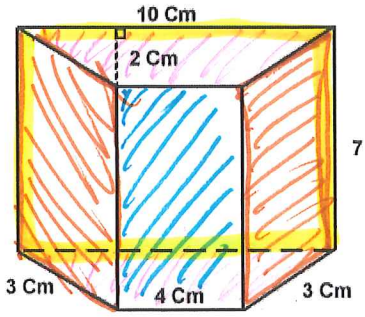
Name: Key

SA and Volume with Interesting Bases In-Class Practice

Warm-up Question- Find the Surface area and volume of the following figures.

A)



Surface Area

$2(\frac{1}{2}2(4+10)$ ← Trapezoids

$+ 7\times4$

$+ 2(7\times3)$

$+ 10\times7$

$SA = 168cm^2$

$SA = 168cm^2$

$V = 98cm^3$

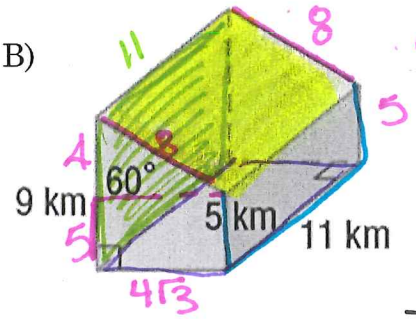
$V = B\cdot H$

$V = \frac{1}{2}\cdot2(4+10)\times7$

Area of Base

$B = \frac{1}{2}2(4+10)$

B)



$SA = 2(\frac{1}{2}4\sqrt{3}(5+9))$

$+ 5\times11$

$+ 11\times4\sqrt{3}$

$+ 9\times11$

$+ 11\times8$

$SA = 415.2km^2$

$SA = 415.2km^2$

$V = 533.5km^3$

$V = B\cdot H$ ← 11 NOT part of trap

$V = \frac{1}{2}4\sqrt{3}(5+9)\cdot11$

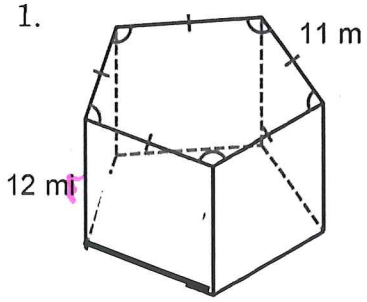
Area of trap Base

$B = \frac{1}{2}4\sqrt{3}(5+9)$

Individual Practice/Review

Directions: Find the surface area and volume for the following prism.

1.



SA = 2 pentagons
5 rectangles!

$SA = 2(5\frac{1}{2}9.4\times9.4\sin(72)) + 5(12\times11)$

$SA = 1080.2$

$SA = 1080.2mi^2$

$V = 2521.1mi^3$

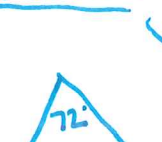
$V = B\cdot H$ ← 12mi

$V = 5\frac{1}{2}9.4^2\sin(72)\times12$

$V = 2521.1m^3$

$B = 5\frac{1}{2}9.4\times9.4\sin(72)$

Pentagon

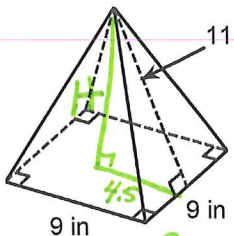


$\cos(54) = \frac{5.5}{r}$

$r = 9.4m$

Directions: Find the surface area and volume for the following pyramids.

