Find the area of
① 4 Triangles
② Find the area of the bare

a) $4\left[\frac{1}{2}(16)(12)\right]$

(2)(16)(12)
(16)(16)

384
+256
―――
640

Show your work.

a. **640 ft²**

b. **36 in²**

Got It? Do these problems to find out.

a.

12 ft
16 ft
16 ft

b.

4.5 in.
3 in.   3 in.
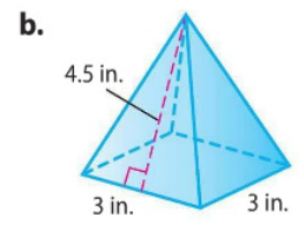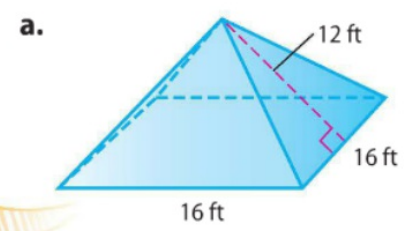
$$c. \; 3\left(\frac{1}{2}(2)(3.5)\right)$$

$$\frac{1}{2}(2)(1.7)$$

① Find lateral area ...

② Find base ...

c.

2 cm
3.5 cm
2 cm
2 cm
1.7 cm
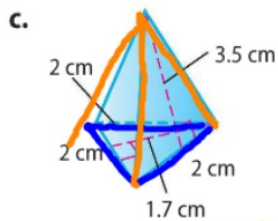
$$\begin{array}{r} 10.5 \\ + 1.7 \\ \hline 12.2 \end{array}$$

Calculator

3.5 × 3 = 10.5

10.5

←			CE	C
MC	7	8	9	÷	Sqrt
MR	4	5	6	×	x²
MS	1	2	3	-	1/x
M+	0	.	±	+	=

Show your work.

12.2 cm²

each pyramid.

6.5

5   5
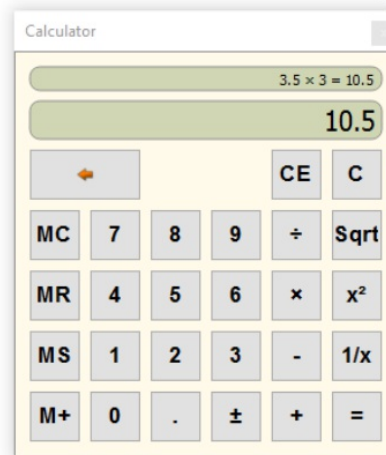
Show your work.
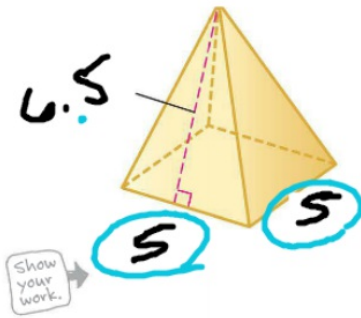
$$④ \quad 4 \left[\frac{1}{2} (5)(6.5) \right]$$

$$+ \quad (5)(5)$$

$$\overline{}$$

total ☺

4. Pyramid-shaped gift boxes have square bases that measure 5 inches on each side. The slant height is 6.5 inches. How much cardboard is used to make each box? (Example 3)
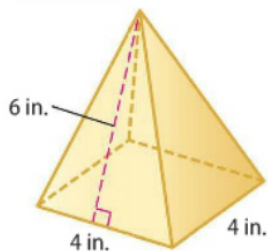
90 in²

Find the surface area of each pyramid. (Examples 1–2)

1. __64 in²__

6 in.

4 in.   4 in.

Show your work.

2. __235.2 m²__
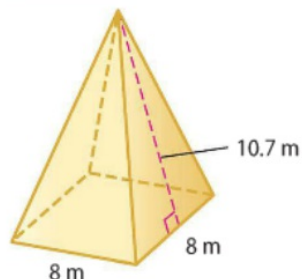
10.7 m

8 m

8 m

3. __55.75 cm²__

5 cm   6 cm

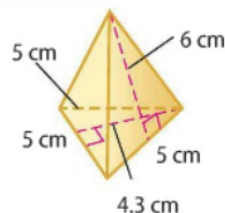5 cm   5 cm

4.3 cm

4. Pyramid-shaped gift boxes have square bases that measure 5 inches on each side. The slant height is 6.5 inches. How much cardboard is used to make each box? (Example 3)
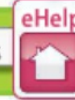
__90 in²__

5. @ **Building on the Essential Question** How do you use the area of a triangle to find the surface area of a triangular pyramid?

