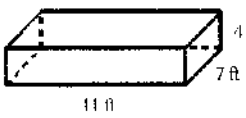
Agriculture
Surface Area Worksheet **Name** Key

Find the surface areas of the following figures to the nearest tenth unless stated otherwise.

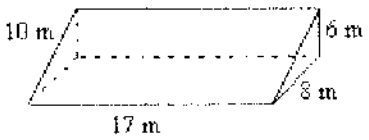
1.



Not drawn to scale

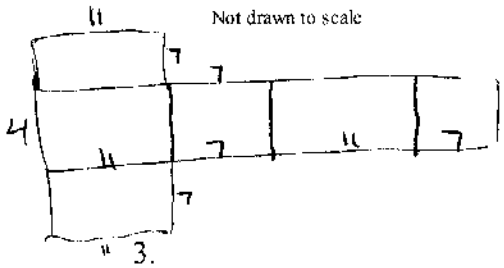
$(11)(7)(2) = 154$
$(11)(4)(2) = 88$
$(7)(4)(2) = 56$
$+$
$298 ft^2$

2.

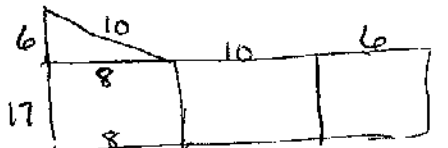


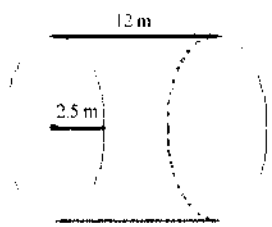
$\frac{1}{2}(8)(6) \times 2\Delta = 48$
$17 \cdot 10 = 170$
$17 \cdot 8 = 136$
$17 \cdot 6 = 102$
$+$
$456 m^2$

3.

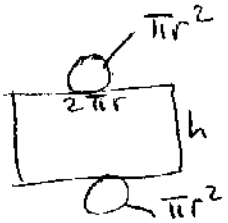


4.



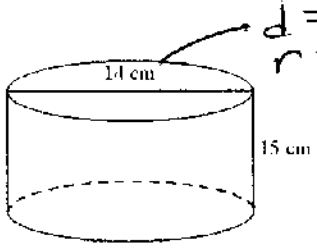


Not drawn to scale

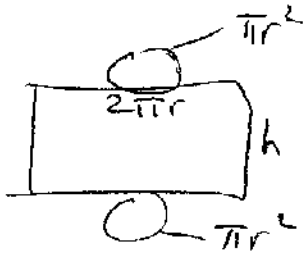


$SA = 2\pi(2.5)(12) + 2\pi(2.5)^2$
$227.8 m^2$

$d = 14 cm$
$r = 7 cm$

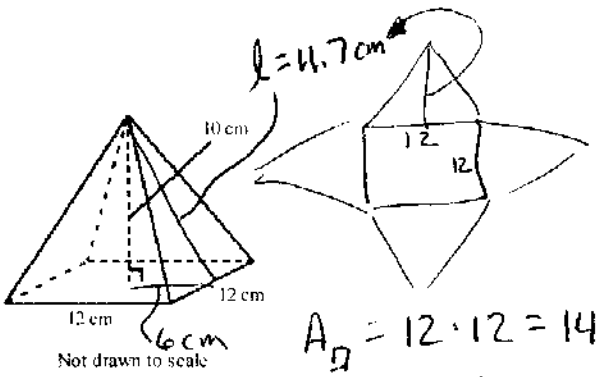


Not drawn to scale

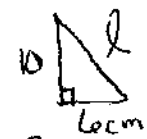


$SA = 2\pi(7)(15) + 2\pi(7)^2$
$967.6 cm^2$

5.



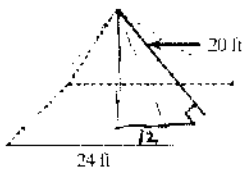
Not drawn to scale



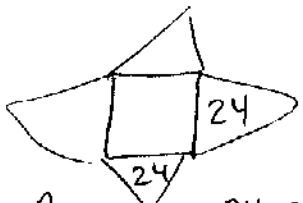
$\ell^2 = 10^2 + 6^2$
$\ell^2 = 136$
$\ell = 11.7 cm$

$A_\square = 12 \cdot 12 = 144$
$A_\Delta = \frac{1}{2}(12)(11.7) = 70.2$
$70.2 \times 4\Delta = 280.8$
$SA = 144 + 280.8$
$SA = 424.8 cm^2$

6.

