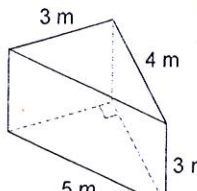
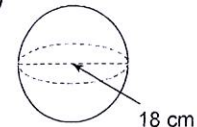
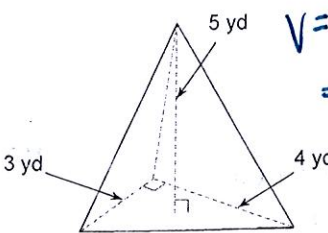


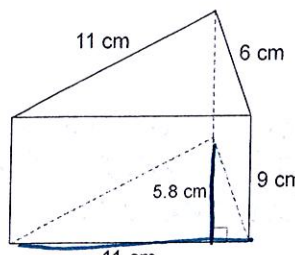
Unit 10 Test Review

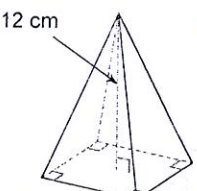
Find the volume of each figure. Round your answers to the nearest tenth, if necessary.

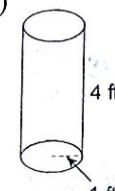
1)  $V = \frac{1}{2} \cdot b \cdot h \cdot l$
 $= \frac{1}{2} \cdot 3 \cdot 4 \cdot 5$
 $= 18 m^3$

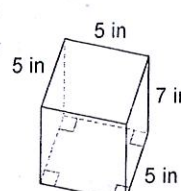
2)  $V = \frac{4}{3} \pi r^3$
 $= \frac{4}{3} \pi 18^3$
 $= 3053.6 cm^3$

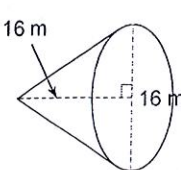
3)  $V = \frac{1}{3} (\frac{1}{2} \cdot b \cdot h) l$
 $= \frac{1}{3} (\frac{1}{2} \cdot 3 \cdot 4) \cdot 5$
 $= 10 yd^3$

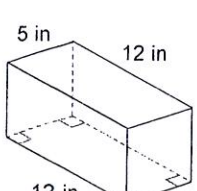
4)  $V = \frac{1}{2} \cdot b \cdot h \cdot l$
 $= \frac{1}{2} \cdot 11 \cdot 5.8 \cdot 9$
 $= 287.1 cm^3$

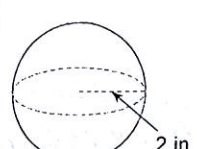
5)  $V = \frac{1}{3} \cdot l \cdot w \cdot h$
 $= \frac{1}{3} \cdot 8 \cdot 8 \cdot 12$
 $= 256 cm^3$

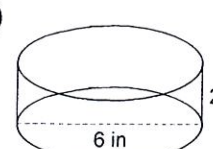
6)  $V = \pi r^2 \cdot h$
 $= \pi 1^2 \cdot 4$
 $= 12.6 ft^3$

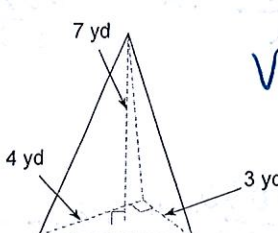
7)  $V = l \cdot w \cdot h$
 $= 5 \cdot 5 \cdot 7$
 $= 175 in^3$

8)  $V = \frac{1}{3} \pi r^2 \cdot h$
 $= \frac{1}{3} \pi 16^2 \cdot 16$
 $= 1072.3 m^3$

9)  $V = l \cdot w \cdot h$
 $= 12 \cdot 5 \cdot 5$
 $= 300 in^3$

10)  $V = \frac{4}{3} \pi r^3$
 $= \frac{4}{3} \pi 2^3$
 $= 33.5 in^3$

11)  $V = \pi r^2 \cdot h$
 $= \pi 3^2 \cdot 2$
 $= 56.5 in^3$

12)  $V = \frac{1}{3} \cdot (\frac{1}{2} \cdot b \cdot h) l$
 $= \frac{1}{3} (\frac{1}{2} \cdot 3 \cdot 4) \cdot 7$
 $= 14 yd^3$

