\pi l}{(5\pi)}$$

$$l = 15\text{in}$$



5. a) What is the volume of the fish tank below?

$$\begin{aligned} V &= l \times w \times h \\ &= 30 \times 40 \times 30 \\ &= \boxed{36000 \text{ cm}^3} \end{aligned}$$

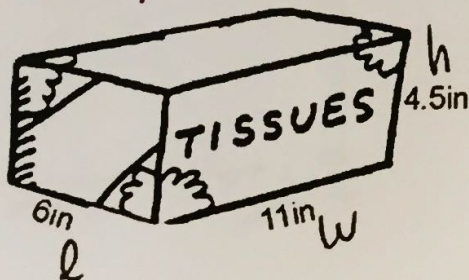


- b) If one guppy requires 50 cubic cm of water to live happily, what is the maximum number of guppies that should be kept in this aquarium?

$$\frac{36000}{50} = \boxed{720 \text{ guppies}}$$

6. Find the surface area of the figures below, to the nearest square inch:

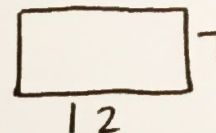
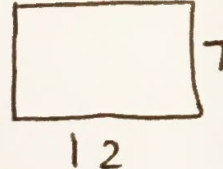
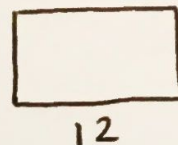
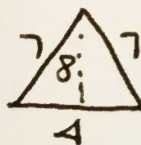
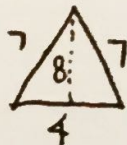
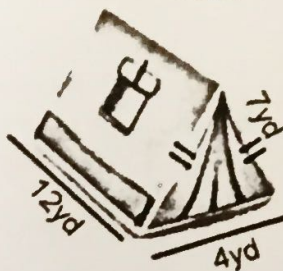
rectangular prism SA $\rightarrow SA = 2(l \times w) + 2(w \times h) + 2(l \times h)$



$$\begin{aligned} &= 2(6 \times 11) + 2(11 \times 4.5) + 2(6 \times 4.5) \\ &= 2(66) + 2(49.5) + 2(27) \\ &= 132 + 99 + 54 \\ &= \boxed{285 \text{ in}^2} \end{aligned}$$

*SHOW ALL WORK!!

7. Find the surface area of the figures below, to the nearest square yard:



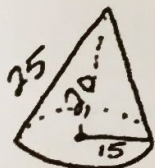
$$SA = \text{Area } \Delta + \text{Area } \Delta + \text{Area}(\square) + \text{Area}(\square) + \text{Area}(\square)$$

$$= 2\left(\frac{1}{2}bh\right) + 2(7 \times 12) + (12 \times 4)$$

$\underbrace{\hspace{1cm}}_{2\Delta} \quad \underbrace{\hspace{1cm}}_{2\text{rect.}} \quad \underbrace{\hspace{1cm}}_{\text{bottom rectangle}}$

$$= 2\left(\frac{1}{2} \times 4 \times 8\right) + 2(84) + (48) = 32 + 168 + 48 = \boxed{248 \text{ yd}^2}$$

8. A cone has a base with a radius of 15 cm, a vertical height of 20 cm, and a slant height of 25 cm. Find, in terms of π , the number of square centimeters in the lateral area of the cone.



$$\text{lat. area} = \pi r l$$

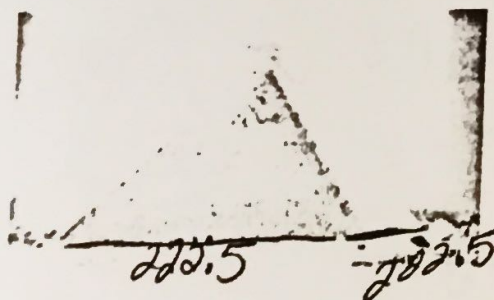
$$= \pi (15)(25)$$

$$= \boxed{375\pi \text{ cm}^2}$$

$$\rightarrow SA = \cancel{\pi r^2} + \pi r l$$

9. The Pyramid of the Sun in Teotihuacan, Mexico has a height of 60.9 meters. Each side of the square base has a length of 222.5 meters. How many cubic meters of space does this pyramid take up? Round to the nearest hundredth.

((Volume))



$$V = \frac{1}{3} (l \times w) h$$

$$= \frac{1}{3} (222.5 \times 222.5) (60.9)$$

$$= \boxed{1,004,976.876 \text{ m}^3}$$

10. Determine the amount of heat needed to fill the entire house shown below, to the nearest cubic foot.

① $V (\Delta \text{ Prism})$

$$V = (\frac{1}{2}bh)H$$

$$= \frac{1}{2}(10)(5)(12)$$

$$= \boxed{300 \text{ ft}^3}$$

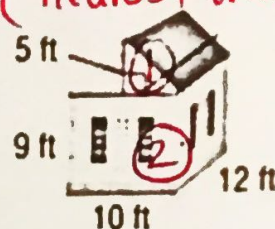
② $V (\square \text{ Prism})$

$$V = l \times w \times h$$

$$= 9 \times 10 \times 12$$

$$= \boxed{1080 \text{ ft}^3}$$

(nearest whole #)



③ Total Volume = $300 + 1080 = \boxed{1380 \text{ ft}^3}$

11. The volume of a cylinder is $12,566.4 \text{ cm}^3$. The height of the cylinder is 8 cm. Find the radius of the cylinder to the nearest tenth of a centimeter.

$$V = \pi r^2 h$$

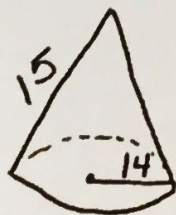
$$\frac{12,566.4}{(8\pi)} = \frac{\pi(r)^2(8)}{(8\pi)}$$

don't forget parentheses!

$$\sqrt{500.0011692} = \sqrt{r^2}$$

$$r = 22.36070592 \rightarrow \boxed{22.4 \text{ cm}}$$

12. A cone-shaped water cup has a slant height of 15 cm and a radius of 14 cm. How much paper is required to make this cup, to the nearest square centimeter?



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

$$= \pi(14)(15)$$

$$= 659.7344573$$

$$\boxed{660 \text{ cm}^2}$$

(Surface Area)

NO TOP

Water cups don't have tops!