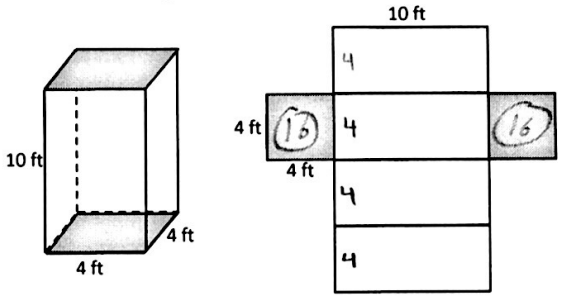
8.5 Day 1 Practice – Surface Area of Prisms and Cylinders **Name** Key

Geometry 3313 **Date** 1 **Period** _____

Learning Targets:

a. I can apply the surface area formulas to solve problems involving prisms and cylinders

For 1 – 3: Use the rectangular prism and net to answer each question.



1. How many lateral faces are there?

   4

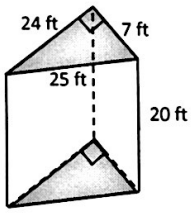
2. What is the total lateral area?

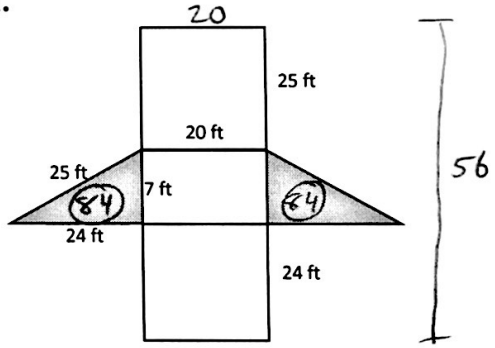
   $10(16) = 160\ ft^2$

3. What is the total surface area of the rectangular prism?

   $32 + 160 = \boxed{192\ ft^2}$

For 4 – 6: Use the triangular prism and net to answer each question.





4. How many lateral faces are there?

   3

5. Find the lateral area

   $20(56) = 1120\ ft^2$

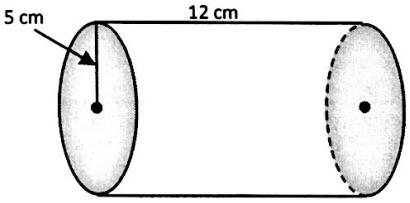
6. What is the total surface area of the triangular prism?

   $B = \frac{1}{2}(7)(24) = 84$

   $2B = 168$

   $168 + 1120 = \boxed{1288\ ft^2}$

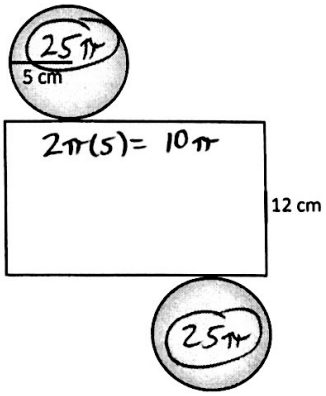
For 7 – 8: Use the cylinder and net to answer each question.



7. What is the lateral area?

   $10\pi(12) = 120\pi$

8. What is the total surface area of the cylinder?



$B = \pi r^2 = \pi(5)^2 = 25\pi$

$2B = 50\pi$

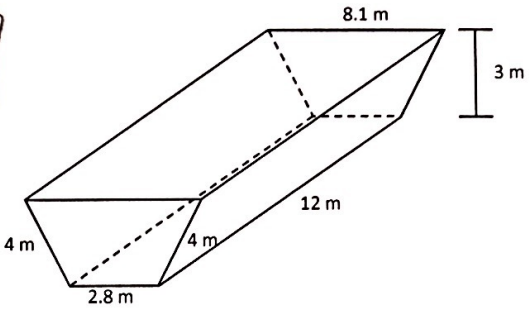
$50\pi + 120\pi = \boxed{170\pi\ cm^2}$

Find the lateral and surface area for each prism or cylinder

9. Find the lateral area of the trapezoidal prism.

$P = 2.8 + 4 + 8.1 + 4 = 18.9 \qquad h = 12$

$LA = P \cdot h = (18.9)(12) = \boxed{226.8\ m^2}$



10. Find the area of the trapezoidal base.

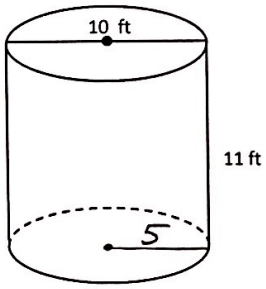
$B = \frac{1}{2}(b_1 + b_2)h = \frac{1}{2}(8.1 + 2.8)(3)$

$\boxed{B = 16.35} \qquad 2B = 32.7\ m^2$

11. Find the total surface area for the prism.

$SA = 226.8 + 32.7 = \boxed{259.5\ m^2}$

12. Find the lateral area of the cylinder. Keep your answer in terms of π.



$LA = P \cdot h \qquad P = 2\pi r = 2\pi(5) = 10\pi$

$LA = (10\pi)(11) = \boxed{110\pi\ ft^2}$

13. Find the area of one circular base. Keep your answer in terms of π.

$B = \pi r^2 = \pi(5)^2 = \boxed{25\pi\ ft^2} \qquad 2B = 50\pi$

14. Find the surface area of the cylinder. Keep your answer in terms of π.

$SA = 2B + LA = 50\pi + 110\pi = \boxed{160\pi\ ft^2}$

A cylinder has a height that is 2 times larger as its radius. The lateral area of the cylinder is 16π m². Answer each question. $\rightarrow h = 2r$

15. What is the length of the cylinder's radius?

$LA = 2\pi r h$

$LA = 2\pi r(2r)$

$LA = 4\pi r^2$

$16\pi = 4\pi r^2$

$\frac{16\pi}{4\pi} = \frac{4\pi r^2}{4\pi} \rightarrow 4 = r^2$

$2 = r$ $\qquad \boxed{r = 2\ m}$

16. What is the height of the cylinder?

$h = 2r = \boxed{4\ m}$

17. What is the surface area of the cylinder? Keep your answer in terms of π.

$B = \pi r^2 = \pi(2)^2$

$B = 4\pi$

$2B = 8\pi$

$SA = 2B + LA = 8\pi + 16\pi$

$\boxed{SA = 24\pi\ m^2}$