Geometry GT/H

Name _____

Worksheet 11.1-11.3

Per/Sec. _____ Date _____

Determine whether each of the following statements is *always*, *sometimes*, or *never* true.

always 1. A triangular prism has 3 lateral faces.

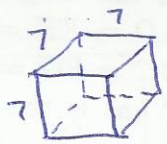
never 2. A pentagonal prism has 5 vertices.

always 3. An octagonal prism has 24 edges.

always 4. It is possible to calculate the surface area of any right cylinder given only the height and radius of a base.

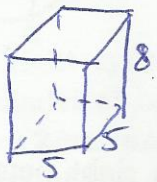
always 5. The total surface area of a prism is equal to the sum of the areas of its lateral faces and its two bases.

294 u^2 6. What is the surface area of a cube with edges of 7?



5
49
× 6
294

210 cm^2 7. What is the total surface area of a right square prism with base edges of 5 cm and lateral edges of 8 cm?



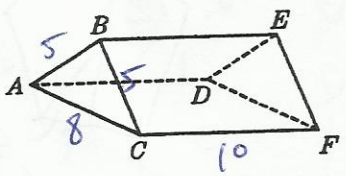
$SA = LA + 2B$; $B = 25$

$SA = Ph + 2B$

$SA = 20(8) + 50$

$SA = 210$

204 ~~192~~ u^2 8. A triangular right prism is shown. If $AB = BC = 5$, $AC = 8$, and $CF = BE = AD = 10$, what is the surface area of the prism?



$B = 12$

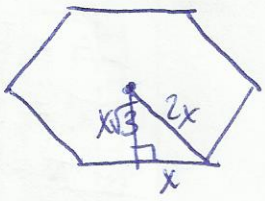
$SA = Ph + 2B$

$SA = 18(10) + 24$

$SA = 204$

5 cm²

13. Each base of a right prism is a regular hexagon with an area of $24\sqrt{3}\,\text{cm}^2$. If the lateral area of the prism is $120\,\text{cm}^2$, what is the height of the prism?



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

$24\sqrt{3} = \frac{1}{2}(x\sqrt{3})(12x)$ $\quad x^2 = 4$

$24\sqrt{3} = 6x^2\sqrt{3}$ $\quad x = 2$

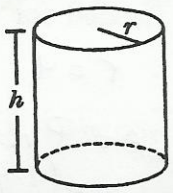
$6x^2 = 24$ $\quad LA = Ph$

$120 = 24h$

$h = 5$

56π u²

14. In the right cylinder shown, $h = 12$ and $r = 2$. What is the total surface area of this cylinder?



$SA = 2\pi rh + 2\pi r^2$

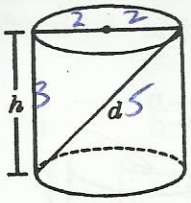
$SA = 2\pi(2)(12) + 2\pi(2)^2$

$SA = 48\pi + 8\pi$

$SA = 56\pi$

20π u²

15. In the right cylinder shown, $h = 3$ and $d = 5$. What is the total surface area of the cylinder?



$SA = 2\pi rh + 2\pi r^2$

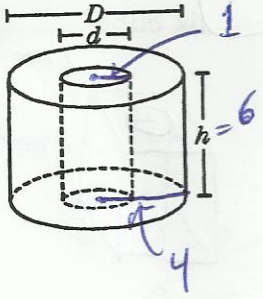
$SA = 2\pi(2)(3) + 2\pi(2)^2$

$SA = 12\pi + 8\pi$

$SA = 20\pi$

90π u²

16. A right cylindrical solid is shown with a smaller cylindrical hole bored through it. If $D = 8\,\text{cm}$, $d = 2\,\text{cm}$, and $h = 6\,\text{cm}$, what is the total surface area of the solid?



$B = 16\pi - \pi = 15\pi$

$SA = LA + 2B$

$SA = Ph + 2B$

$SA = (2\pi + 8\pi)(6) + 2(15\pi)$

$SA = 10\pi(6) + 30\pi$

$SA = 90\pi$

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Surface Area of Pyramids Worksheet

Find the lateral area and surface area of each regular pyramid.

