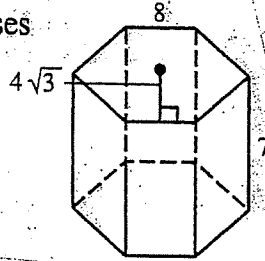




Geometry (H)  
Section - Area & Volume of Prisms

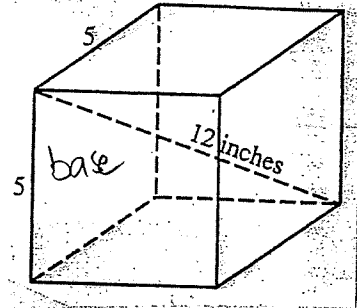
Name: KEY

1. regular hexagonal bases



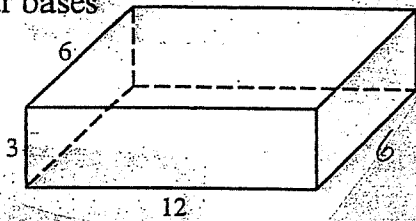
$LA = 336$      $SA = 336 + 192\sqrt{3}$

2. square bases



$LA = 20\sqrt{94}$      $SA = 50 + 20\sqrt{94}$

3. rectangular bases



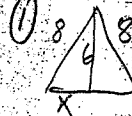
①  $B = 72$

②  $LA = ph$   
 $= 36(3)$   
 $LA = 108$

③  $TA = LA + 2B$   
 $108 + 2(72)$

$LA = 108$      $SA = 252$

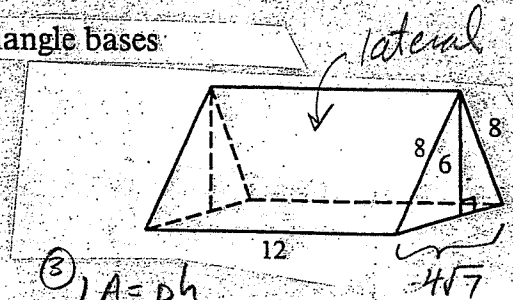
4. isosceles triangle bases



$36 + x^2 = 64$   
 $x = 2\sqrt{7}$   
 $2x = 4\sqrt{7}$

②  $B = \frac{1}{2}bh$   
 $= \frac{1}{2}(4\sqrt{7})(6)$   
 $= 12\sqrt{7}$

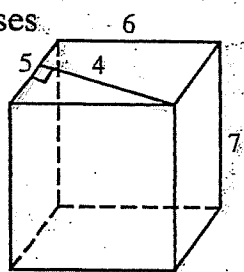
$LA = 192 + 48\sqrt{7}$      $SA = 192 + 72\sqrt{7}$



③  $LA = ph$   
 $= (16 + 4\sqrt{7})12$   
 $= 192 + 48\sqrt{7}$

④  $TA = LA + 2L$   
 $192 + 48\sqrt{7} + 2(12)$

5. parallelogram bases



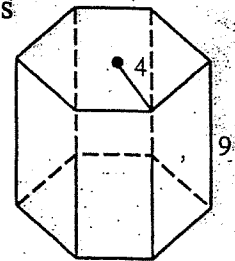
①  $B = bh$   
 $= 4(5)$   
 $B = 20$

②  $LA = ph$   
 $= 22(7)$   
 $= 154$

③  $SA = LA + 2B$   
 $154 + 2(20)$

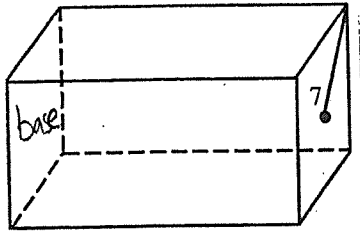
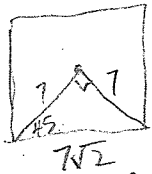
$LA = 154$      $SA = 190$

6. regular hexagonal bases



$LA = 216$      $SA = 216 + 48\sqrt{3}$

7. square bases



①  $B = (\sqrt{2})^2 = 98$   
 ②  $LA = ph = 28\sqrt{2}(10) = 280\sqrt{2}$   
 ③  $SA = LA + 2B = 280\sqrt{2} + 2(98)$

$LA = 280\sqrt{2}$      $SA = 196 + 280\sqrt{2}$

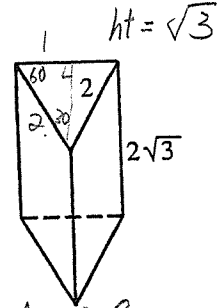
8. equilateral triangle bases

①  $B = \frac{1}{2}bh = \frac{1}{2}(2)\sqrt{3} = \sqrt{3}$

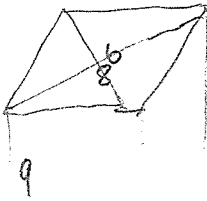
②  $LA = ph = 6(2\sqrt{3})$

③  $SA = LA + 2B = 12\sqrt{3} + 2(\sqrt{3})$

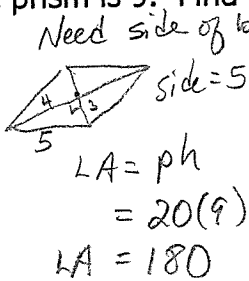
$LA = 12\sqrt{3}$      $SA = 14\sqrt{3}$



9. The bases of a right prism are rhombi. The diagonals of the bases have lengths 8 and 6, and the height of the prism is 9. Find the surface area of the prism.