2.a)



$SA = 4\triangle s + \square$

$SA = 4\frac{1}{2}9\times11 + 9\times9$

$SA = 279in^2$

Find H

$H^2+4.5^2=11^2$

$H = 10.04$

$H = 10in$

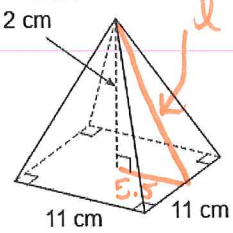
$V = \frac{1}{3}B\cdot H$

$V = \frac{1}{3}(9\times9)\times10$

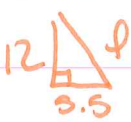
$V = 270in^3$

SA= 279in² V= 270in³

b)



Find slant



$12^2+5.5^2=l^2$

$174.25=l^2$

$\sqrt{174.25}=l$

$13.2=l$

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

$V = \frac{1}{3}11\times11\times12$

$V = 484cm^3$

$SA = 4\frac{1}{2}11\times13.2 + 11\times11$

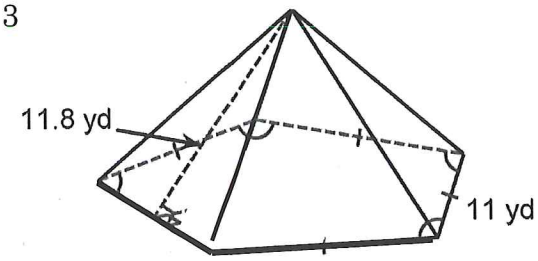
$SA = 411.4cm^2$

SA= 411.4cm² V= 484cm³

Directions: Find the surface area for the following pyramid.

3

SA= 534.6yd²

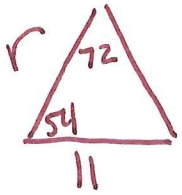


SA = Pentagon + 5 triangles

$SA = 5\frac{1}{2}9.4\times9.4\times\sin(72) + 5\frac{1}{2}11\times11.8$

$SA = 534.6yd^2$

Find r.



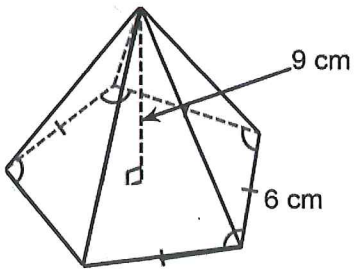
$\cos(54) = \frac{5.5}{r}$

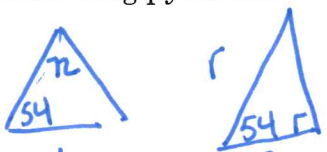
$r = 9.4yd$

Directions: Find the volume for the following pyramid.

4.

V= 185.5cm³





$\cos(54) = \frac{3}{r}$

$r = 5.1cm$

$V = \frac{1}{3}\cdot5\frac{1}{2}5.1\times5.1\sin(72)\cdot9$

$V = 185.5cm^3$

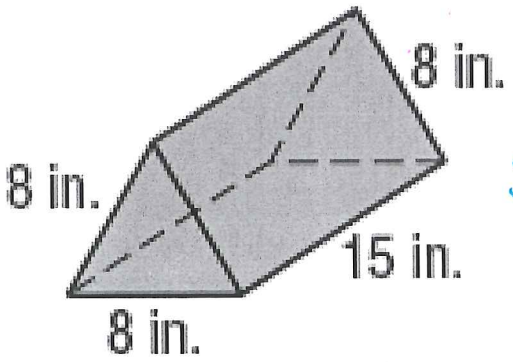
B = area of Pentagon

$B = 5\frac{1}{2}\cdot5.4\times5.1\sin(72)$

Can be done at home if needed.

5. Find the surface area and volume.

SA= 415.0 in²



SA = 3(15×8) + 2(3½ 4.6² sin(120))

