AW Math 11

Day 3: Surface Area of 3-D Objects

Surface Area: total area of all surfaces

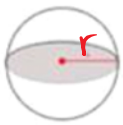
Prism: —

Net: 2D diagram → shows 3D object

Base: Bottom

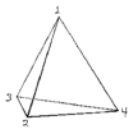
Lateral Faces: Sides of 3D object

Cylinder (soup can)
base is a circle



Sphere (3D circle)

slant length
Cone
circular base

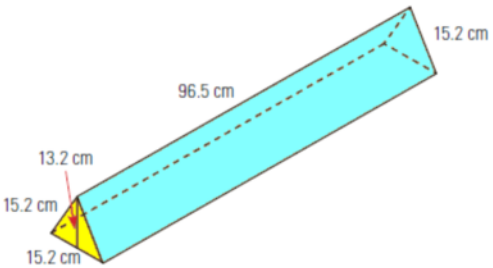


Pyramid: Can have different bases (□, ▭, △)

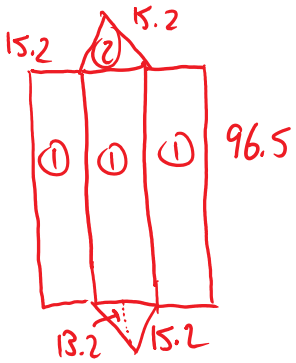
Example 1:

Jason ships posters in boxes made into the shape of an equilateral triangular prism, as shown in the diagram.

a) Draw a net of the box and label the dimensions of each side.



Net



b) Calculate the surface area of the box.

# of rect.

1. L x W $96.5 \times 15.2 = 1466.8 \times 3 = 4400.4\ cm^2$

# of Δ

2. $\frac{b \times h}{2}$ $\frac{15.2 \times 13.2}{2} = 100.32 \times 2 = 200.64$

total = 4400.4 + 200.64 = $4601.04\ cm^2$

Example 2:

Find the surface area of a gum ball with a diameter of 3.4 cms.

radius = $\frac{3.4}{2} = 1.7$

$SA = 4\pi r^2$

$= 4\pi (1.7)^2$

$= 36.32\ cm^2$

Assignment 14-15 # 1-3

Example 3:

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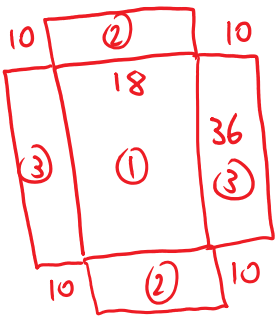
3 × 12 = 36

Example 3: 12" = 1FT 36"

Jen is building a child's wagon. The wagon box is to be 3 feet long, 18 inches wide, and the sides of the wagon 10 inches high.

a) Draw a net of the wagon box, and label the dimensions.



b) Calculate the surface area of the box, in square inches.

A_1: L×W $36 \times 18 = 648\ in^2$

A_2: L×W $10 \times 18 = 180 \times 2 = 360\ in^2$

A_3: L×W $10 \times 36 = 360 \times 2 = 720\ in^2$

total: 648 + 360 + 720 = $1728\ in^2$

c) Since one square foot equals 144 in^2, what is the surface area of the box *in square feet?*

12 × 12 = 144 in^2

$1728 \div 144 = 12\ ft^2$

d) Can she make the box from a single sheet of 4 feet × 8 feet plywood?

8 × 4 = 32 ft^2

↳ Yes!

e) If the material (wood) costs $3.50 per ft^2, how much does Jen pay for it?

$32\ ft^2 \times \$3.50 = \$112.00$

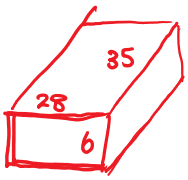
Assignment pg 14-17 # 1-6

Day 3 Assignment: Surface Area of 3-D Objects

You will need a formula sheet for this assignment.

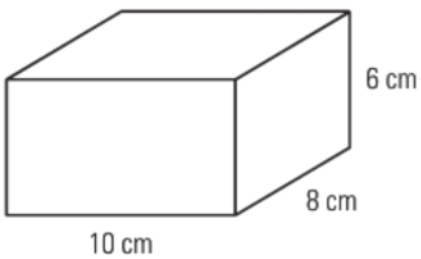
1) Darcy has a summer job painting houses. He is asked to paint the wooden siding on a house that is 28 feet wide and 35 feet long. The siding extends 6 feet up the side of the house.

   a) What is the total surface area that he must paint? Sketch the front and side view of the house to help with your calculation.

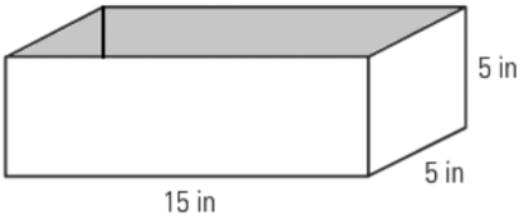


   b) A one-gallon can of the stain that Darcy is using covers approximately 225 ft^2. If Darcy applies 2 coats of stain, how many cans of stain should he buy?

2) Calculate the surface area of the shape given below. Show your work clearly.



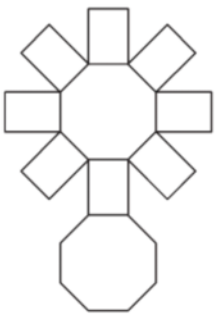
3) The following box has negligible thickness, and has an open top. Calculate it's *inside surface area.*



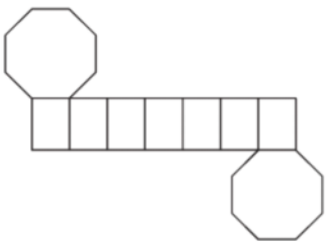
4) Cody says that Diagram A is the net of a right octagonal prism. Maddie disagrees, and says Diagram B is the correct net for a right octagonal prism.

Who is correct? Explain your answer.

A:

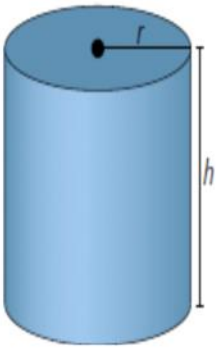


B:



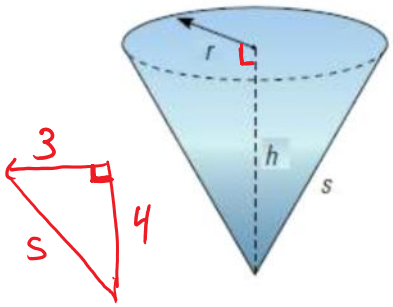
5) Find the surface areas of the objects:

a) A narrow cylinder with radius 4 **cm** and height 7 **m**.

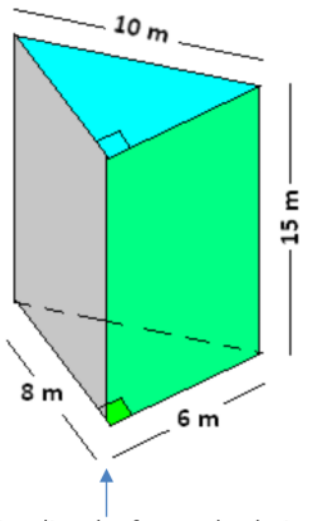


b) A tennis ball of diameter 6.7 cms

c) A cone with radius 3 cm, and height 4 cm.



6) Draw the net of the triangular prism below, then calculate its surface area.



Visualize the front edge being snipped open, so that the object can lay flat