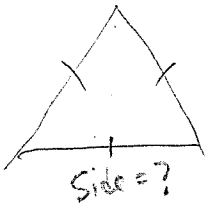
$A = \frac{1}{2}d_1d_2 = \frac{1}{2}(6)(8) = 24$   
 $B = 24$



$SA = LA + 2B = 180 + 2(24)$

$SA = 228$

10. Each base of a right prism is an equilateral triangle with an area of  $9\sqrt{3}$ . The height of the prism is 7. Find the lateral area of the prism.



$\frac{S^2\sqrt{3}}{4} = 9\sqrt{3}$   
 $S^2 = 36$   
 $S = 6$

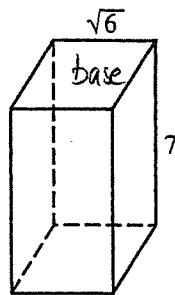
$LA = ph = 18(7)$

$LA = 126$

Find the volume of each prism.

11. right prism square bases

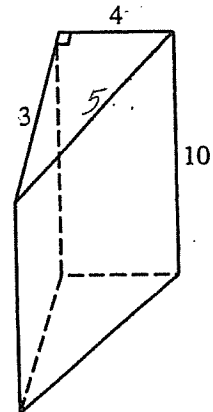
$B = 6$   
 $V = Bh = 6(7)$



$V = 42$  cu. units

12. right prism right triangular bases

$B = \frac{1}{2}3(4) = 6$   
 $V = Bh = 6(10)$



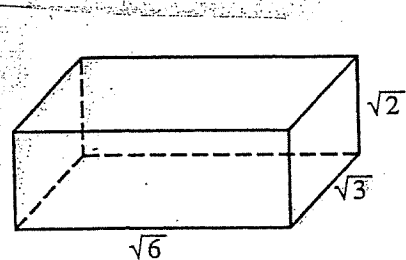
$V = 60$  cu. un.

13. right prism  
rectangular bases

$$B = \sqrt{18}$$

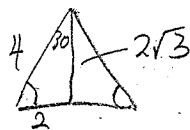
$$B = 3\sqrt{2}$$

$$V = 3\sqrt{2} \sqrt{2}$$



$$V = \underline{6 \text{ cu.}}$$

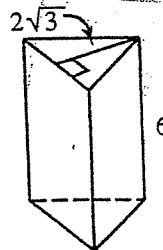
14. right prism  
equilateral triangular bases



$$B = \frac{1}{2}bh$$

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

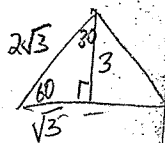
$$= 4\sqrt{3}$$



$$V = 4\sqrt{3}(6)$$

$$V = \underline{24\sqrt{3}}$$

15. oblique prism  
equilateral triangular bases



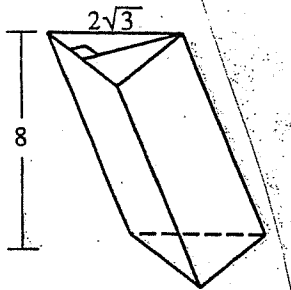
$$B = \frac{1}{2}bh$$

$$= \frac{1}{2}(2\sqrt{3})(3)$$

$$= 3\sqrt{3}$$

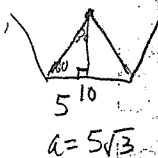
$$V = Bh$$

$$3\sqrt{3}(8)$$



$$V = \underline{24\sqrt{3} \text{ cu.}}$$

16. right prism  
regular hexagonal bases



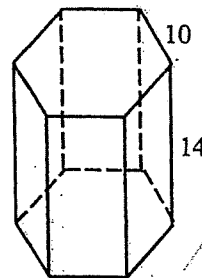
$$A = \frac{1}{2}ap$$

$$= \frac{1}{2}5\sqrt{3}(6)$$

$$= 150\sqrt{3}$$

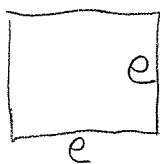
$$V = Bh$$

$$= 150\sqrt{3}(14)$$



$$V = \underline{2100\sqrt{3}}$$

17. A prism with a square base has a height of 25 cm and a volume of  $1000\text{cm}^3$ . Find the length of each edge of the base.



$$V = Bh$$

$$1000 = 25B$$

$$B = 40$$

$$B = e^2$$

$$40 = e^2$$

$$e = \underline{2\sqrt{10}}$$

18. A prism has a volume of  $420\text{cm}^3$ . Its base is a right triangle with sides of length 2, 3,  $\sqrt{13}$ . Find the height of the prism. (h)

$$V = Bh$$

$$420 = 3h$$

$$h = \underline{140}$$

$$B = \frac{1}{2}bh$$

$$= \frac{1}{2}3(2)$$

$$B = 3$$

