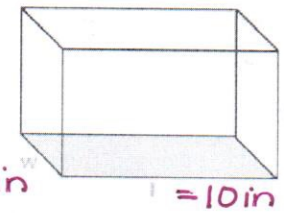
Secondary Math 2 **Unit 12 Review** **Name:** key **Period:** _____

1) Find the volume of the solid. The length of the base is 10 in, the width of the base is 3 in, and the height of the solid is 7 in.



$V = lwh = (10)(3)(7)$

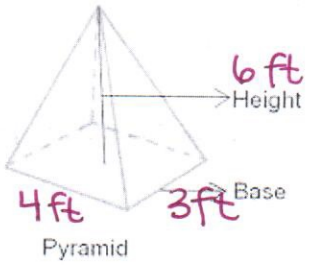
A $V = 20\text{ in}^3$ B $V = 70\text{ in}^3$ C $V = 100\text{ in}^3$ **D $V = 210\text{ in}^3$**

2) A jar of peanut butter has a base with a radius of 4 cm and a height of 8 cm. Find the volume. cylinder $= \pi r^2 h$

A $V = 32\pi\text{ cm}^3$ **B $V = 128\pi\text{ cm}^3$** C $V = \frac{32\pi}{3}\text{ cm}^3$ D $V = \frac{128\pi}{3}\text{ cm}^3$

$V = \pi(4)^2(8)$

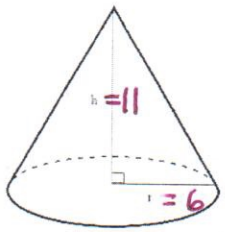
3) Find the volume of the solid. The length of the base is 3 ft, the width of the base is 4 ft, and the height of the solid is 6 ft.



$V = \frac{1}{3}lwh = \frac{1}{3}(3)(4)(6)$

A $V = 8\text{ ft}^3$ B $V = 13\text{ ft}^3$ **C $V = 24\text{ ft}^3$** D $V = 72\text{ ft}^3$

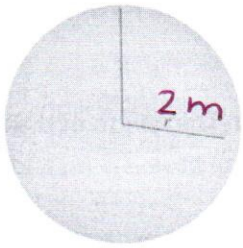
4) Find the volume of the solid. The radius of the base is 6 cm and the height of the solid is 11 cm.



$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(6)^2(11)$

A $V = 396\pi\text{ cm}^3$ B $V = 22\pi\text{ cm}^3$ C $V = 66\pi\text{ cm}^3$ **D $V = 132\pi\text{ cm}^3$**

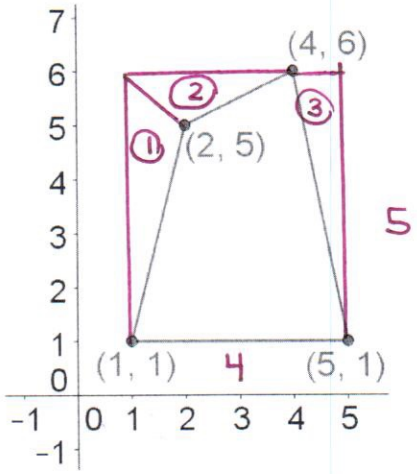
5) Find the volume of the solid. The radius of the sphere is 2 m.



$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi(2)^3$

A $V = 8\pi\ m^3$ B $V = \frac{16\pi}{3}\ m^3$ C $V = \frac{32\pi}{3}\ m^3$ D $V = \frac{8\pi}{3}\ m^3$

6) Find the area of the polygon. Assume the measurements are given in miles.



