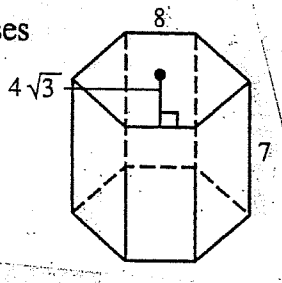
Geometry (H)
Section - Area & Volume of Prisms

Name: KEY

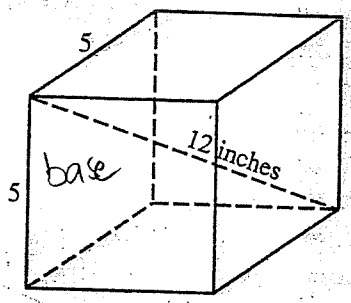
Classwork

1. regular hexagonal bases



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

2. square bases



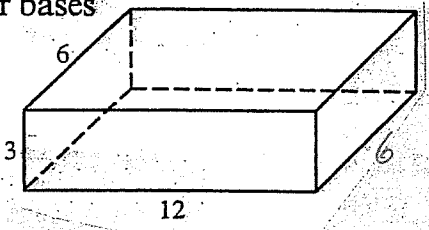
LA = $20\sqrt{94}$ SA = $50+20\sqrt{94}$

3. rectangular bases

① $B = 72$

② $LA = ph$
$= 36(3)$
$LA = 108$

③ $TA = LA + 2B$
$108 + 2(72)$

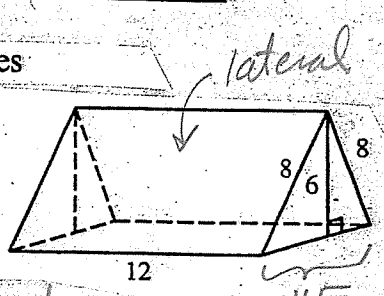


LA = 108 SA = 252

4. isosceles triangle bases

① $36 + x^2 = 64$
$x = 2\sqrt{7}$
$2x = 4\sqrt{7}$

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



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

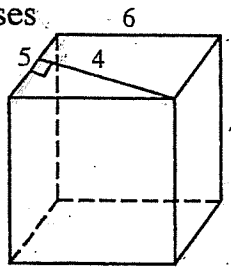
④ $TA = LA + 2$
$192 + 48\sqrt{7} +$
$2(1$

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

5. parallelogram bases

① $B = bh$
$= 4(5)$
$B = 20$

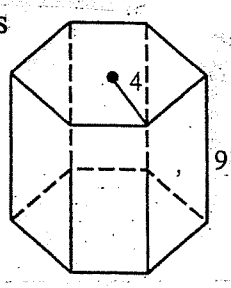
② $LA = ph$
$= 22(7)$
$= 154$



③ $SA = LA + 2B$
$154 + 2(20)$

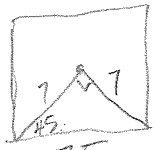
LA = 154 SA = 190

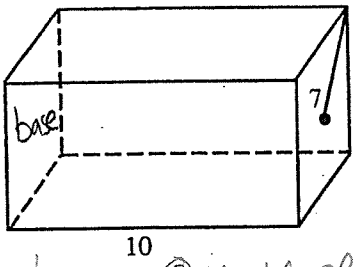
6. regular hexagonal bases



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

7. square bases





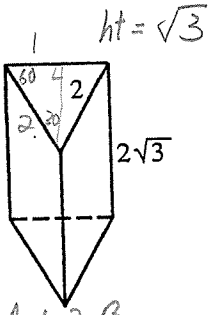
① $B = (7\sqrt{2})^2$
$= 98$

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



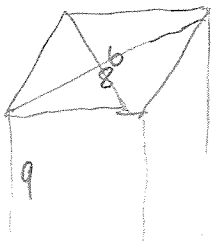
① $B = \frac{1}{2}bh$
$\frac{1}{2}(2)\sqrt{3}$
$B = \sqrt{3}$

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.



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

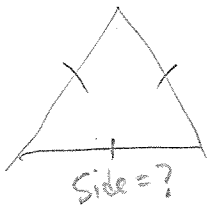
Need side of base:

side = 5

$LA = ph$
$= 20(9)$
$LA = 180$

$SA = TA$
$= LA + 2B$
$= 180 + 2(24)$
$SA = 228$

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.



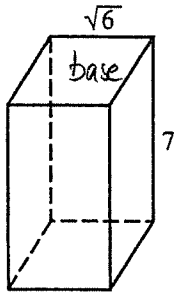
$\frac{s^2\sqrt{3}}{4} = 9\sqrt{3}$
$s^2 = 36$
$s = 6$

$LA = ph$
$= 18(7)$
$LA = 126$

Find the volume of each prism.

11. right prism
square bases

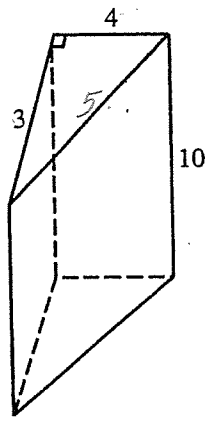
$B = 6$
$V = Bh$
$= 6(7)$



V = 42 cu. units

12. right prism
right triangular bases

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



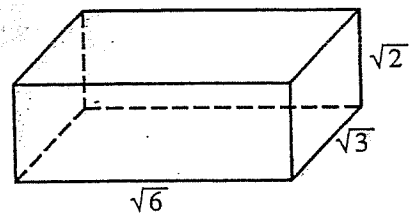
V = 60 cu. un.