13. The volume of a ball is $972\pi \text{ cm}^3$. What is the radius of this ball to the nearest tenth?

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

$$972\pi = \frac{4}{3}\pi r^3$$

$$3 \cdot 972 = 4r^3 \cdot 3 \quad \sqrt[3]{729} = \sqrt[3]{4r^3}$$

$$\frac{2916}{4} = \frac{4r^3}{4}$$

$$r = 9 \text{ cm}$$

14. The circumference of the Earth is estimated to be about 7920π miles. What is the estimated volume of the Earth?

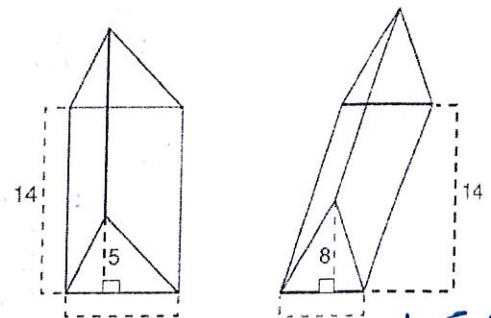
$$\frac{7920\pi}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r = 3960$$

$$V = \frac{4}{3}\pi 3960^3$$

$$V = 2.6 \times 10^{11} \text{ AxA really big \#!!}$$

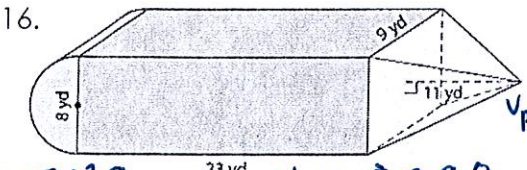
15. The diagram below shows two figures. Figure A is a right triangular prism and figure B is an oblique triangular prism. The base of figure A has a height of 5 and a length of 8 and the height of prism A is 14. The base of figure B has a height of 8 and a length of 5 and the height of prism B is 14.



Use Cavalieri's Principle to explain why the volumes of these two triangular prisms are equal.

Since the heights are the same, and the area of the cross sections are the same, then the volumes are equal. $A = \frac{1}{2} \cdot 8 \cdot 5 = 20$

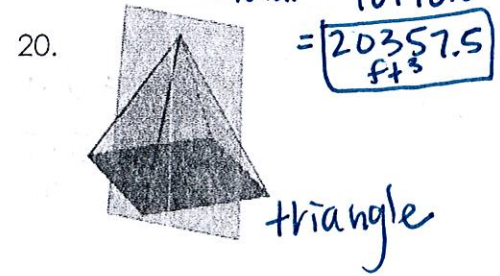
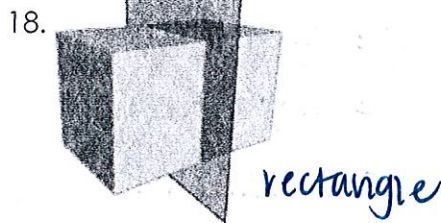
Find the volume of the composite figures below.



$$V_{\text{cyl}} = \pi 4^2 \cdot 9 = 452.4 \cdot \frac{1}{2} = 226.2$$

$$V_{\text{prism}} = 23 \cdot 9 \cdot 8 = 1656$$

Identify the cross section.



Population Density.

21. China has 1,386,135,802 people and an area of 3,705,219 square miles. What is China's population density to the nearest person?

$$\frac{1386135802}{3705219} = 374 \text{ people}$$

22. If a small town has a population density of 28 people per square mile, with a population of 8,326 people. What is the area of this town? Round to the nearest square mile if necessary.

$$x \cdot 28 = \frac{8326}{x} \cdot x \quad \frac{28x}{28} = \frac{8326}{28}$$

$$x = 297 \text{ mi}^2$$

23. For a certain species of animal to survive, the population density must be less than 20 per square mile. In a rectangular wildlife preserve measuring 32 miles by 10 miles, scientists counted 5,830 of the animals. Is there enough area for all the animals to survive? Explain.

$$\frac{5830}{320} = 18.2 < 20 \quad \text{yes these animals will survive!}$$

17. (the cone has been cut OUT of the cylinder)
 $V_{\text{cyl}} = \pi 18^2 \cdot 30 = 30536.3$
 $V_{\text{cone}} = \frac{1}{3} \cdot \pi 18^2 \cdot 30 = 10178.8 \text{ ft}^3$
 $V_{\text{total}} = 264 + 1656 + 226.2 = 2146.2 \text{ yd}^3$
 $V_{\text{total}} = 30536.3 - 10178.8 = 20357.5 \text{ ft}^3$