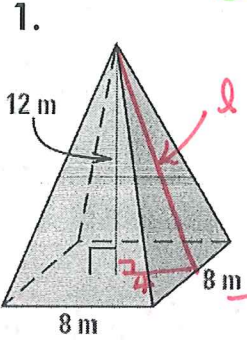Name: _____ Hour: _____

Basic Surface Area and Volume of Pyramids and Cones
Homework

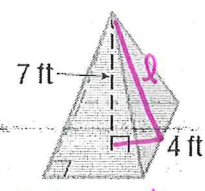Find the volume and surface area of the solid. Round to the nearest tenth.
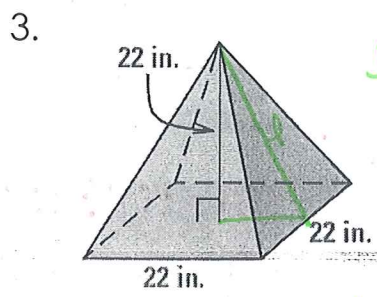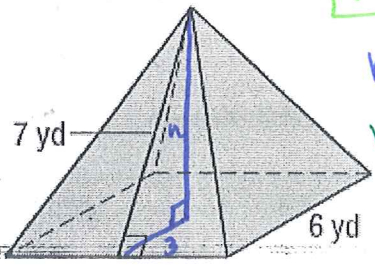
odds = SA   evens = volume

1.

12 m

8 m

8 m

12 ℓ $\ell = 12.6$

4

$SA = 8 \times 8$
$\quad + 4(\frac{1}{2} 8 \times 12.6)$

$\boxed{SA = 265.6 \, m^2}$

$V = \frac{1}{3}(8 \times 8)12$ $\boxed{V = 256 \, m^3}$

2.

7 ft ℓ $\ell = 7.3$

4 ft

$SA = 4 \times 4$
$\quad + 4(\frac{1}{2} 4 \times 7.3)$

$\boxed{SA = 74.4 \, ft^2}$

$V = \frac{1}{3}(4 \times 4)7$

$\boxed{V = 37.3 \, ft^3}$

3.

22 in.

22 in.

22 in.

$\ell = 24.6 in$

$SA = 22 \times 22$
$\quad + 4(\frac{1}{2} 22 \times 24.6)$

$\boxed{SA = 1566.4 in^2}$

$V = \frac{1}{3}(22 \times 22)22$

$\boxed{V = 3549.3 \, in^3}$

4.

7 yd

6 yd

$n = 6.3 yd$

$V = \frac{1}{3} 6.6 \times 6.3$

$\boxed{V = 75.6 \, yd^3}$

$SA = 6 \times 6$
$\quad + 4(\frac{1}{2} 6 \times 7)$

$\boxed{SA = 120 \, yd^2}$

$\boxed{\ell = 7.4 \, ft}$

5.

7.1 ft

4 ft

4 ft
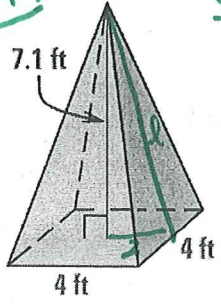
$SA = 4 \times 4$
$\quad + 4(\frac{1}{2} 4 \times 7.4)$

$\boxed{SA = 75.2 \, ft^2}$

$V = \frac{1}{3} 4 \times 4 \times 7.1$

$\boxed{V = 37.9 \, ft^3}$

6.

5 cm

3.5

7 cm

$h = 3.6$
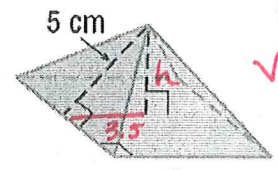
$V = \frac{1}{3} 7 \times 7 \times 3.6$

$\boxed{V \approx 58.8 \, cm^3}$

$SA = 7 \times 7$
$\quad + 4 \frac{1}{2} 7 \times 5$

$\boxed{SA = 119 \, cm^2}$

7.

12 ft

14 ft
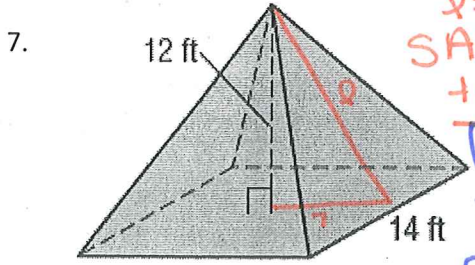
$\ell = 13.9$
$SA = 14 \times 14$
$\quad + 4(\frac{1}{2} 14(13.9))$

$\boxed{SA = 585.2 \, ft^2}$

$V = \frac{1}{3} 14 \times 14 \times 12$

$\boxed{V = 784 \, ft^3}$

8.

