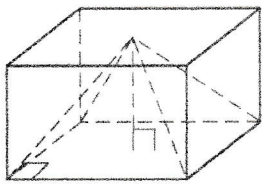
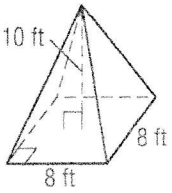
Volume of Pyramids

Volumes of Pyramids This figure shows a prism and a pyramid that have the same base and the same height. It is clear that the volume of the pyramid is less than the volume of the prism. More specifically, the volume of the pyramid is one-third of the volume of the prism.



Volume of a Pyramid If a pyramid has a volume of V cubic units, a height of h units, and a base with an area of B square units, then $V = \frac{1}{3}Bh$.

Example: Find the volume of the square pyramid.



$V = \frac{1}{3}Bh$ Volume of a pyramid

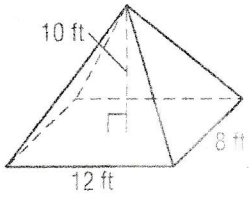
$= \frac{1}{3}(8)(8)10$ $B = (8)(8)$, $h = 10$

≈ 213.3 Multiply.

The volume is about 213.3 cubic feet.

Find the volume of each pyramid. Round to the nearest tenth if necessary.

1.



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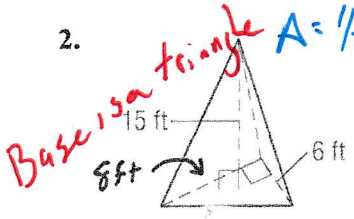
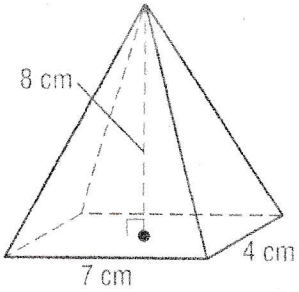


Base is a triangle $A = \frac{1}{2}bh$

$V = \frac{1}{3}(\frac{1}{2} \cdot 6 \cdot 8)15$

$V = 120 ft^3$

3.



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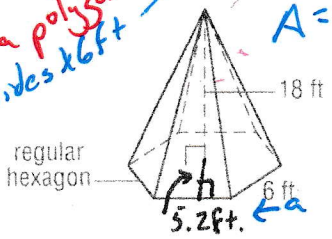


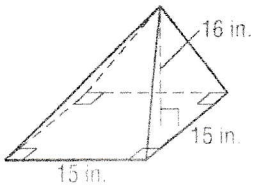
Base is a polygon $P = 6$ sides $\times 6ft$

$A = \frac{1}{2}Pa$

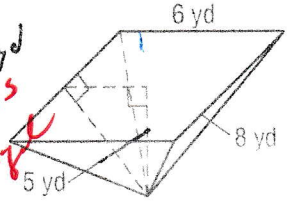
$V = \frac{1}{3}(\frac{1}{2} \cdot 6 \cdot 6 \cdot 5.2)18$

$V = 561.6 ft^3$

5.



6.



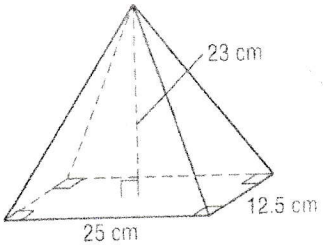
$h = 5yd$

Base is a rectangle $A = bh$

$V = \frac{1}{3}(8 \cdot 6) \cdot 5$

$= 80 yd^3$

7.



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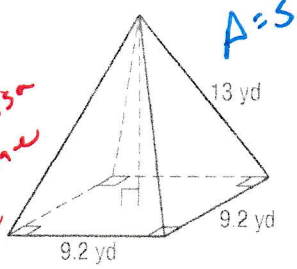

Base is a square $A = s^2$

$V = \frac{1}{3}(9.2)^2 \cdot 13$

$V = 366.77 yd^3$