13. right prism
rectangular bases

$B = \sqrt{18}$

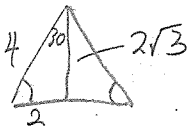
$B = 3\sqrt{2}$

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



V = 6 cu.

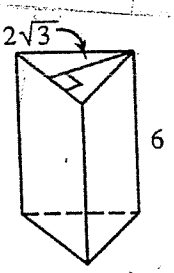
14. right prism
equilateral triangular bases



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

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

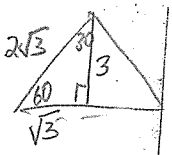
$= 4\sqrt{3}$



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

V = $24\sqrt{3}$

15. oblique prism
equilateral triangular bases



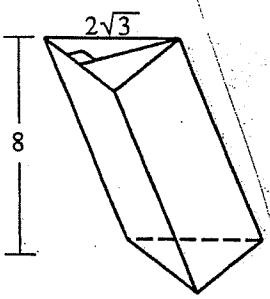
$B = \frac{1}{2}bh$

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

$= 3\sqrt{3}$

$V = Bh$

$3\sqrt{3}(8)$



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

16. right prism
regular hexagonal bases

$a = 5\sqrt{3}$

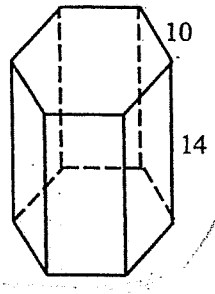
$A = \frac{1}{2}ap$

$= \frac{1}{2}5\sqrt{3}(60)$

$= 150\sqrt{3}$

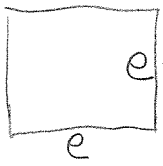
$V = Bh$

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



V = $2100\sqrt{3}$

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



$V = Bh$

$1000 = 25B$

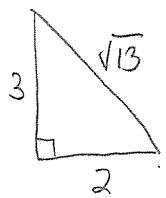
$B = 40$

$B = e^2$

$40 = e^2$

$e = 2\sqrt{10}$

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



$V = Bh$

$420 = 3h$

$h = 140$

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

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

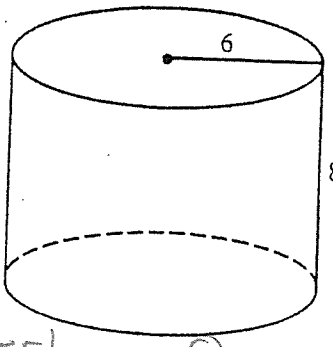
$B = 3$

Geometry (H)
Section ___ – Surface Area & Volume of Cylinders

Name: _____

Find the lateral area, surface area and volume of each right cylinder.

1.



① $B = \pi r^2$
$= \pi 6^2$
$= 36\pi$

② $V = Bh$
$= 36\pi(8)$

③ $LA = 2\pi rh$
$= 2\pi(6)(8)$

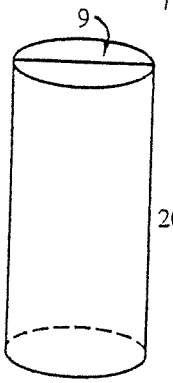
④ $SA = LA + 2B$
$96\pi + 2(36\pi)$

LA = 96π

SA = 168π

V = 288π

2.



$r = \frac{9}{2}$

$B = \left(\frac{9}{2}\right)^2 \pi$
$= \frac{81\pi}{4}$

$LA = 2\pi rh$
$= 2\pi\left(\frac{9}{2}\right)(20)$

$V = Bh$
$\frac{81\pi}{4}(20)$

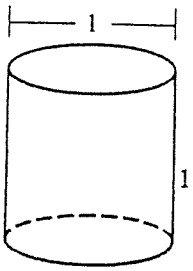
$SA = LA + 2B$
$180\pi + 2\left(\frac{81\pi}{4}\right)$

LA = 180π

SA = $220\frac{1}{2}\pi = \frac{441\pi}{2}$

V = 405 cu.

3.



$r = \frac{1}{2}$

$B = \pi\left(\frac{1}{2}\right)^2$
$= \frac{1}{4}\pi$

$V = Bh$
$= \frac{\pi}{4}(1)$

$LA = 2\pi rh$
$= 2\pi\left(\frac{1}{2}\right)(1)$

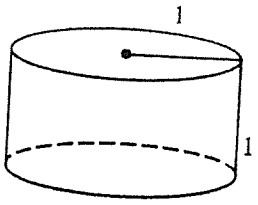
$TA = LA + 2B$
$\pi + 2\left(\frac{1}{4}\pi\right)$

LA = π

SA = $\frac{3\pi}{2}$

V = $\frac{\pi}{4}$

4.



$B = \pi$

$V = Bh$
$= \pi(1)$

$LA = 2\pi rh$
$= 2\pi$

$SA = LA + 2B$
$= 2\pi + 2(\pi)$

LA = 2π

SA = 4π

V = π