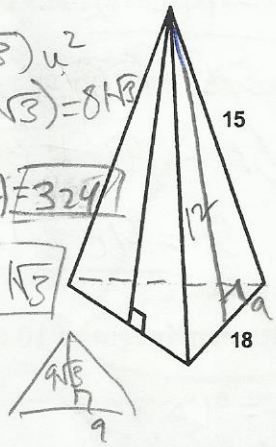
1. LA = 324 u^2

SA = $(324 + 81\sqrt{3})$ u^2

$\ell = 15$ $B = \frac{1}{2}(18)(9\sqrt{3}) = 81\sqrt{3}$

$LA = \frac{1}{2}P\ell = \frac{1}{2}(54)(12) = 324$

$SA = LA + B = 324 + 81\sqrt{3}$



2. LA = 1020 u^2

SA = 1920 u^2

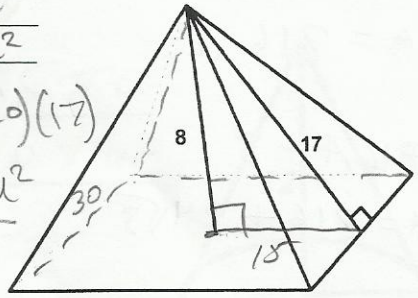
$LA = \frac{1}{2}P\ell = \frac{1}{2}(120)(17)$

$LA = 1020\ u^2$

$SA = LA + B$

$SA = 1020 + 900$

$SA = 1920\ u^2$



3. LA = $6\sqrt{103}$

SA = $(6\sqrt{103} + 6\sqrt{3})$ u^2

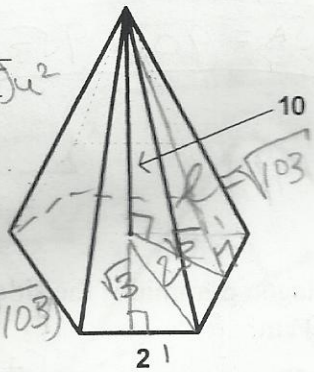
$B = \frac{1}{2}ap = \frac{1}{2}(\sqrt{3})(12)$

