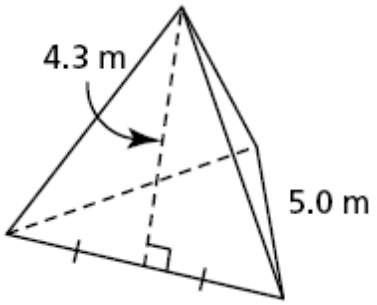
# Math 10

# Lesson 6-4 Answers

## Lesson Questions

**Question 1**

A tetrahedron has four congruent triangles. Therefore the surface area is given by




$SA = 4A_{\triangle}$

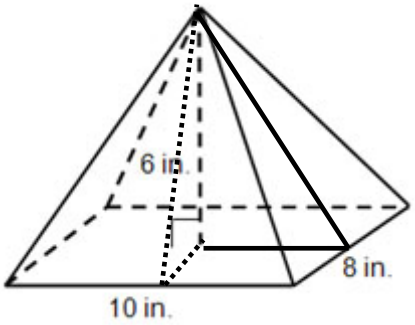
$SA = 4\left(\frac{1}{2}bs\right)$

$SA = 4\left(\frac{1}{2}(5.0)(4.3)\right)$

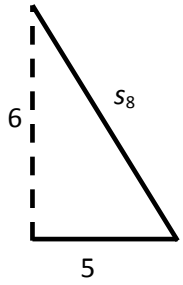
$SA = \mathbf{43 m^2}$

**Question 2**

For the rectangular prism the two sides of the base result in two triangular faces with a base of 8 in. and two faces with a base of 10 in. In addition, we are given the height of the prism. We need to calculate the slant height for each triangular face.




For the 8 in. triangle face




$s_8^2 = 6^2 + 5^2$

$s_8^2 = 36 + 25$

$s_8^2 = 61$

$s_8 = \sqrt{61}$

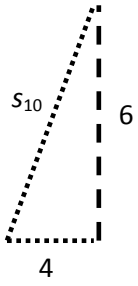
For the 10 in. triangle face

$s_{10}^2 = 6^2 + 4^2$

$s_{10}^2 = 36 + 16$

$s_{10}^2 = 52$

$s_{10} = \sqrt{52}$




The surface area of the rectangular pyramid is

$SA = 2A_{\triangle_8} + 2A_{\triangle_{10}} + A_B$

$SA = 2\left(\frac{1}{2}b_8 s_8\right) + 2\left(\frac{1}{2}b_{10}s_{10}\right) + b_8 b_{10}$

$SA = \left(b_8 s_8\right) + \left(b_{10}s_{10}\right) + b_8 b_{10}$

$SA = \left(8\sqrt{61}\right) + \left(10\sqrt{52}\right) + 8 \cdot 10$

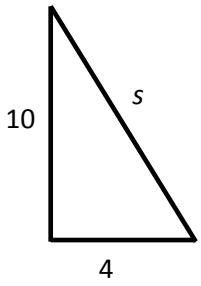
$SA = \mathbf{214.6 in^2}$

**Question 3**

For a right cone

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

We are given *r* (4 m) and *h* (10 m) so we need to calculate *s* first.




$s^2 = 10^2 + 4^2$

$s^2 = 100 + 16$

$s^2 = 116$

$s = \sqrt{116}$

We can calculate the surface area:

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

$SA = \pi(4)\sqrt{116} + \pi(4)^2$

$SA = \mathbf{186\,m^2}$

**Question 4**

Note that the given area (3000 in.$^2$) is for the faces of the pyramid. Therefore, the area of one face is

$A_{\triangle} = \dfrac{3000}{4} = 750$

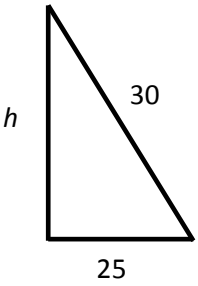
Using the formula for the area of a triangle

$A_{\triangle} = \frac{1}{2}bs$

$750 = \frac{1}{2}50s$

$750 = 25s$

$30 = s$




$30^2 = h^2 + 25^2$

$h^2 = 30^2 - 25^2$

$h^2 = 900 - 625$

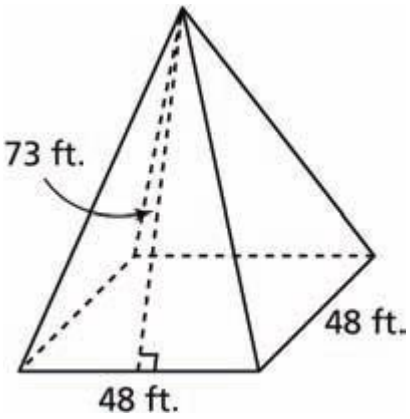
$h^2 = 275$

$h = \sqrt{275}$

$h = \mathbf{16.6\,in.}$

## Assignment

1. a) 151 in.$^2$ b) 2356 cm$^2$
2. a) 896 cm$^2$ b) 628 yd.$^2$
3. a)




   b) 7008 ft.$^2$
4. 923 285 ft.$^2$
5. a) 2261.9 cm$^2$ b) $11.94
6. a) 87 m$^2$ b) 176 ft.$^2$
7. 2.0 m$^2$; I assumed the hides had equal areas.
8. 188 ft.$^2$
9. a) Right square pyramid and right cone b) Right rectangular prism
10. The Louvre
11. a) 193.7 cm$^2$ b) 34.9 m$^2$
12. 61 ft.$^2$
13. 16.0 cm