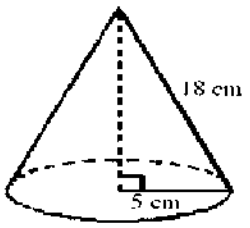


Not drawn to scale



$A_\square = 24 \cdot 24 = 576$
$A_\Delta = \frac{1}{2}(24)(20) = 240$
$240 \times 4\Delta = 960$
$SA = 576 + 960$
$SA = 1536 ft^2$

7. Find the surface area of the cone.

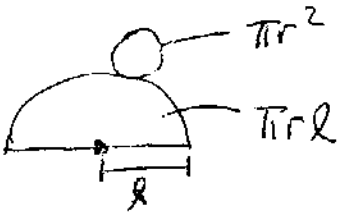


Not drawn to scale

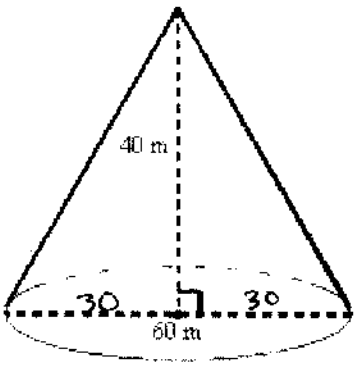
$SA = \pi r l + \pi r^2$

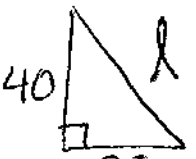
$SA = \pi(5)(18) + \pi 5^2$

$SA = 361.3 cm^2$



8. Find the slant height and surface area of the cone.





$l^2 = 30^2 + 40^2$

$\sqrt{l^2} = \sqrt{2500}$

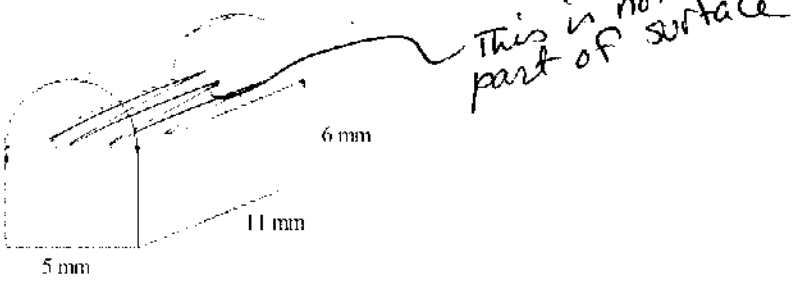
$l = 50m$

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

$SA = \pi(30)(50) + \pi(30)^2$

$SA = 7539.8 m^2$

9. Find the surface area of the figure below.

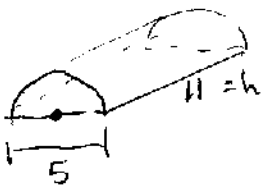


This is not part of surface

Not drawn to scale

box:
$5 \cdot 6 \cdot 2 = 60$
$5 \cdot 11 = 55$
$11 \cdot 6 \cdot 2 = 132$

½ cyl top:



$r = 2.5$

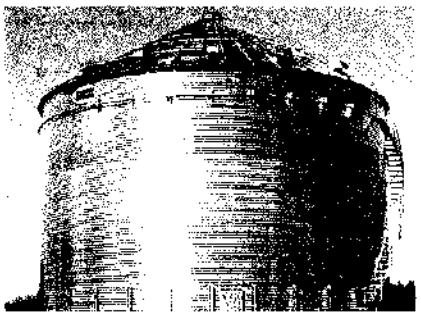
$\frac{1}{2}\left[2\pi(2.5)(11) + 2\pi(2.5)^2\right]$

106.0

$SA = 60 + 55 + 132 + 106$

$SA = 353 mm^2$

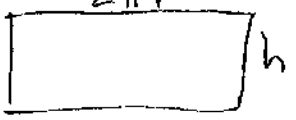
10. A farm hand needs to paint the outside of three-grain bins to the roof (eave). The bin has a diameter of 33 feet across and a height to the eave of 29'4". The paint comes in a 5-gallon or 1-gallon container and covers 250 square feet per gallon. If the paint costs $134.99 for 5 gallons and $29.99 for 1 gallon, how much is needed and how much will it cost to paint the grain bin?



