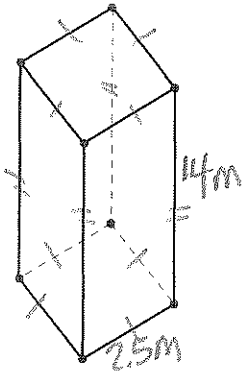


1. Find the volume and total surface area of a right prism with a square base of side 2.5 m and height 14m.



$$TSA = 2(2.5)^2 + 4(2.5)(14) = 140 + 12.5$$

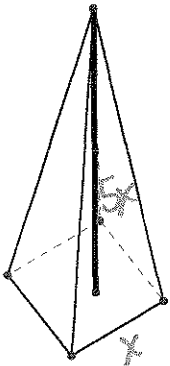
$$2A_{BASE} + LSA = \boxed{152.5 \text{ m}^2}$$

$$V = A_{BASE} \cdot h_{prism}$$

$$= (2.5)^2 \cdot 14$$

$$= \boxed{87.5 \text{ m}^3}$$

2. Find the lengths of the sides of the base of a pyramid and the height of the pyramid, if the base is a square and the height of the pyramid is 5 times a side of the base. The volume of the pyramid is 2880 cu cm.



$$V = \frac{1}{3} A_{BASE} \cdot h_{PYRAMID}$$

$$2880 = \frac{1}{3} (x^2)(5x)$$

$$2880 = \frac{5}{3} x^3$$

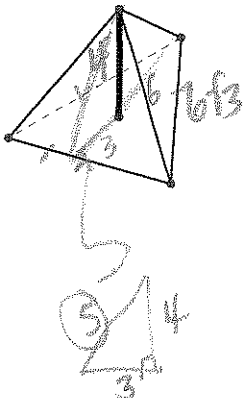
$$\frac{3}{5}(2880) = x^3$$

$$\sqrt[3]{1728} = x$$

$$12 = x \Rightarrow 5x = 60$$

BASE: 12cm x 12cm  
HEIGHT: 60cm

3. Find the volume and total surface area of a regular pyramid with an equilateral triangular base ( $6\sqrt{3}$  on a side) and a pyramid height of 4 cm. (SPOILER ALERT!!)



$$V = \frac{1}{3} A_{BASE} \cdot h_{PYRAMID}$$

$$= \frac{1}{3} (\frac{1}{2} \cdot 6\sqrt{3} \cdot 9) (4)$$

$$= \boxed{36\sqrt{3} \text{ cm}^3}$$

$$TSA = 3 (\frac{1}{2} (6\sqrt{3})(9)) + 27\sqrt{3}$$

$$= 45\sqrt{3} + 27\sqrt{3}$$

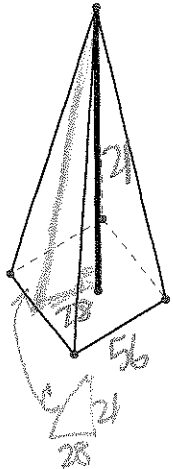
$$= \boxed{72\sqrt{3} \text{ cm}^2}$$

1.  $87.5 \text{ m}^3$ ,  $152.5 \text{ m}^2$

2. 12 cm, 60 cm

3.  $36\sqrt{3} \text{ cm}^3$ ,  $72\sqrt{3} \text{ cm}^2$

4. Find the volume and total surface area of a regular square pyramid whose base is 56 cm on a side and whose height is 21 cm.



$$V = \frac{1}{3} A_{\text{BASE}} \cdot H_{\text{PYRAMID}}$$

$$= \frac{1}{3} (56^2) (21) = 21,952$$

$$TSA = LSA + A_{\text{BASE}}$$

$$\text{SLANT HEIGHT} = 4 \left( \frac{1}{2} (56) (35) \right) + 56^2$$

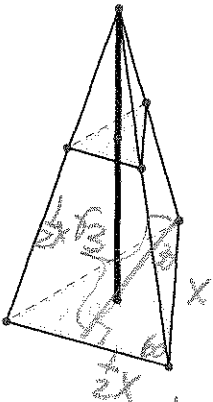
$$c^2 = 21^2 + 28^2$$

$$c^2 = 1225$$

$$c = 35$$

$$= 7,056 \text{ cm}^2$$

5. Find the height of a regular equilateral triangular pyramid, if the area of the base is  $110.25\sqrt{3} \text{ cm}^2$  and a cross section 6 cm from the vertex is 8 cm on a side.



$$110.25 = \frac{1}{4} x^2$$

$$441 = x^2$$

$$\pm 21 = x$$

SIMILAR PYRAMIDS ARE PROPORTIONAL

LITTLE	6	=	8
BIG	x	=	21
	height		side

$$8x = 176$$

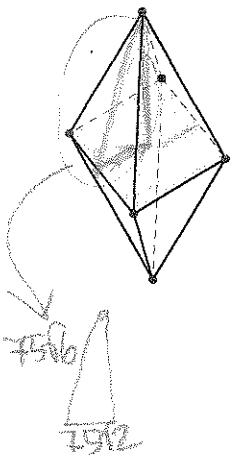
$$x = 15.75$$

$$15.75 \text{ cm}$$

$$A_{\text{BASE}} = \frac{1}{2} (x) \left( \frac{1}{2} x (\sqrt{3}) \right)$$

$$110.25\sqrt{3} = \frac{\sqrt{3}}{4} x^2$$

6. Find the volume and total surface area of an octahedron that is  $15\sqrt{2} \text{ cm}$  on each edge.



$$V_{\text{OCT}} = 2V_{\text{PYRAMID}} = 2 \left( \frac{1}{3} (A_{\text{BASE}}) (H_{\text{PYRAMID}}) \right)$$

$$= 2 \left( \frac{1}{3} (15\sqrt{2})^2 (15) \right)$$

$$= 2 (2250) = 4500 \text{ cm}^3$$

$$TSA_{\text{OCT}} = 2 \cdot LSA_{\text{PYRAMID}} = 2 \left( 4 \left( \frac{1}{2} (15\sqrt{2}) (7.5\sqrt{6}) \right) \right)$$

$$= 450\sqrt{12} \text{ cm}^2$$

$$= 900\sqrt{3} \text{ cm}^2$$

4.  $21,952 \text{ cm}^3$ ,  $7,056 \text{ cm}^2$

5.  $15.75 \text{ cm}$

6.  $4,500 \text{ cm}^3$ ,  $450\sqrt{12} \text{ cm}^2$