$A_{\square} - A_1 - A_2 - A_3 = A_{original}$

$A_{\square} = (4)(5) = 20\ mi^2$

$A_1 = \frac{1}{2}(5)(1) = 2.5 mi^2$

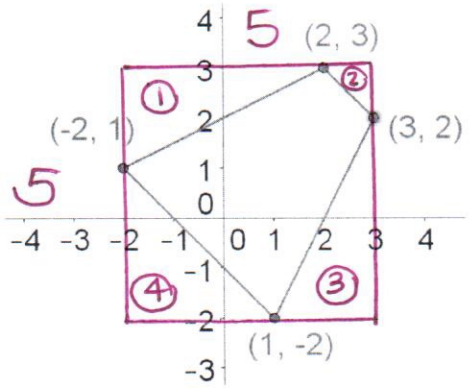
$A_2 = \frac{1}{2}(3)(1) = 1.5\ mi^2$

$A_3 = \frac{1}{2}(5)(1) = 2.5\ mi^2$

$A_{original} = 20 - 2.5 - 1.5 - 2.5 = 13.5 mi^2$

A $A = 6.5\ \text{mi}^2$ B $A = 13.5\ \text{mi}^2$ C $A = 7\ \text{mi}^2$ D $A = 14\ \text{mi}^2$

7)



Find the area of the polygon. Assume the measurements are given in inches.

$A_{\square} = (5)(5) = 25\ in^2$

$A_1 = \frac{1}{2}(4)(2) = 4\ in^2$

$A_2 = \frac{1}{2}(1)(1) = 0.5\ in^2$

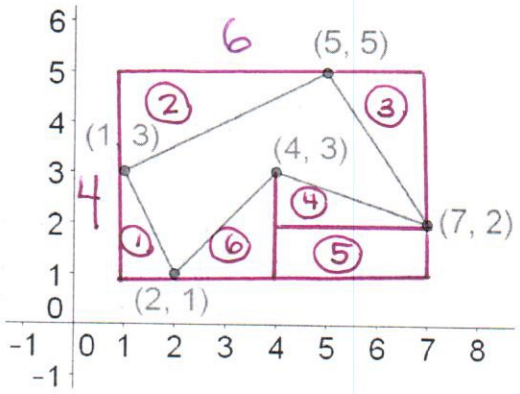
$A_3 = \frac{1}{2}(2)(4) = 4\ in^2$

$A_4 = \frac{1}{2}(3)(3) = 4.5 in^2$

$A_{original} = 25 - 4 - 0.5 - 4 - 4.5 = 12 in^2$

A $A = 12\ \text{in}^2$ B $A = 12.5\ \text{in}^2$ C $A = 13\ \text{in}^2$ D $A = 13.5\ \text{in}^2$

8) Find the area of the polygon. Assume the measurements are given in centimeters.



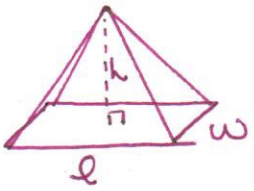
$A_{\square} = (4)(6) = 24\ cm^2$
$A_1 = \frac{1}{2}(1)(2) = 1\ cm^2$
$A_2 = \frac{1}{2}(2)(4) = 4\ cm^2$
$A_3 = \frac{1}{2}(2)(3) = 3\ cm^2$
$A_4 = \frac{1}{2}(3)(1) = 1.5\ cm^2$
$A_5 = (3)(1) = 3\ cm^2$
$A_6 = \frac{1}{2}(2)(2) = 2\ cm^2$

A $A = 13\ cm^2$ B $A = 14.5\ cm^2$ C $A = 14\ cm^2$ D $A = 9.5\ cm^2$

$A_{original} = 24 - 1 - 4 - 3 - 1.5 - 3 - 2 = 9.5\ cm^2$

9) A rectangular pyramid has a volume of 30 cubic inches. What is one possible set of dimensions for the pyramid?

many answers!!



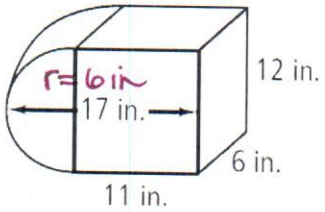
$V = 30\ in^3$

$V = \ell w h$

$\ell = 5in\ w = 2in\ h = 3in\ \ V = 30\ in^3$

$\ell = 10in\ w = 3in\ \ h = 1in\ \ V = 30\ in^3$

10) What is the volume in cubic inches of the solid figure, rounded to the nearest cubic inch?