$r = 16.5ft$

$h = 29'4" = 29\frac{1}{3} ft$

$4in \cdot \frac{1ft}{12in}$



$SA = 2\pi rh$

$SA = 2\pi(16.5)(29\frac{1}{3})$

$SA = 3041.1 ft^2$

$* 3 grain bins$

$9123.2 ft^2$

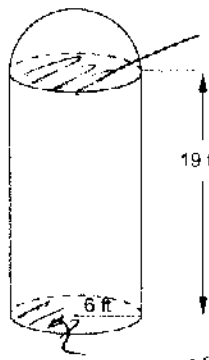
$9123.2ft^2 \cdot \frac{1gal}{250ft^2} = 36.5 gal$

37 gallons needed

$7(5\text{-gal}) + 2(1\text{-gal})$

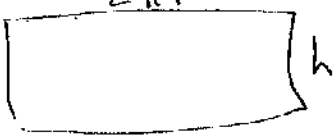
$7(134.99) + 2(29.99) =$ $1004.91

11. A farmer stores grain in the silo shown below. The shape of the silo is a cylinder with a radius of 6 feet and a height of 19 feet. On top of the cylinder is a hemisphere (half of a sphere) that also has a radius of 6 feet. If the farmer wants to paint the silo, what is the surface area to be painted? Paint costs $134.00 for 5-gallons and $29.99 for 1-gallon, covering 200 sq ft per gallon. How much paint is needed and how much will it cost?



inside not painted

Floor, not painted



and

1/2 sphere

$\frac{1}{2}(4\pi r^2)$

$2\pi r^2$

$2\pi rh$

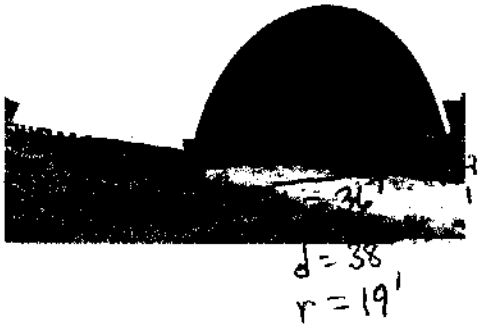
$2\pi(6)(19) + 2\pi(6)^2$

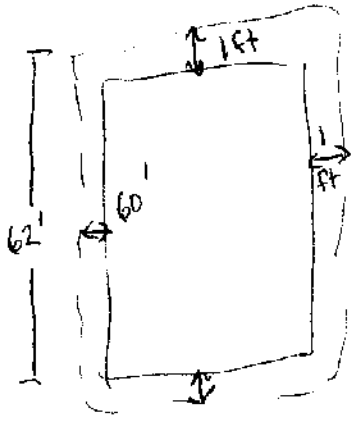
$716.3 + 226.2$

$SA = 942.5 ft^2$

$942.5ft^2 \cdot \frac{1gal}{200ft^2} = 4.7 gal \rightarrow$ Need 5 gallons $134

12. A farmer wants to install a single tube building shown below. The width of the building is 36 feet and the length is 60 feet. How much polyethylene cover is needed if there is a 1-foot overlap on all sides.





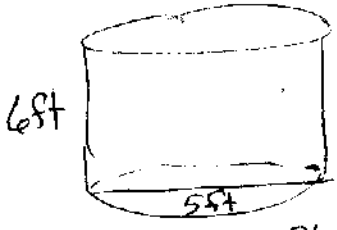
½ cylinder w/ no ends

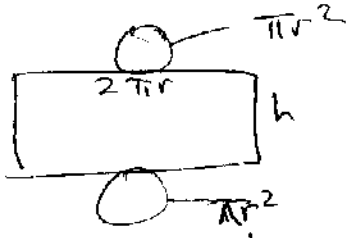
$\pi r h$

$\pi(19)(62)$

$3700.8\ ft^2$

13. A farmer has a cylindrical tank for storing fuel. The tank has a diameter of 5 feet and a height of 6 feet. What is the surface area of the tank? Explain how you find the surface area.





$r = 2.5ft$

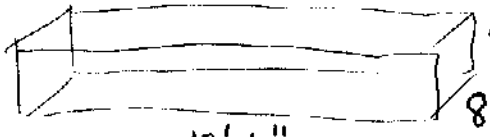
$SA = 2\pi rh + 2\pi r^2$

$SA = 2\pi(2.5)(6) + 2\pi(2.5)^2$

$SA = 133.5ft^2$

Draw the net & find the area of the 2 ⊙'s, $2\pi r^2$, & of the rectangle, $2\pi rh$, then Add together.

14. How many square feet is of material is needed to cover a rectangular box that has a length of 12 feet 6 inches, a width of 8 feet 8 inches, and a height of 4 feet?



$12.5\ ft$

$8" \cdot \frac{1ft}{12in}$

$8\frac{2}{3}\ ft$

Top & Bottom $2(12.5)(8\frac{2}{3}) = 216.7$

Front & Back $2(12.5)(4) = 100$

Sides $2(8\frac{2}{3})(4) = 69.3$

+

$386\ ft^2$