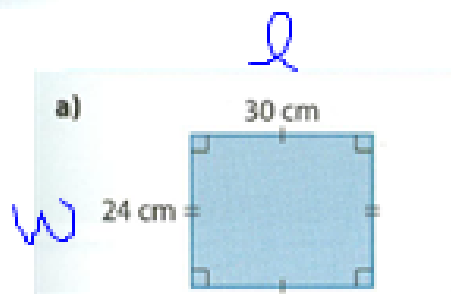


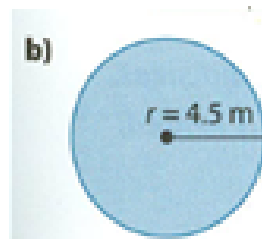
7. Determine the area of each shape.



$$A = l \times w$$

$$A = 30 \times 24$$

$$A = 720 \text{ cm}^2$$

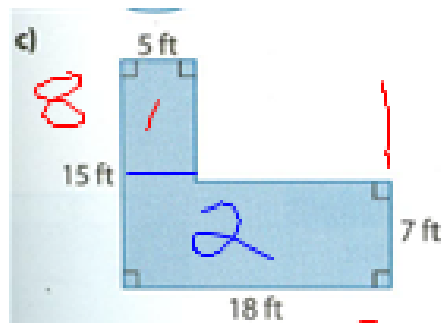
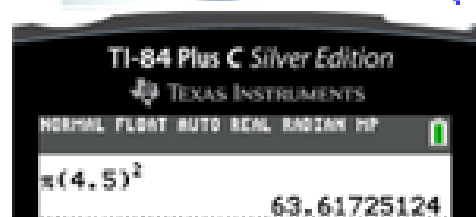


$$A = \pi r^2$$

$$A = \pi (4.5)^2$$

$$A = 63.617$$

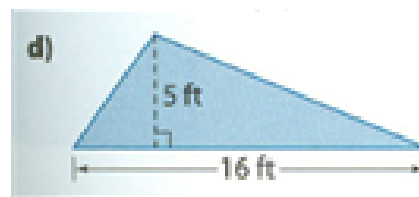
$$A = 63.62 \text{ m}^2$$



$$\begin{aligned} \text{Area 1} &= l \times w \\ &= 8 \times 5 \\ &= 40 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Area 2} &= l \times w \\ &= 18 \times 7 \\ &= 126 \text{ ft}^2 \end{aligned}$$

$$A = 40 + 126 = 166 \text{ ft}^2$$



$$A = \frac{1}{2}bh$$

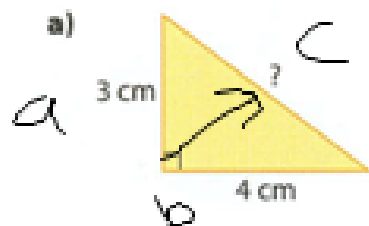
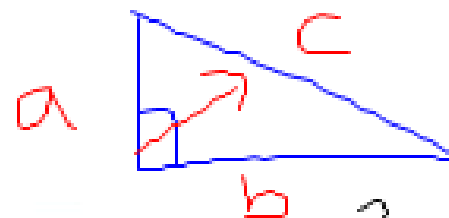
$$A = \frac{1}{2}(16)(5)$$

$$A = 40 \text{ ft}^2$$

or $A = \frac{bh}{2}$

9. Determine the unknown side lengths in each right triangle.

$$a^2 + b^2 = c^2$$



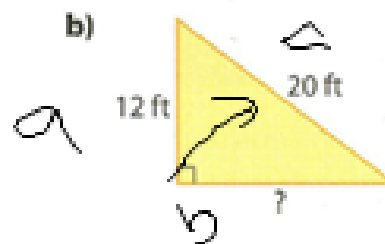
$$a^2 + b^2 = c^2$$

$$3^2 + 4^2 = c^2$$

$$9 + 16 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$$5 \text{ cm} = c$$



$$c^2 - a^2 = b^2$$

$$20^2 - 12^2 = b^2$$

$$400 - 144 = b^2$$

$$\sqrt{256} = \sqrt{b^2}$$

$$16 \text{ ft} = b$$

Solving Equations

10. Solve.

a) $P = 2(l + w)$
 $l = 5, w = 8$. Solve for P .

$$P = 2(l + w)$$

$$= 2(5 + 8)$$

$$= 2(13)$$

$$P = 26$$

d) $SA = 6s^2$
 $s = 1.2$. Solve for SA .

$$SA = 6(1.2)^2$$

$$SA = 8.64$$

b) $V = lwh$
 $l = 7, w = 4, h = 2.5$. Solve for V .

$$V = lwh$$

$$V = (7)(4)(2.5)$$

$$V = 70$$

c) $A = \frac{1}{2}bh$
 $A = 18, b = 3$. Solve for h .

