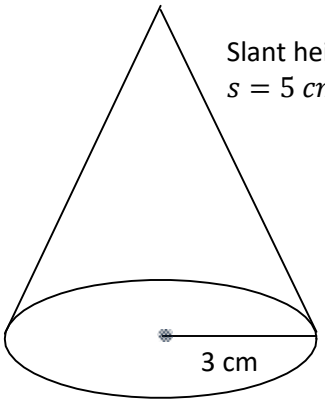
M10 - 2.1 - Cone Surface Area/Volume Notes

Cone Surface Area

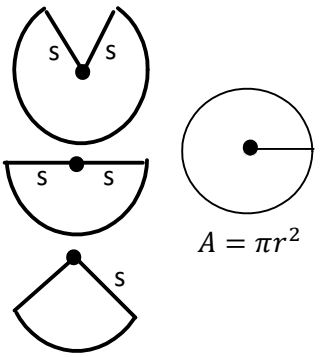


$SA = \pi r^2 + \pi rs$
$SA = (3.14)(3)^2 + (3.14)(3)(5)$
$SA = 28.27 + 47.12$

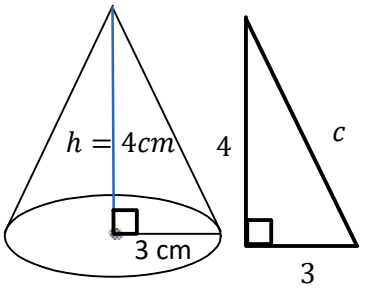
$SA = 75.40\ cm^2$

$SA = 24\pi\ cm^2$ Terms of Pie

Net Area

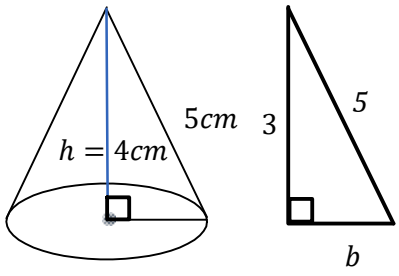


Pythagoras (Same as Above)



$a^2 + b^2 = c^2$
$3^2 + 4^2 = c^2$
$9 + 16 = c^2$
$c^2 = 25$
$c = \sqrt{25}$

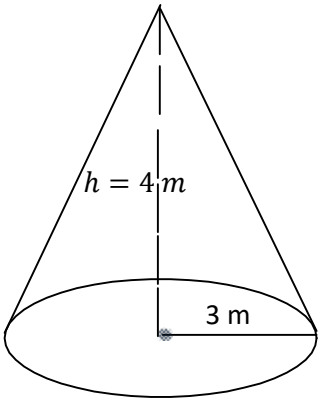
$c = 5$



$a^2 + b^2 = c^2$
$3^2 + b^2 = 5^2$
$9 + b^2 = 25$
$-9 \quad -9$
$b^2 = 16$
$\sqrt{b^2} = \sqrt{16}$

$b = 4$

Cone Volume



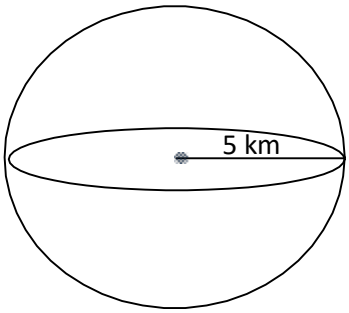
$V = \frac{1}{3} \times (area\ of\ base) \times h$
$V = \frac{1}{3} \times (\pi r^2) \times h$
$V = \frac{1}{3} \times \left((3.14)(3)^2\right) \times 4$

$V = \pi r^2 h$

$V = 37.7\ m^3$

$V = 12\pi\ m^3$ Terms of Pie

Sphere Surface Area and Volume



$SA = 4\pi r^2$
$SA = 4(3.14)(5)^2$

$SA = 314\ km^2$

$SA = 100\pi\ km^2$

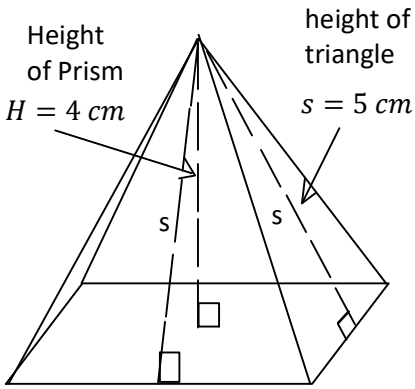
$V = \frac{4}{3}\pi r^3$
$V = \frac{4}{3}(3.14)(5)^3$

