area

rectangle: ℓw
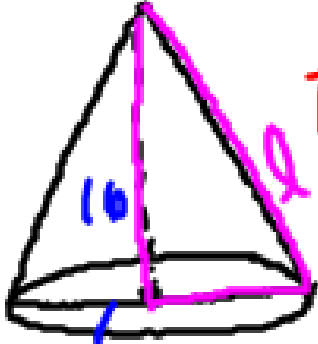
triangle: $\frac{1}{2}bh$

Surface Area

1,2: add all faces

3: $2\pi rh + 2\pi r^2$

4: $\frac{1}{2}P\ell + B$

5: $\pi r\ell + \pi r^2$

6: $4\pi r^2$

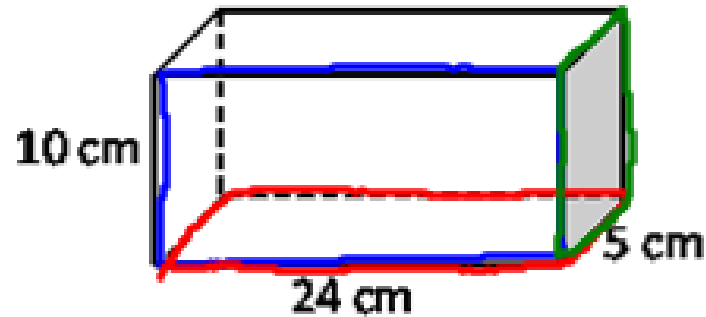7: $\pi r\ell + \pi r^2$

$16^2 + 12^2 = \ell^2$

8: $C = \pi d$ to find r

$\frac{18}{\pi} = \frac{\pi d}{\pi}$

$4\pi r 2 \bigcirc = d$

1.

10 cm

24 cm

5 cm

$10 \times 24 = 240$

$5 \times 24 = 120$

$10 \times 5 = 50$

$$\begin{array}{r} 240 \\ 240 \\ 120 \\ 120 \\ 50 \\ + \ 50 \\ \hline \end{array}$$

$820 \ cm^2$

2.

5 in

8 in
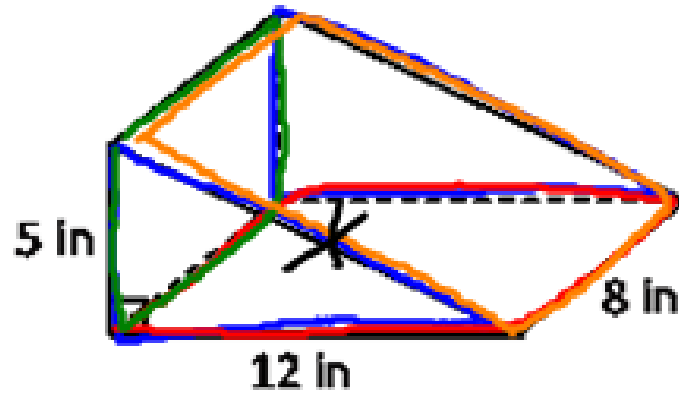
12 in

$\frac{1}{2} \cdot 12 \cdot 5 = 30$

$12 \times 8 = 96$
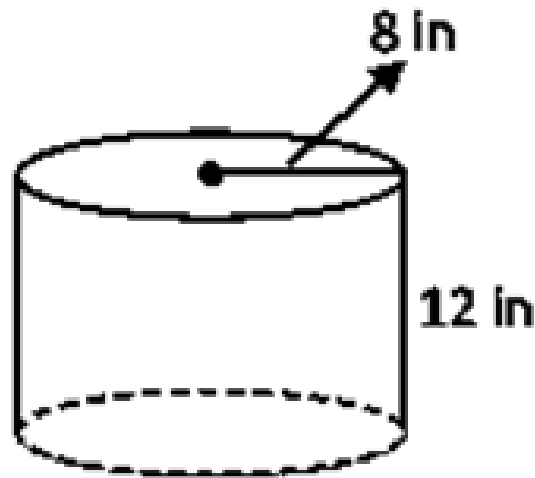
$5 \times 8 = 40$

$13 \times 8 = 104$

$$\begin{array}{r} 30 \\ 30 \\ 96 \\ 40 \\ + 104 \\ \hline \end{array}$$

$\boxed{300 \text{ in}^2}$

$5^2 + 12^2 = x^2$

$25 + 144 = x^2$

$169 = x^2$

$13 = x$

3.