$$A = \frac{bh}{2}$$

$$2 \times 18 = \frac{3h}{2}$$

$$\frac{36}{3} = \frac{3h}{3}$$

$$12 = h$$



1.1

Nets and Surface Area of 3-D Objects

box

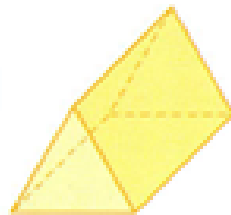
rectangular prism

- a 3-D figure with two rectangular bases that are the same size and shape



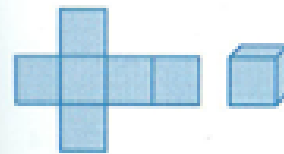
triangular prism

- a 3-D figure with only two triangular faces that are the same size and shape



net

- a 2-D diagram that can be folded to create a 3-D object



net



3-D object

surface area

- the sum of the areas of all the faces of a 3-D object
- measured in square units or units²

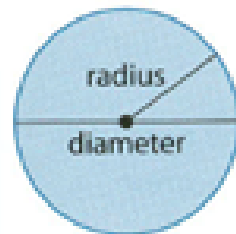
cylinder

- a 3-D object with two circular faces that are the same size and a curved surface



diameter

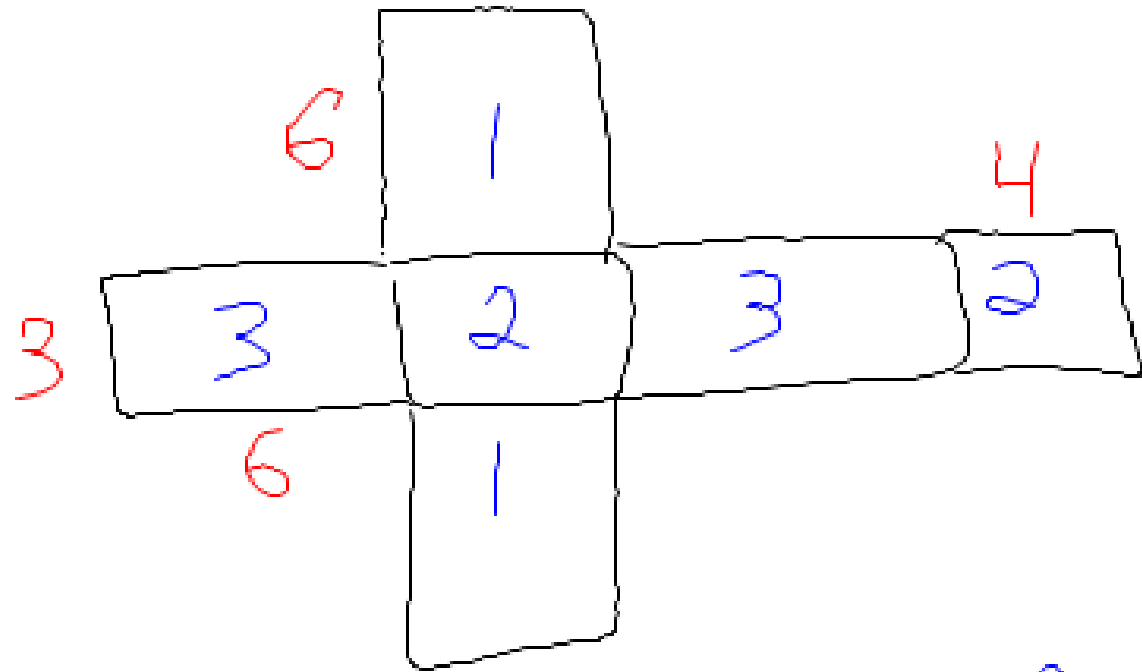
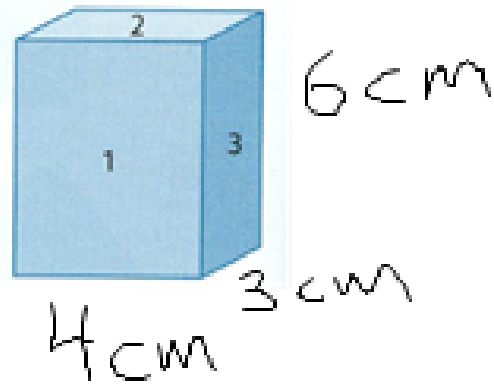
- the distance across a circle through its centre



radius

- the distance from the centre of a circle to a point on the circumference

Calculate the Surface Area of



$$\begin{aligned} \text{Area 1} &= l \times w \\ &= 6 \times 4 \\ &= 24 \end{aligned}$$