10 yd

9 yd

4.5
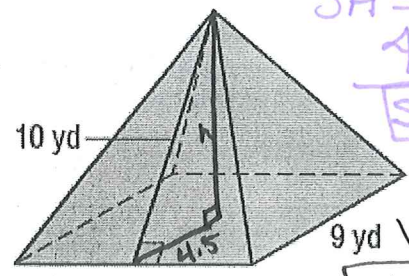
$SA = 9 \times 9$
$\quad 4(\frac{1}{2} 9 \times 10)$

$\boxed{SA = 261 \, yd^2}$

$h = 8.9$

$V = \frac{1}{3} 9 \times 9 \times 8.9$
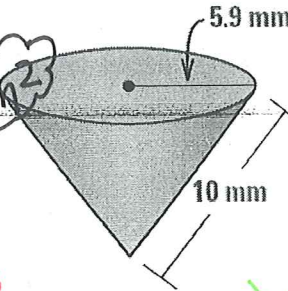
$\boxed{V = 240.3 \, yd^3}$

9.
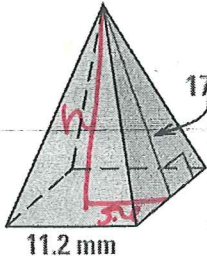
$$SA = 11.2 \times 11.2 + 4(\tfrac{1}{2} 11.2 \times 17)$$

$$SA = 506.24 \text{ mm}^2$$

17 mm, 11.2 mm

$h = 16.1 \text{ mm}$

$$V = \tfrac{1}{3}(11.2 \times 11.2)16.1$$

$$V \approx 673.2 \text{ mm}^3$$
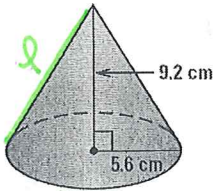
10.

5.9 mm, 10 mm

$$SA = \pi 5.9^2 + \pi 5.9 \times 10$$

$$SA = 799.5 \text{ mm}^2$$

$h = 8.1 \text{ mm}$

$$V = \tfrac{1}{3}\pi 5.9^2 \times 8.1$$

$$V = 295.3 \text{ mm}^3$$

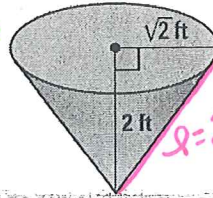**11.**

ℓ, 9.2 cm, 5.6 cm

$\ell = 10.8 \text{ cm}$

$$SA = \pi 5.6^2 + \pi 5.6 \times 10.8$$

$$SA = 288.5 \text{ cm}^2$$

$$V = \tfrac{1}{3}\pi 5.6^2 \times 9.2$$

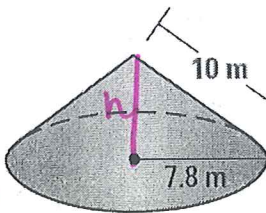$$V = 302.2 \text{ cm}^2$$

12.

$\sqrt{2}$ ft, 2 ft, $\ell = 2.4$

$$SA = \pi \sqrt{2}^2 + \pi \sqrt{2} \times 2.4$$

$$SA = 17.0 \text{ ft}^2$$

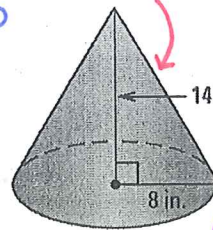$$V = \tfrac{1}{3}\pi(\sqrt{2})^2 \times 2$$

$$V = 4.1 \text{ ft}^3$$

13.

10 m, h, 7.8 m

$h = 6.2$

$$SA = \pi(7.8)^2 + \pi 7.8 \times 10$$

$$SA = 436.2 \text{ m}^2$$

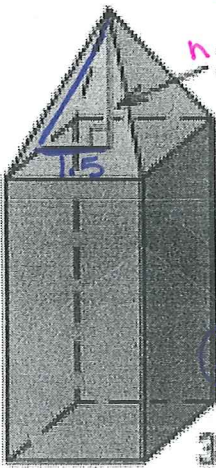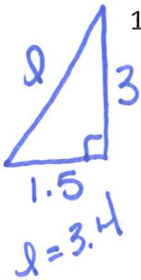$$V = \tfrac{1}{3}(7.8)^2 \pi \times 6.2$$

$$V = 394.9 \text{ m}^3$$

14.

$\ell = 16.1$, 14 in., 8 in.

$$SA = \pi 8^2 + \pi 8 \cdot 16.1$$

$$SA = 605.7 \text{ in}^2$$

$$V = \tfrac{1}{3}\pi 8^2 \times 14$$

$$V = 938.3 \text{ in}^3$$

15.

ℓ, 3, 1.5, $\ell = 3.4$

1.5, 6, 3, 3

$$SA = \text{w/o Base of Pyramid or top of Prism.}$$

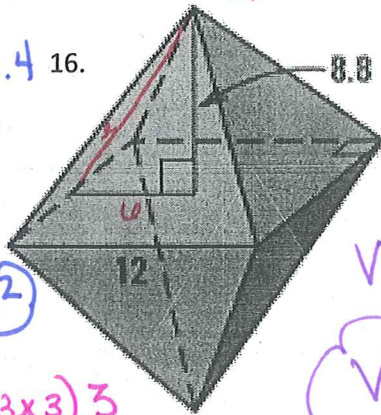$$SA = 4\triangle = 4\tfrac{1}{2} 3 \times 3.4$$
$$+ 2(6 \times 3)$$
$$+ 2(6 \times 3)$$
$$+ 1(3 \times 3)$$

$$SA = 101.4 \text{ units}^2$$

$$V = (3 \times 3)6 + \tfrac{1}{3}(3 \times 3)3$$

$$V = 63 \text{ units}^3$$

16.

$\ell = 10.7$, 8.8, 12

$$SA = 8 \tfrac{1}{2} 12 \times 10.7$$

$$SA = 85.6 \text{ units}^2$$

$$V = 2\left(\tfrac{1}{3} B \times h\right)$$

$$V = 2 \tfrac{1}{3} 12 \times 12 \times 8.8$$

$$V = 70.4 \text{ units}^3$$