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

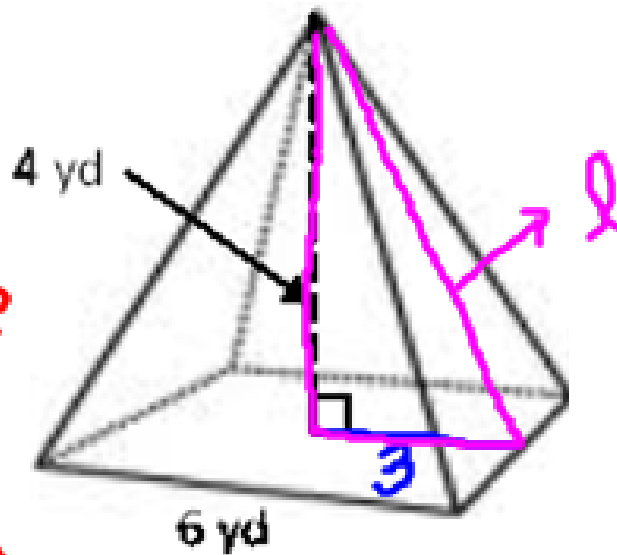$$2 \cdot \pi \cdot 8 \cdot 12 + 2 \cdot \pi \cdot 8^2$$

$$192\pi + 128\pi$$

$$320\pi$$

$$\boxed{1005.3 \text{ in}^2}$$

4.

4 yd

area
of base

perimeter
of
base

6 yd

3

l

$4^2 + 3^2 = l^2$

$16 + 9 = l^2$

$25 = l^2$

$5 = l$

$SA = \frac{1}{2}Pl + B$

$\frac{1}{2} \cdot 24 \cdot 5 + 36$

$60 + 36$

$\boxed{96 \text{ yd}^2}$

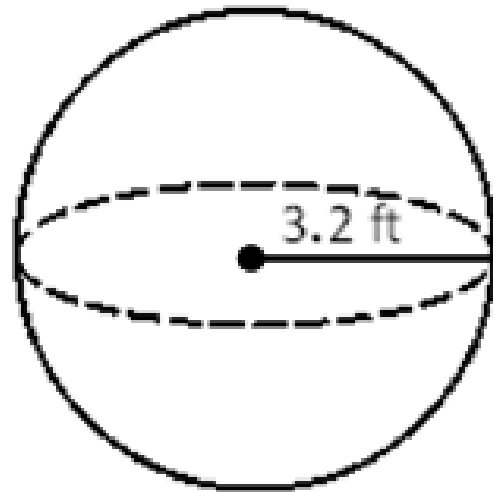**5.**

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

$$\pi \cdot 9 \cdot 15 + \pi \cdot 9^2$$

$$135\pi + 81\pi$$
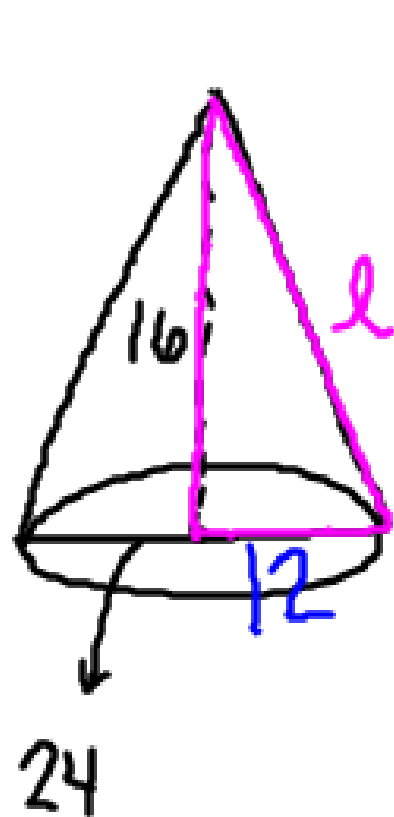
$$216\pi$$

$$678.6 \ m^2$$

6.

3.2 ft

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

$$4 \cdot \pi \cdot 3.2^2$$

$$\boxed{128.7 \ ft^2}$$

7. Find the surface area of a cone with an altitude of 16 cm and diameter of 24 cm.

$$16^2 + 12^2 = \ell^2$$
$$256 + 144 = \ell^2$$
$$400 = \ell^2$$
$$20 = \ell$$

$$\pi r \ell + \pi r^2$$
$$\pi \cdot 12 \cdot 20 + \pi \cdot 12^2$$
$$240\pi + 144\pi$$
$$384\pi$$
$$\boxed{1206.4 \text{ cm}^2}$$

16

ℓ

12

24

8. Find the surface area of a sphere whose great circle has a circumference of 18 mm.

$$C = \pi d$$

$$\frac{18}{\pi} = \frac{\pi d}{\pi}$$

$$5.73 = d$$

$$\div 2 \Big(\qquad$$

$$2.9 = r$$

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

$$4 \cdot \pi \cdot 2.9^2$$

$$\boxed{105.7 \text{ mm}^2}$$