Sample answer: The base and all three lateral faces of

a triangular pyramid are triangles. Use the formula for
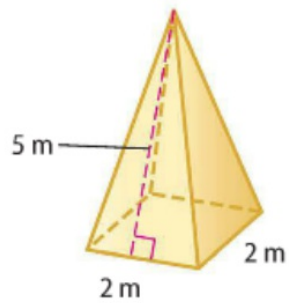
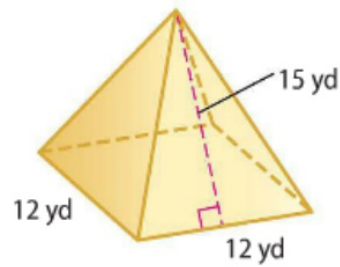**the area of a triangle to find the area of each face.**

Find the surface area of each pyramid. (Examples 1–2)

1. _24 m²_

5 m

2 m

2 m

2. _504 yd²_

15 yd

12 yd

12 yd

3. _126.35 cm²_

10 cm

7 cm

6.1 cm

7 cm

7 cm

4. _107 ft²_

8.2 ft

5 ft

5 ft

5. _143.1 mm²_

8 mm

9 mm

7.8 mm

9 mm

9 mm

6. _30.9 in²_

6 in.
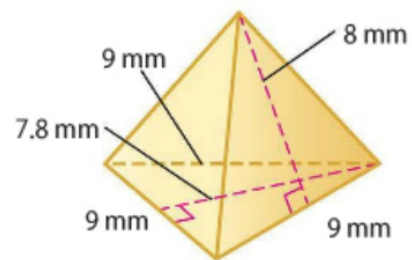
3 in.
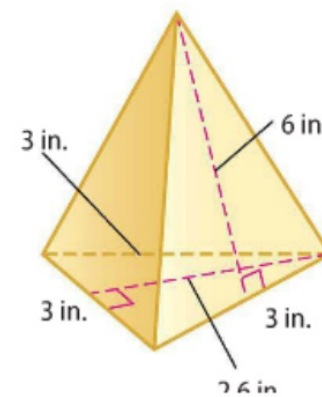
3 in.

3 in.

2.6 in.
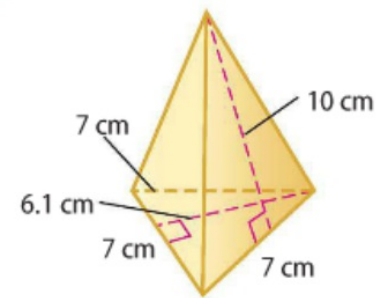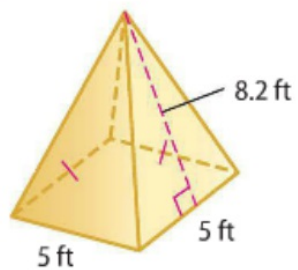
7. A tea bag is shaped like a square pyramid with the base measuring 4 centimeters on each side. The slant height is 4.5 centimeters. How much mesh is used to create the tea bag? (Example 3)

52 cm²

8. An earring design is shaped like a triangular pyramid. All the faces are equilateral triangles with side lengths of 14 millimeters. The slant height is 12.1 millimeters. What is the surface area of the earring? (Example 3)

338.8 mm²

9. An acting award is a square pyramid with a base that measures 6 inches on each side. The slant height is 8 inches. What is the surface area of the award? (Example 3)

132 in²

10. **CCSS** **Identify Structure** Refer to the figures listed in the table. Determine the number of faces the figure has of each two-dimensional shape. Explain.

Figure	Rectangular Faces	Triangular Faces
Rectangular Prism	6	0
Triangular Prism	3	2
Square Pyramid	1	4
Triangular Pyramid	0	4

Sample answer: Rectangular prisms have no triangular faces and triangular pyramids have no rectangular faces. Triangular prisms and square pyramids have a combination of both. The figures are named by their bases.

11. **CCSS** **Find the Error** Pilar is finding the surface area of the pyramid shown. Find her mistake and correct it.

110 ft²; Sample answer:

A pyramid has only one

square base. To find the

surface area, add

25 + (4 • 21.25).

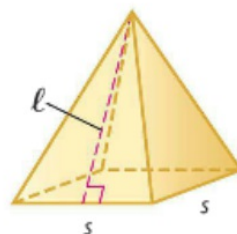$8\frac{1}{2}$ ft

5 ft

5 ft
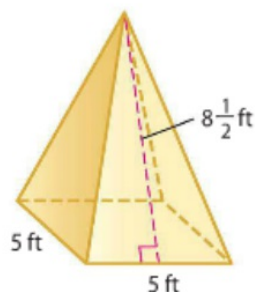
$25 + 25 + (4 \cdot 21.25)$
$= 135 \text{ ft}^2$

12. **CCSS** **Persevere with Problems** The *lateral surface area L.A.* of a pyramid is the area of its lateral faces. Use the square pyramid at the right to complete each step to find the lateral surface area of any pyramid.

ℓ

s

s

$$L.A. = \frac{1}{2}s\ell + \underline{\frac{1}{2}s\ell + \frac{1}{2}s\ell + \frac{1}{2}s\ell} \qquad \text{Lateral surface area}$$

$$= \frac{1}{2}(\underline{s+s+s+s})\ell \qquad \text{Distributive Property}$$

$$= \frac{1}{2}P\ell \qquad\qquad\qquad \text{Perimeter of base: } P = s+s+s+s$$

13. **CCSS** **Justify Conclusions** Suppose you could climb to the top of the Pyramid Arena in Memphis, Tennessee. Which path would be shorter, climbing a lateral edge or the slant height? Justify your response. **It would be shorter to**

climb up the slant height. The bottom of the slant height is closer to the

center of the base of the pyramid than the bottom of the lateral edge.