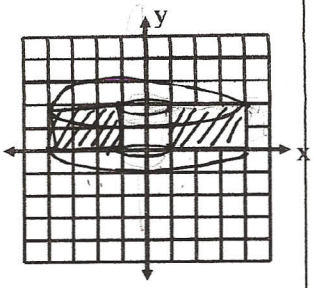
Geometry
Review of 11.2 and 11.3

Name_____
Date_____ Period_____

1. The plane region is revolved completely about the y-axis. Describe the solid and find its surface area.



$LA_{Big} = 8\pi(2) = 16\pi$

$LA_{Small} = 2\pi(2) = 4\pi$

Base $= 16\pi - \pi = 15\pi$

$SA = 16\pi + 4\pi + 30\pi$

$= 50\pi\ u^2$

2. The plane region is revolved completely about the line x=1. Describe the solid and find its surface area.

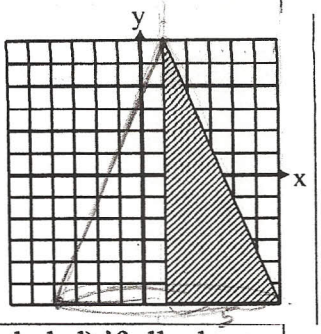
cone $r=5$ $h=12$ $\ell=13$

$LA = \frac{1}{2}(10\pi)(13)$

$= 65\pi$

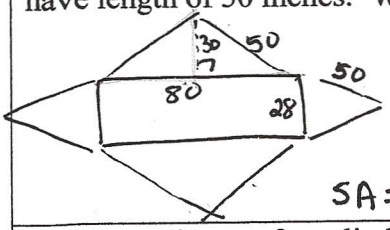
$B = 25\pi$

$SA = 90\pi\ u^2$



3. Find the surface area of a regular pyramid with equilateral triangular faces (base included) if all edges are 5 inches. $4\Delta s = 4\left(\frac{5^2\sqrt{3}}{4}\right) = 25\sqrt{3}\ in^2$

4. A pyramid has a rectangular base that is 80 inches by 28 inches. Its lateral edges are congruent and have length of 50 inches. What is its lateral area? LA = 3744



Rect $= 80(28) = 2240$

Top $\Delta = \frac{1}{2}(80)(30) = 1200$

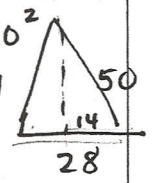
Side $\Delta = \frac{1}{2}(28)(48) = 672$

$SA = 2240 + 2(1200) + 2(672) = 5984\ in^2$

$14^2 + h^2 = 50^2$

$h^2 = 2304$

$h = 48$



5. The total area of a cylinder is 40π and the height is 8. Find the radius of this cylinder.

$2\pi r h + 2\pi r^2 = 40\pi$

$16r + 2r^2 = 40$

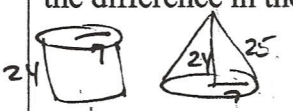
$r^2 + 8r - 20 = 0$

$(r+10)(r-2)$

$r = -10$ $r = 2$

$r = 2u$

6. A cylinder and a cone have congruent bases with radius 7. Both have a height of 24. What is the difference in their total areas?



$LA = 14\pi(24) = 336\pi$

$SA = 434\pi$

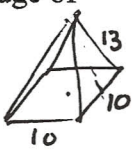
$LA = \frac{1}{2}(14\pi)(25)$

$= 175\pi$

$SA = 224\pi$

Diff $= 210\pi\ u^2$

7. Find the lateral area of a regular square pyramid with base perimeter of 40 and a lateral edge of length 13. $\ell = 12$

