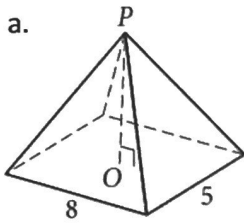Geometry
Volume Review
Name ___Key___
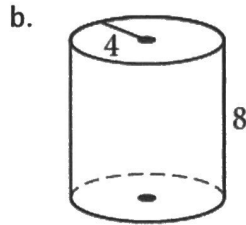
1. Find the volume of the figures below. **Leave answers in terms of pi.** If units are included they should be in your answer.

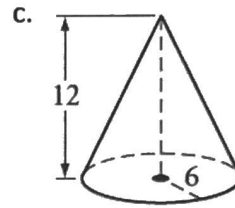a.

P

O

8   5

height is 12

$V = \frac{1}{3}(8)(5)(12)$

$\boxed{160 \text{ units}^3}$

Same → $= \frac{8(5)(12)}{3}$

b.

4

8

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

$\boxed{128\pi \text{ units}^3}$

c.

12

6

$V = \frac{\pi(6)^2(12)}{3}$

$\boxed{144\pi \text{ units}^3}$

d.

25

14

$V = \frac{\pi(7)^2(25)}{3}$

then... ÷2

$\frac{1225\pi}{3}$ $= \frac{1225\pi}{6}$

e.

6

$V = \frac{4}{3}\pi(6)^3$

$\boxed{288\pi \text{ units}^3}$

f.

3

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

36π
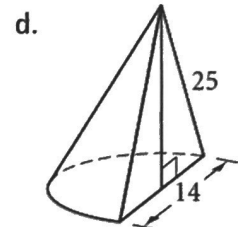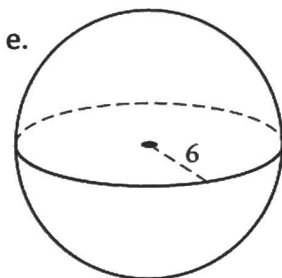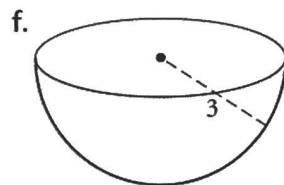
then... ÷2

$\frac{36}{2}\pi = \boxed{18\pi \text{ units}^3}$

g.

4

4

7

7-4 = 3→
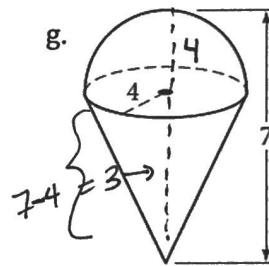
$Cone = \frac{1}{3}\pi(4)^2(3) = 16\pi$

+

$hemisphere = \frac{\frac{4}{3}\pi(4)^3}{2} = \frac{128\pi}{3}$

$= \boxed{\frac{176\pi}{3} \text{ units}^3}$

h.

45 cm

15 cm

25 cm
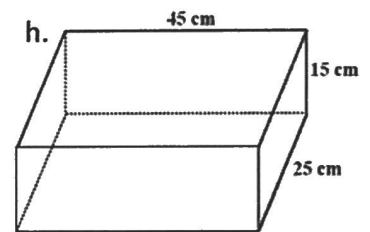
$V = (45)(15)(25)$

$\boxed{= 16,875 cm^3}$

2. A Silo hold water. Find how much water can fit inside the Silo. Round to the nearest hundredth.

5

8
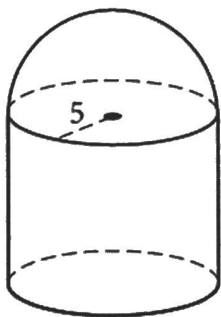
→ hemisphere $\frac{4}{3}\pi(5)^3 = \frac{500\pi}{3}$

+

→ cylinder $\pi(5)^2(8) = 200\pi$

$\boxed{\frac{1100}{3}\pi \text{ units}^3}$

$\boxed{\approx 1151.92 \text{ units}^3}$

Name _____

3. If the volume of a sphere is 635 cm³, what is the length of the radius? Round to the nearest tenths.

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

$3 \cdot 635 = \frac{4}{3}\pi r^3 \cdot 3$

$\frac{1905}{\pi} = \frac{4\pi r^3}{\pi}$

$\frac{606.38}{4} = \frac{4 r^3}{4}$

$\sqrt[3]{r^3} = \sqrt[3]{51.60}$

$r = 5.3 \text{ cm}$

4. A sphere has volume 221.83π cm³. What is its diameter? Round to the nearest tenths.

$3 \cdot 221.83\pi = \frac{4\pi r^3}{3} \cdot 3$

$\frac{665.49\pi}{4\pi} = \frac{4\pi r^3}{4\pi}$

$\sqrt[3]{166.37} = \sqrt[3]{r^3}$

$5.50 = r$

$d = 2(5.5) =$

11 cm

5. A cone has volume 320 cm³ and height 16 cm. Find the radius of the base. Round your answer to the nearest tenths.

$V = \frac{\pi r^2 h}{3}$

$3 \cdot 320 = \frac{\pi r^2 (16)}{3} \cdot 3$

$\frac{960}{\pi} = \frac{16\pi r^2}{\pi}$

$\frac{305.58}{16} = \frac{16 r^2}{16}$
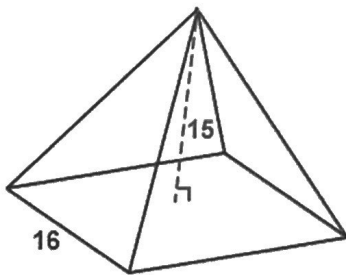
$\sqrt{19.10} = \sqrt{r^2}$