$V = 523.6\ km^3$

Terms of Pie $V = \frac{100}{3}\pi\ km^3$

M10 - 2.2 - Square Pyramid Notes

Square Based Pyramid Surface Area and Volume

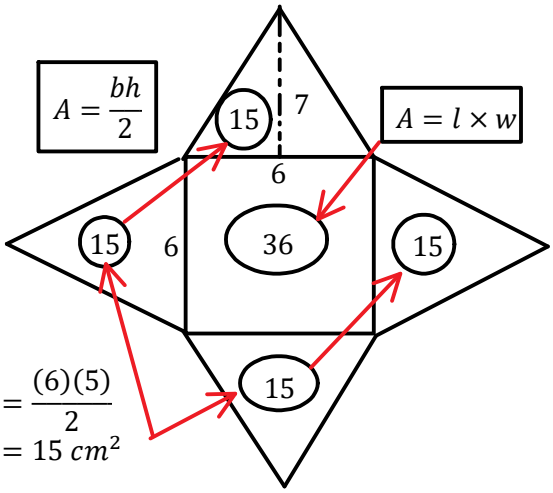


$b = 6\ cm$

$SA = 2bs + b^2$
$SA = 2(6)(5) + (6)^2$
$SA = 60 + 36$

$SA = 96\ cm^2$

OR



$A = \frac{(6)(5)}{2}$
$A = 15\ cm^2$

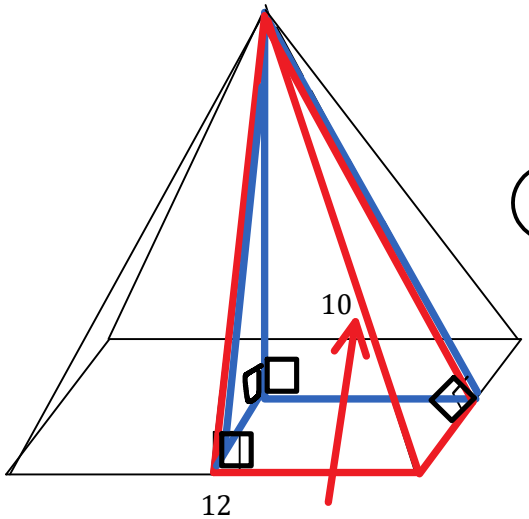
$SA = 15 + 15 + 15 + 15 + 36$

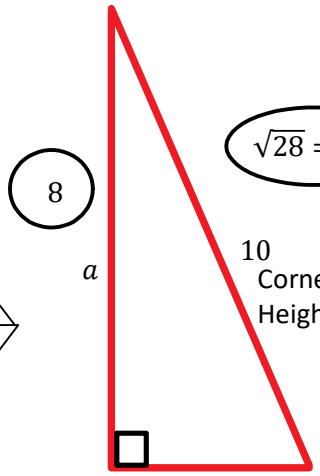
$SA = 96\ cm^2$

$V = \frac{1}{3} \times (area\ of\ base) \times h$
$V = \frac{1}{3} \times (l \times w) \times h$
$V = \frac{1}{3} \times (6 \times 6) \times 4$

$V = 48\ cm^3$

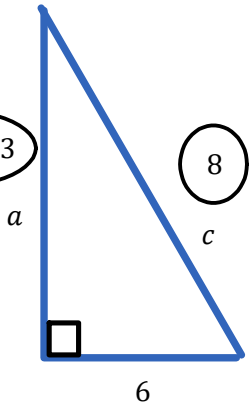
Pythagoras (Different than Above)





$a^2 + b^2 = c^2$
$a^2 + 6^2 = 10^2$
$a^2 + 36 = 100$
$-36 \quad -36$
$a^2 = 64$
$a = \sqrt{64}$