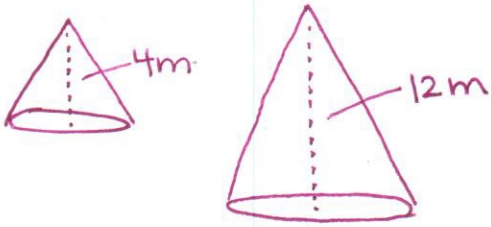


$\frac{1}{2} V_{cylinder} + V_{rect.\ prism}$

$\frac{1}{2}(\pi(6)^2(6)) + (11)(6)(12)$

$339.292 + 792 = \boxed{1131\ in^3}$

11) Two similar cones have heights 4 m and 12 m.



a. What is the ratio of their heights?

$k = \frac{4}{12} = \boxed{\frac{1}{3}}$

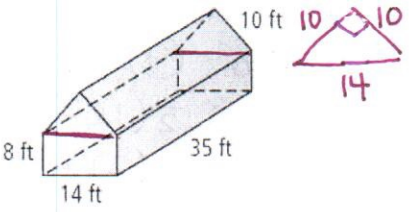
b. What is the ratio of their surface areas?

$k^2 = \frac{1^2}{3^2} = \boxed{\frac{1}{9}}$

c. What is the ratio of their volumes?

$k^3 = \frac{1^3}{3^3} = \boxed{\frac{1}{27}}$

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



$V_{\text{Triangular Prism}} + V_{\text{rect. prism}}$

$= \frac{1}{2}(10)(10)(35) + (8)(14)(35)$

$= 1750 + 3920 = \boxed{5670\ ft^3}$

13) If you need 3 gallons of paint to cover a wall 10 feet high, how much paint would you need to cover a similar wall that is 15 feet high?

length — area use ratios — length — area

$k = \frac{10}{15} = \frac{2}{3}$ so $k^2 = \frac{2^2}{3^2} = \frac{4}{9}$

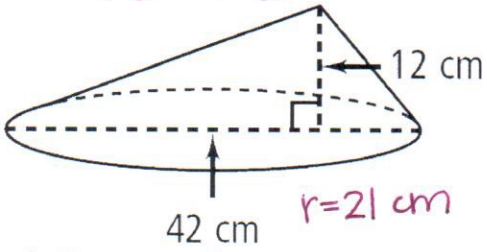
$\frac{4}{9} \times \frac{3}{x}$

$\frac{4x}{4} = \frac{27}{4}$

$\boxed{x = 6.75 \text{ gallons}}$

14-15: Find the volume.

14) cone (circular pyramid)



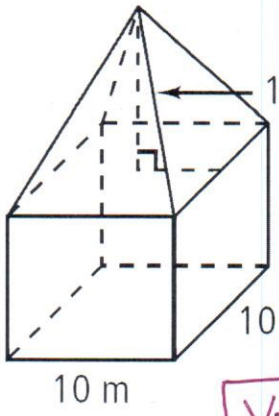
$r = 21$ cm

$V = \frac{1}{3}(\pi(21)^2)(12)$

$= \boxed{1764\pi\ cm^3}$

$5541.77\ cm^3$

15)



$V_{\text{square pyramid}} + V_{\text{cube}}$

$= \frac{1}{3}(10(10)(13)) + (10)(10)(10)$

$= 433.33 + 1000$

$\boxed{V_{Total} = 1433.33\ m^3}$

16) A milk jug shaped like a cylinder has a base area of 100 cm^2 and can hold 1500 cm^3 of milk. The height of the juice container is:

volume

$\text{area} = \pi r^2$

$\pi r^2 = 100$

$\text{Volume} = \pi r^2 h$

$\pi r^2 h = 1500$

$\frac{(100)h}{100} = \frac{1500}{100}$

$\boxed{h = 15\ cm}$

17) Find the diameter of a soccer ball with a volume of 1436.76 in^3 to the nearest inch.

$d = 2r$ — sphere

$V = 1436.76\ in^3$

$\frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi} = \frac{1436.76}{\frac{4}{3}\pi}$

$r^3 = 343$

$r = \sqrt[3]{343}$

$\boxed{r = 7\ in^3}$