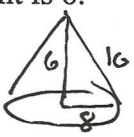


$LA = \frac{1}{2}(40)(12)$

$= 240\ u^2$

8. The radius of a cone is 8 and the height is 6. What is its lateral area?

$LA = \frac{1}{2}(16\pi)(10) = 80\pi\ u^2$

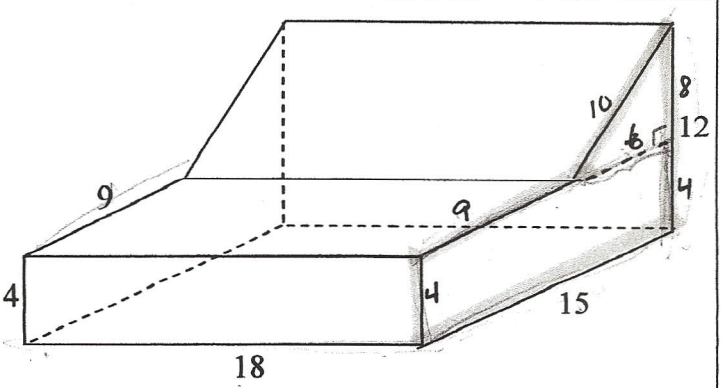


9. Find the lateral area of this right prism.

$P = 15 + 12 + 10 + 9 + 4 = 50$

$LA = 50(18) = 900\ u^2$

$B = 4(15) + \frac{1}{2}(6)(8) = 60 + 24 = 84$



10. Find the total area of the prism in problem 9.

$SA = 900 + 2(84) = 1068\ u^2$

11. After installing the right prism in problems 9 and 10 as a cover for outdoor machinery, it was found that the machinery was overheating. In order to correct the problem of overheating, it was determined that a tight-fitting tent-like cover made of reflective material was to be made. This reflective material comes in sheets that are 4 by 8. The contractor who is to make it doesn't care where or how many seams he makes. If each sheet of reflective material costs $68, how many sheets will he need and how much will the reflective material cost?

$1068 - (18)(15) = 1068 - 270 = 798\ ft^2$

$\frac{798}{32} = 24.9375$

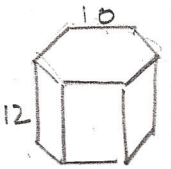
$25(68) = \$1700$

12. Find the lateral area and surface area of a regular hexagonal right prism is the base edges are 10 and the height is 12. $P = 60$

$LA = 60(12) = 720$

$B = 6\left(\frac{10^2\sqrt{3}}{4}\right) = 150\sqrt{3}$

$SA = 720 + 300\sqrt{3}$



13. Find the lateral area and surface area of the regular pyramid with slant height 17 cm. and altitude 8 cm.

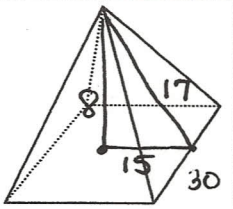
$P = 30(4) = 120$

$LA = \frac{1}{2}(120)(17)$

$LA = 1020$

$B = 900$

$SA = 1920$



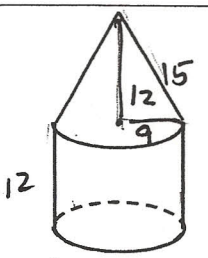
14. The height of the cone and the cylinder are both 12 ft. The diameter of the cylinder is 18 ft. Find the surface area of the figure.

$LA_{cone} = \frac{1}{2}(18\pi)(15) = 135\pi$

$SA = 432\pi$

$LA_{cyl} = 18\pi(12) = 216\pi$

$B = 81\pi$



15. Suppose the figure in problem 14 was a metal building that required all of the exterior metal (exposed to air) to be coated with "Rustoleum". Rustoleum comes in gallon cans and one gallon covers 250 ft^2. How many gallons of Rustoleum should be bought?

$LA = 351\pi \approx 1102.7$

4.4 gal Buy 5 gallons.

16. A regular pentagonal pyramid has slant height 10 in and lateral area 90 in^2. Find the length of a base edge.

$LA = \frac{1}{2} P\ell$

$90 = \frac{1}{2}(10)P$

$P = 18$

$e = 18/5 = 3.6$ in

Review Answers:

1. $50\pi\ u^2$
2. $90\pi\ u^2$
3. $25\sqrt{3}$ in^2
4. 3744 in^2
5. r = 2 units
6. 210π units^2
7. 240 units^2
8. 80π units^2
9. 900 units^2
10. 1068 units^2
11. 25 sheets at a cost of ~~$1700~~
12. LA=720 u^2; SA=(720 +300$\sqrt{3}$)u^2
13. LA=1020 cm^2; SA=1920 cm^2
14. 432π ft^2
15. 5 gallons
16. 3.6 in