$a = 8$

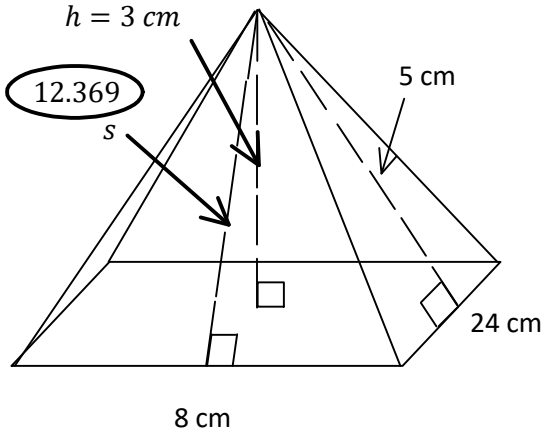


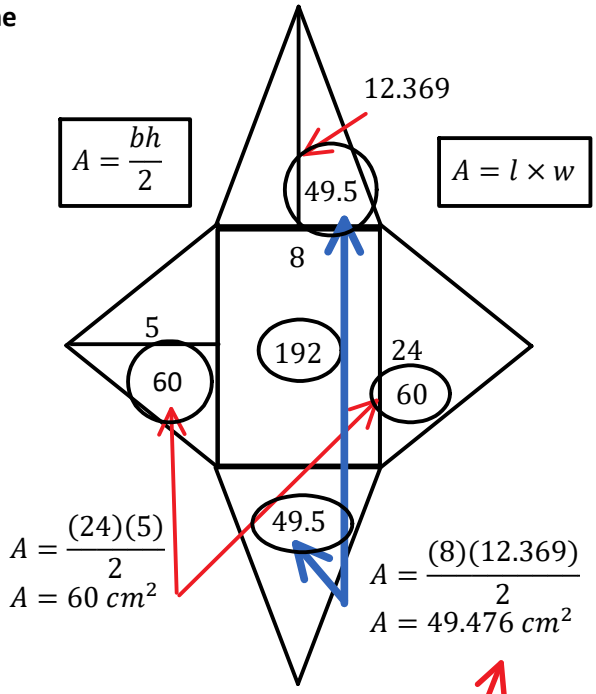
$a^2 + b^2 = c^2$
$a^2 + 6^2 = 8^2$
$a^2 + 36 = 64$
$-36 \quad -36$
$a = 28$
$a = \sqrt{28}$

$a = \sqrt{28} = 5.3$

M10 - 2.3 - Rectangular Pyramid Notes

Rectangular Based Pyramid Surface Area and Volume

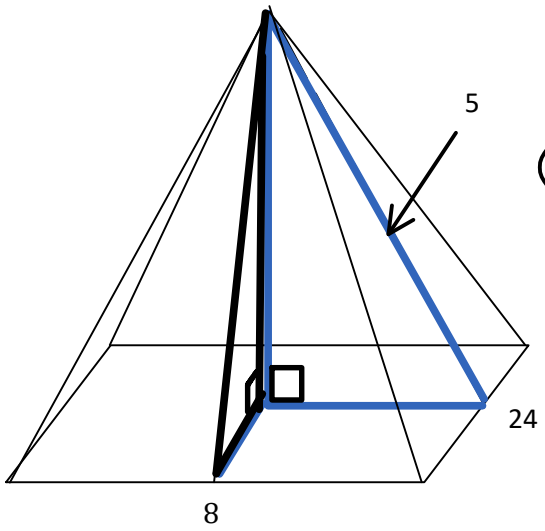


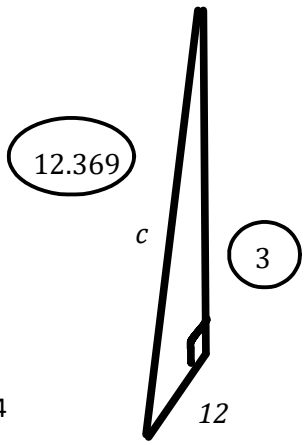


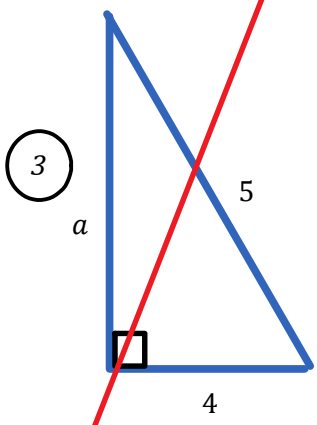
$SA = 60+60+49.5+49.5+192$

$SA = 412\ cm^2$

Pythagoras (Same as Above)







