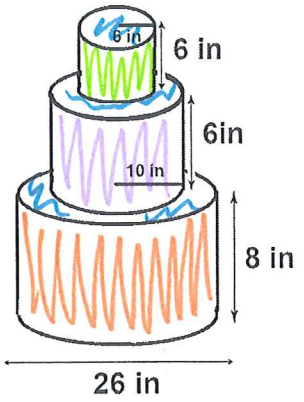
KEY

Surface Area of Composites and Applications

1. At Vito's Bakery, they are creating a new tiered cake with the dimensions below. In order to purchase enough frosting, Vito needs to find the area to frost. He will not be frosting under the cake or between layers. Vito never took a math class to figure this out. If you choose the correct answer, he will hire you! Choose the surface area to be frosted below. Use exact values.



Blue makes full circle w/ r=13

$\pi 13^2$

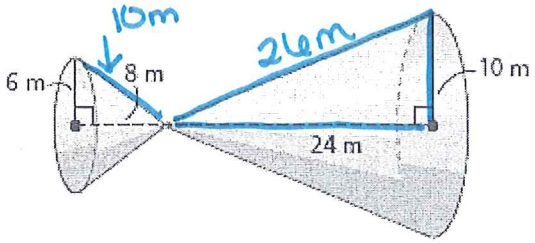
$+ 2\pi 13 \cdot 8$ ← LA

$+ 2\pi 10 \cdot 6$ ← LA

$+ 2\pi 6 \cdot 6$ ← LA

569π in^2 of frosting

2. Find the surface area of the following composite solid. Use exact values.

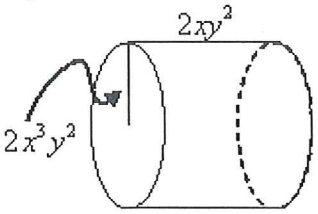


Find slant heights w/ pyth. thm.

$SA = \pi 10^2 + \pi 10 \cdot 26 + \pi 6^2 + \pi 6 \cdot 8$

$SA = 444\pi$ m^2

3. Given the figure below with dimensions as variable expressions, write a factored expression that represents the total surface area of the cylinder in terms of x and y?



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

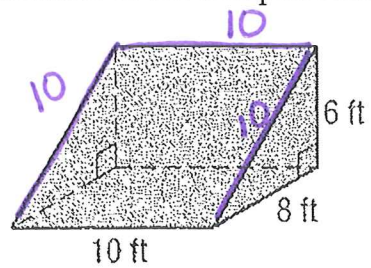
$SA = 2\pi (2x^3y^2)^2 + 2\pi 2x^3y^2 \cdot 2xy^2$

$= 2\pi 2x^3y^2 2x^3y^2 + 2\pi 2x^3y^2 \cdot 2xy^2$

$SA = 8\pi x^6y^4 + 8\pi x^4y^4$

$SA = 8\pi x^4y^4(x^2+1)$

4. Jack needs to build a ramp to get to his front door, find the amount of wood needed to cover the surface of the complete ramp (include all faces).



10×10

10×6

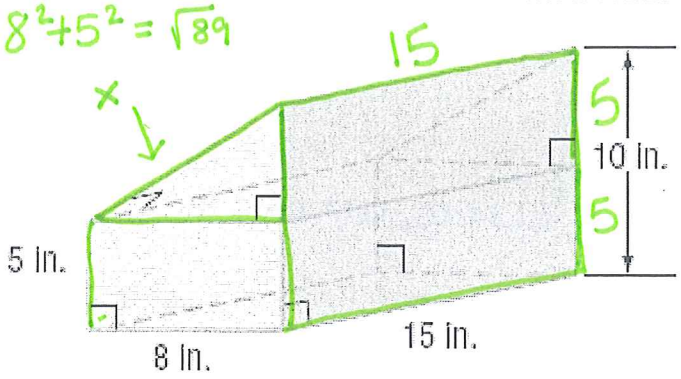
10×8

$+ 2\frac{1}{2} 8 \cdot 6$

$SA = 288$ ft^2

5. Find the exact value and the rounded value of the surface area for the following composite solid.

$8^2+5^2=\sqrt{89}$

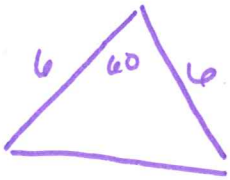


$15\cdot10$
$+2(5\times8)$
$+\ 8\times15$
$+\ 15\times\sqrt{89}$
$+\ 2\frac{1}{2}\,8\cdot5$
$+\ 5\times15$

$SA = 465 + 15\sqrt{89}\ in^2$

$SA \approx 606.510\ in^2$

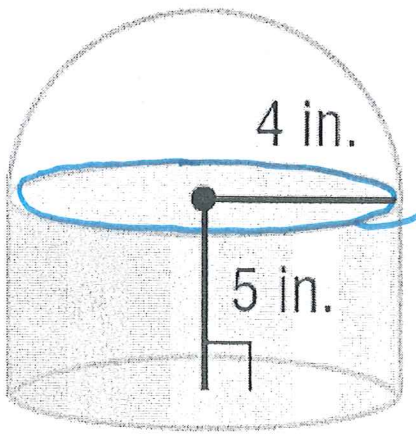
6. The US Postal Service offers a mailer for posters or artwork that is a regular triangular prism. The base is an equilateral triangle with sides that measure 6 inches. Find the surface area of the mailer package to the nearest thousandth.



$=3(6\times38)$
$+\ 2\,\frac{1}{2}\,6\cdot6\sin60$

$SA = 715.177\ in^2$

7. Find the surface area of the composite figure.



$SA = \cancel{2}\pi r^2 + 2\pi rh + 4\pi r^2$ (not a surface)

$SA = \pi 4^2 + 2\pi 4\cdot5 + 4\pi 4^2$

$SA = 120\pi\ in^2$

$SA \approx 376.991\ in^2$