$r = 4.4 \text{ cm}$

6. In Dingwall the town engineers have contracted for a new water storage tank. The tank is cylindrical with a base <u>25 ft in diameter</u> and a height of 30 ft. What is the volume of the storage tank? <u>Round</u> to the nearest <u>tenths</u>. $r = 12.5$

$V = \pi r^2 h$

$V = \pi (12.5)^2 (30) = 4{,}726.2 \text{ ft}^3$

7. The right **square** pyramid has a base edge of 16 in and a height of 15 in. What is the volume of the pyramid?

$V = \frac{\ell \cdot w \cdot h}{3}$

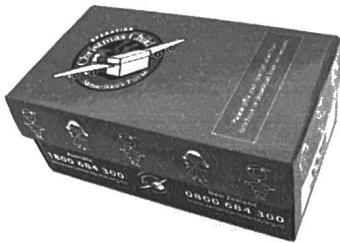$V = \frac{(16)(16)(15)}{3} = \frac{3840}{3} = 1280 \text{ in}^3$

8. If a right rectangular **pyramid** has a volume of 120 ft³ and a length of 9 with a width of 5, what is the height of the pyramid?

$V = \frac{\ell \cdot w \cdot h}{3}$

$3 \cdot 120 = \frac{(9)(5)(H)}{3} \cdot 3$

$\frac{360}{45} = \frac{45 H}{45}$

$h = 8 \text{ ft}$

9. If this shoe box can hold 672 in.³ of goodies for an unsuspecting kiddo. With a length of 14 in. and a height of 8 in., what is the width of this box?
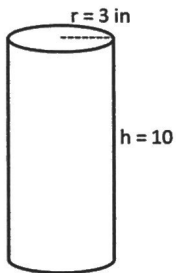
$$V = \ell \cdot w \cdot h$$
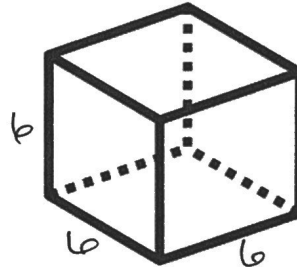$$672 = (14)(8)\boxed{w}$$
$$\frac{672}{112} = \frac{112\,\boxed{w}}{112}$$

$$\boxed{w = 6 \text{ in}}$$

10. What is the volume of the cylinder?

r = 3 in

h = 10

$$V = \pi(3)^2(10)$$
$$\boxed{90\pi \text{ in}^3}$$

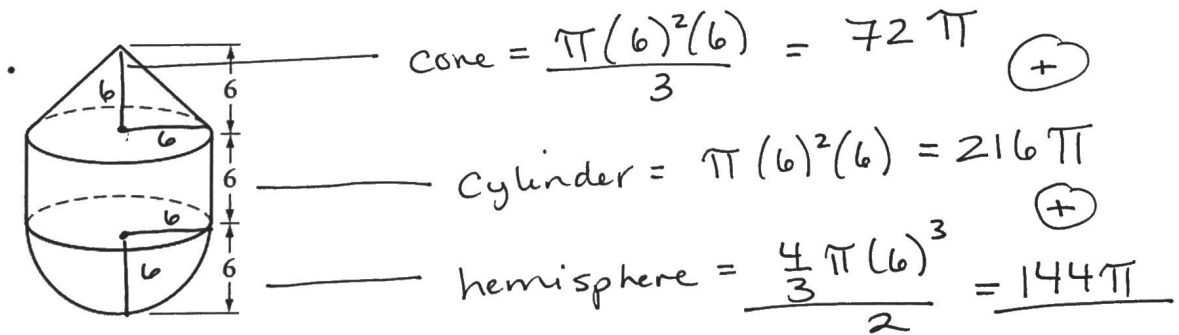11. What is the volume of the cube with 6 cm sides?

$$V = (6)(6)(6) =$$
$$(6)^3 =$$
$$\boxed{216 \text{ cm}^3}$$

12. What is the volume for the whole figure?

$$\text{cone} = \frac{\pi(6)^2(6)}{3} = 72\pi \quad \oplus$$

$$\text{cylinder} = \pi(6)^2(6) = 216\pi \quad \oplus$$

$$\text{hemisphere} = \frac{\frac{4}{3}\pi(6)^3}{2} = 144\pi$$

$$\text{Total} = \boxed{432\pi \text{ units}^3}$$