If Corner Height
See page before

$a^2 + b^2 = c^2$
$3^2 + 12^2 = c^2$
$9 + 144 = c^2$
$153 = c^2$
$\sqrt{153} = c$

$c = \sqrt{153} = 12.369$

$a^2 + b^2 = c^2$
$a^2 + 4^2 = 5^2$
$a^2 + 16 = 25$
$-16 \quad -16$
$a^2 = 9$
$a = \sqrt{9}$

$a = 3$

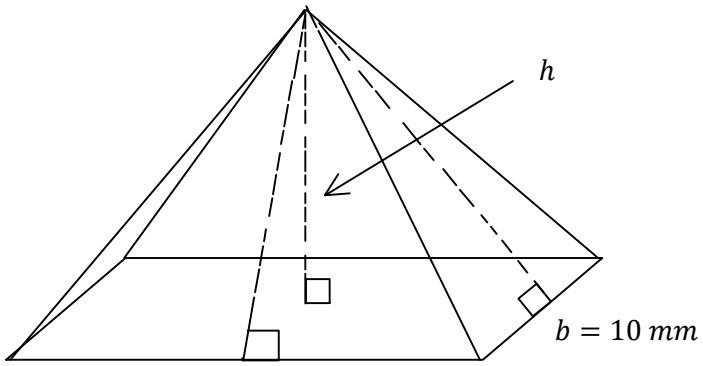
$$V = \frac{1}{3} \times (area\ of\ base) \times h$$
$$V = \frac{1}{3} \times (l \times w) \times h$$
$$V = \frac{1}{3} \times 8 \times 24 \times 3$$

$V = 192\ cm^3$

M10 - 2.4 - Volume/Surface Area Missing Length Notes

Find the missing length for the shapes below.

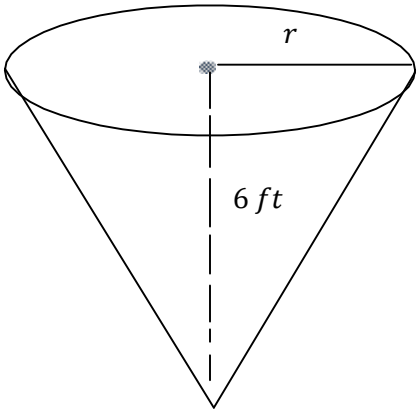
$V = 500\ mm^3$



$b = 10\ mm$

$$V = \frac{1}{3} \times (area\ of\ base) \times h$$
$$V = \frac{1}{3} \times (l \times w) \times h$$
$$500 = \frac{1}{3} \times 10 \times 10 \times h$$
$$500 = \frac{100h}{3}$$
$$3 \times 500 = \frac{100h}{3} \times 3$$
$$1500 = 100h$$
$$\frac{1500}{100} = \frac{100h}{100}$$

$$\boxed{h = 15\ mm}$$

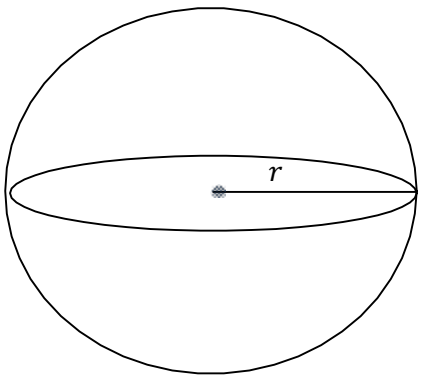


$V = 157.08\ ft^3$

$$V = \frac{1}{3} \times (area\ of\ base) \times h$$
$$V = \frac{1}{3} \times (\pi r^2) \times h$$
$$157.08 = \frac{1}{3} \times \left((3.14)r^2\right) \times 6$$
$$157.08 = 6.28r^2$$
$$\frac{157.08}{6.28} = \frac{6.28r^2}{6.28}$$
$$25 = r^2$$
$$\sqrt{25} = r$$

$$\boxed{r = 5\ ft}$$

$SA = 196\pi\ in^2$ Terms of pie



$$SA = 4\pi r^2$$
$$196\pi = 4\pi r^2$$
$$\frac{196\pi}{\pi} = \frac{4\pi r^2}{\pi}$$
$$\frac{196}{4} = \frac{4r^2}{4}$$
$$49 = r^2$$
$$\sqrt{49} = r$$

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