$$\begin{aligned} \text{Area 2} &= l \times w \\ &= 3 \times 4 \end{aligned}$$

$$\begin{aligned} \text{Area 3} &= l \times w \\ &= 3 \times 6 \\ &= 18 \end{aligned}$$

$$SA = (2 \times A1) + (2 \times A2) + (2 \times A3) = 12$$

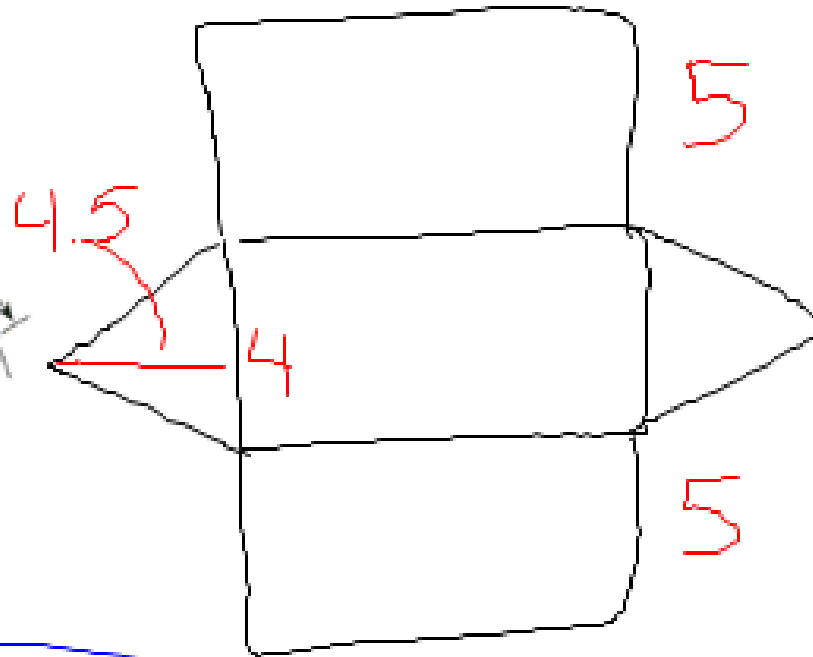
$$SA = (2 \times 24) + (2 \times 12) + (2 \times 18)$$

$$\begin{aligned} SA &= 48 + 24 + 36 \\ SA &= 108 \text{ cm}^2 \end{aligned}$$

Calculate the Surface Area of a Triangular Prism

a) Sketch a net of a tent.
Label the dimensions.

b) Determine the amount of material needed to make the tent.



End

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}(4)(4.5)$$

$$A = 9$$

Side

$$A = l \times w$$

$$A = 6 \times 5$$

$$A = 30$$

6 Bottom

$$A = l \times w$$

$$A = 6 \times 4$$

$$A = 24$$

$$SA = (2 \times \text{ends}) + (2 \times \text{sides}) + \text{bottom}$$

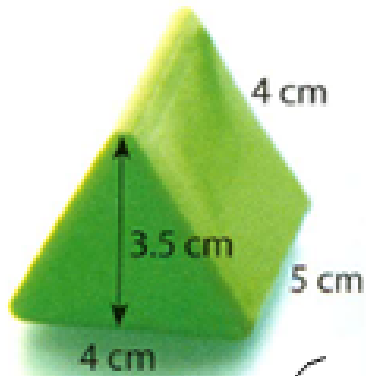
$$SA = (2 \times 9) + (2 \times 30) + 24$$

$$SA = 18 + 60 + 24$$

$$SA = 102 \text{ ft}^2$$

Need 102 ft^2 of material.

Your Turn



What is the total area of plastic needed to make the triangular prism?