SA = 414.97

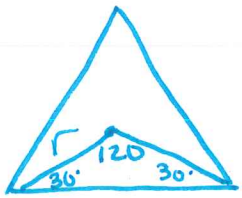
V= 412.3 in³

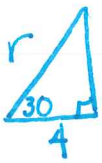
V = B · H ← 15

V = 3½ 4.6 × 4.6 sin(120) · 15

V = 412.3

Area of Base

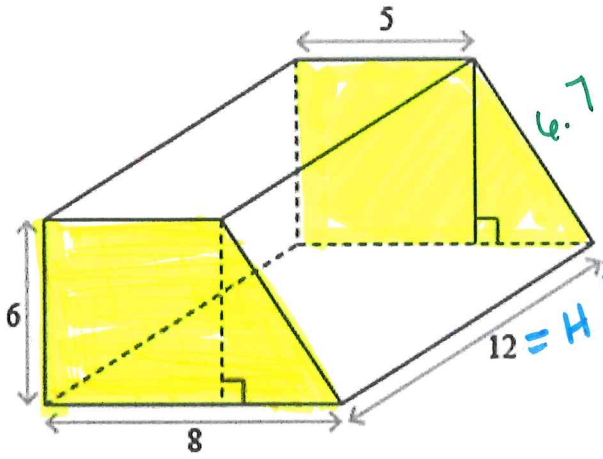




cos(30) = 4/r

r = 4.6 in

6.



Trapezoid

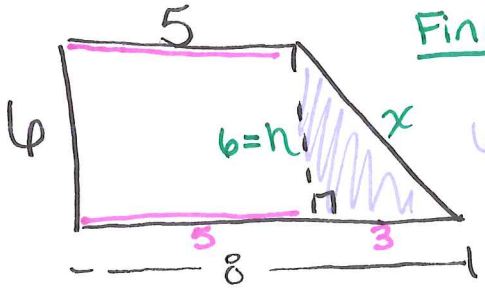
SA= 386.4 units²

V= 468 units²

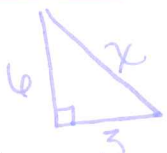
V = B · H

V = ½ 6 (8+5) × 12

Let's look @ the trapezoid



Find x



$6^2 + 3^2 = x^2$

$\sqrt{45} = x$

$3\sqrt{5} = x$

or

x = 6.7

Surface Area

2(½ 6 (8+5)) ← trap bases!

12 × 6.7

+ 8 × 12

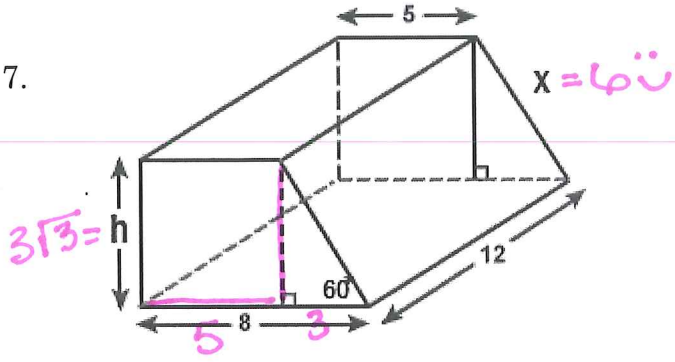
+ 6 × 12

+ 5 × 12

SA = 386.4 units²

More on next page...

7.



SA= 357.9 units²

V= 405.3 units³

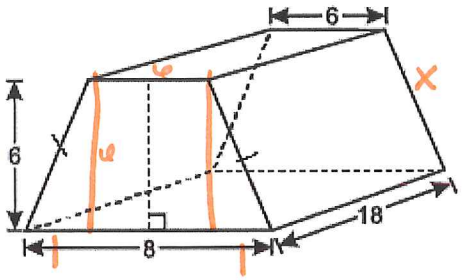
$SA = 2\,\frac{1}{2}\,3\sqrt{3}(8+5) + 6\times12 + 8\times12 + 3\sqrt{3}\times12 + 5\times12$

$SA = 357.9 \text{ units}^2$

$V = \frac{1}{2}\,3\sqrt{3}\cdot(8+5)\times12$

$V = 405.3 \text{ units}^3$

8.



SA= 555.6 units²

V= 756 units³

$1^2 + 6^2 = x^2$

$\sqrt{37} = x$

$6.1 = x$

$SA = 2\,\frac{1}{2}\,6(6+8) + 2(6.1\times18) + 8\times18 + 6\times18$

$SA = 555.6\,u^2$

$V = \frac{1}{2}\,6(6+8)\times18$

$V = 756\,u^3$