$B = 6\sqrt{3}$

$LA = \frac{1}{2}P\ell = \frac{1}{2}(12)(\sqrt{103})$

$LA = 6\sqrt{103}$

$SA = LA + B = 6\sqrt{103} + 6\sqrt{3}$



4. LA = 540 u^2

SA = 864 u^2

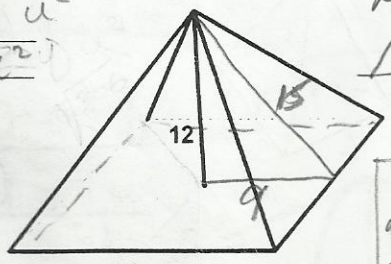
$LA = \frac{1}{2}P\ell$

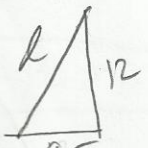
$LA = \frac{1}{2}(72)(15)$

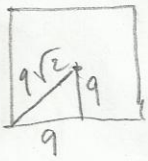
$LA = 540$

$SA = LA + B$

$SA = 540 + 324$







5. LA = $54\sqrt{3}$ u^2

SA = $63\sqrt{3}$ u^2

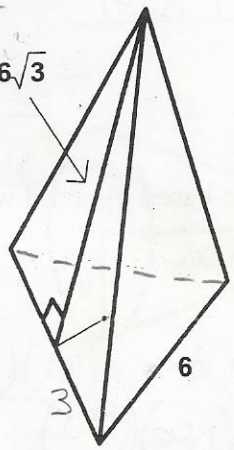
$LA = \frac{1}{2}P\ell$

$LA = \frac{1}{2}(18)(6\sqrt{3})$

$LA = 54\sqrt{3}\ u^2$

$SA = LA + B$

$SA = 54\sqrt{3} + 9\sqrt{3}$



6. LA = 103.5 u^2

SA = 142.6 u^2

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

$a = 3.4$; $P = 23$

$B = \frac{1}{2}(3.4)(23)$

$B = 39.1$

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

$B = 9\sqrt{3}$

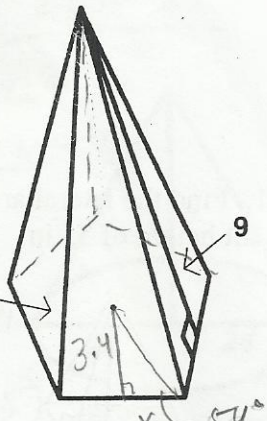
$LA = \frac{1}{2}P\ell$

$LA = \frac{1}{2}(23)(9)$

$LA = 103.5$

$SA = LA + B$

$= 103.5 + 39.1 = 142.6\ u^2$



$\tan 54° = \frac{3.4}{x}$

$x = 3.4 \tan 54°$

$x = 2.3$

Geometry Advanced

Name _____
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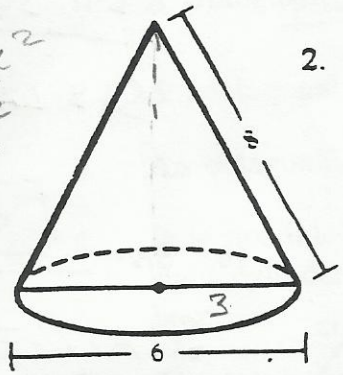
Surface Area of Cones Worksheet

Find the lateral area and the surface area of each right cone.

1. LA = $24\pi u^2$
   SA = $33\pi u^2$



$B = 9\pi$

$LA = \pi rl$

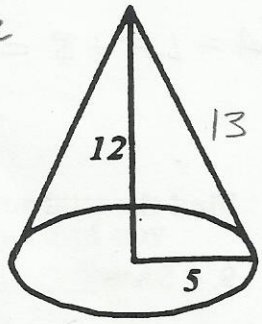
$LA = \pi(3)(8)$

$LA = 24\pi u^2$

$SA = LA + B$

$SA = 33\pi u^2$

2. LA = $65\pi u^2$
   SA = $90\pi u^2$



$B = 25\pi$

$LA = \pi rl$

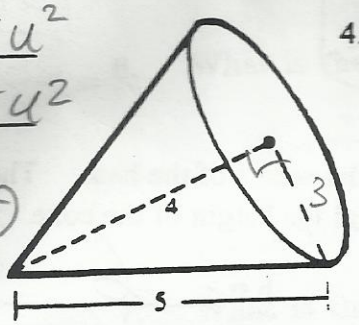
$LA = \pi(5)(13)$

$LA = 65\pi u^2$

$SA = LA + B$

$SA = 90\pi u^2$

3. LA = $15\pi u^2$
   SA = $24\pi u^2$



$B = 9\pi$

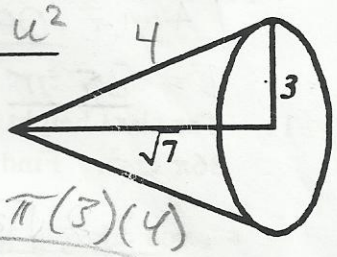
$LA = \pi rl = \pi(3)(5)$

$LA = 15\pi u^2$

$SA = LA + B$

$SA = 24\pi u^2$

4. LA = $12\pi u^2$
   SA = $21\pi u^2$



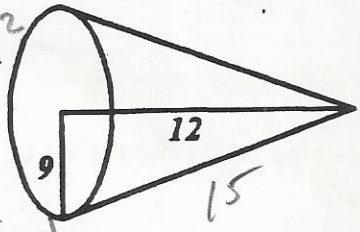
$B = 9\pi$

$LA = \pi rl = \pi(3)(4)$

$LA = 12\pi u^2$

$SA = LA + B = 21\pi u^2$

5. LA = $135\pi u^2$
   SA = $216\pi u^2$



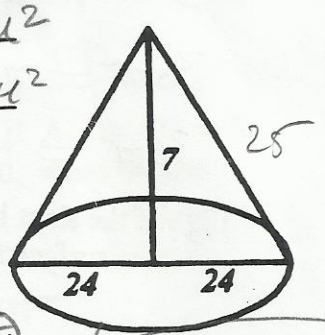
$B = 81\pi$

$LA = \pi rl = \pi(9)(15)$

$LA = 135\pi u^2$

$SA = LA + B = 216\pi u^2$

6. LA = $600\pi u^2$
   SA = $1176\pi u^2$



$B = 576\pi$

$LA = \pi rl$

$LA = \pi(24)(25) = 600\pi u^2$

$SA = LA + B = 1176\pi u^2$