End

Side

$$A = \frac{1}{2}bh$$

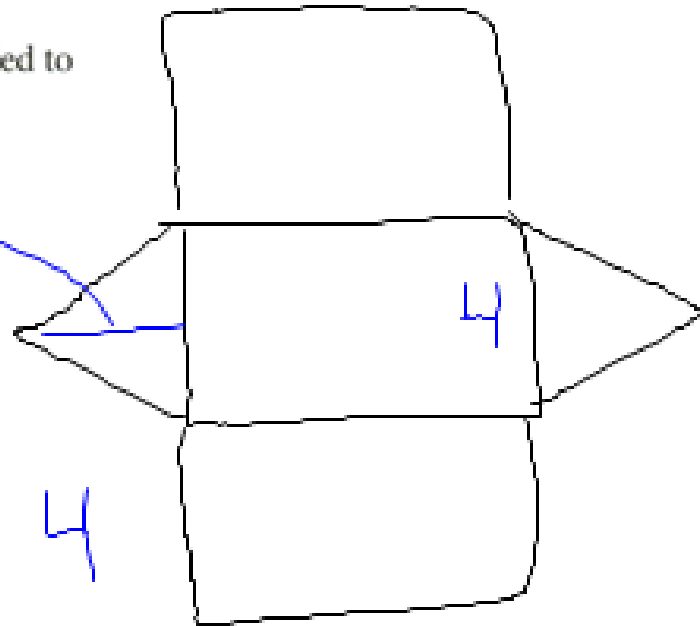
$$A = \frac{1}{2}(4)(3.5)$$

$$A = 7$$

$$A = l \times w$$

$$A = 5 \times 4$$

$$A = 20$$



Bottom

$$A = l \times w$$

$$A = 4 \times 5$$

$$A = 20$$

$$SA = (2 \times \text{end}) + (2 \times \text{side}) + \text{bottom}$$

$$SA = (2 \times 7) + (2 \times 20) + 20$$

$$SA = 14 + 40 + 20$$

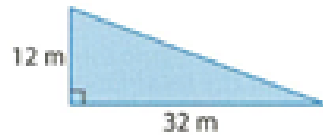
$$SA = 74 \text{ cm}^2$$

Try It

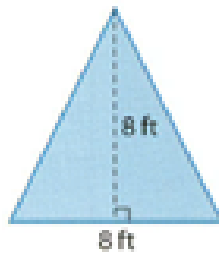
Page 9-10 from book:

1. Determine the area of each triangle.

a)



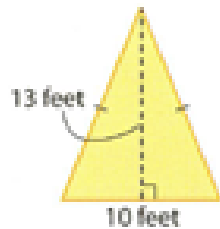
b)



2. Which imperial unit would be best to express the area of each item?

- a) a computer screen
- b) the surface of a lake
- c) a backyard
- d) the ceiling in a bedroom

3. What is the area of the triangle shown?

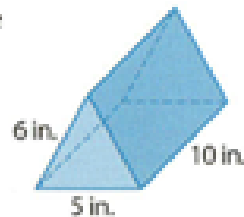


4. Which SI unit would be best to express the area of each item?

- a) a gymnasium floor
- b) a forest
- c) a wrapper for a mint
- d) the lid for a tub of ice cream

5. The triangular prism shown has an approximate height of 5.5 in.

- a) Sketch a net of the triangular prism.
- b) Calculate the surface area of the prism.

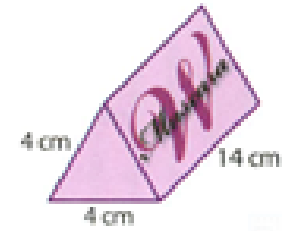


6. Determine the total area of the material needed to create the wedge tent shown. Include the material needed for the floor. Express your answer to the nearest square foot.

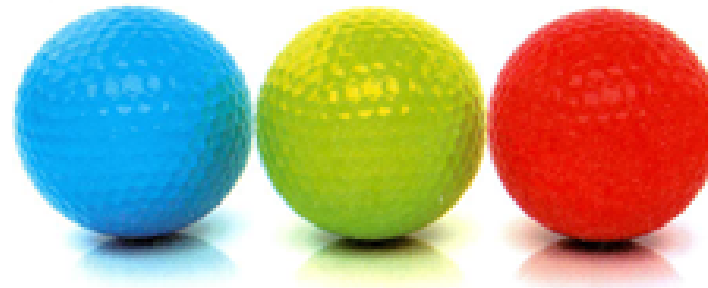
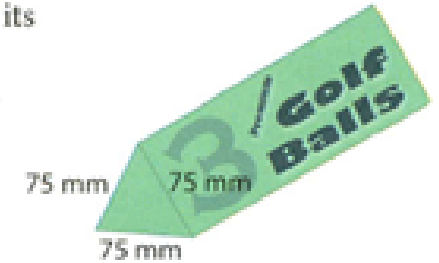


7. A brand of mascara comes in a cardboard box in the shape of a triangular prism. The height of the triangular face at each end of the prism is about 3.5 cm.

- a) On grid paper, sketch a net of the box.
- b) Calculate the area of the five faces of the box.
- c) Why might the total amount of cardboard needed to make this box be slightly greater than your answer to part b)?



8. A company is thinking of changing its package for a set of three golf balls to a box in the shape of a triangular prism. The diameter of a golf ball is approximately 43 mm. The balls will be placed three in a row.



- a) What is the minimum length of the longest side of the box?
- b) Sketch a net of the box.
- c) Calculate the total area of cardboard needed to make the five sides of the box. Round your answer to the nearest square millimetre. **Hint:** Use the Pythagorean relationship
- d) Calculate the total area of cardboard needed for a rectangular prism that would hold three golf balls.
- e) Give one reason why the company might *not* use the triangular prism box for its golf balls.
- f) Give one reason why the company might use the triangular prism box for its golf balls.