Part B: Area of Two Dimensional Objects
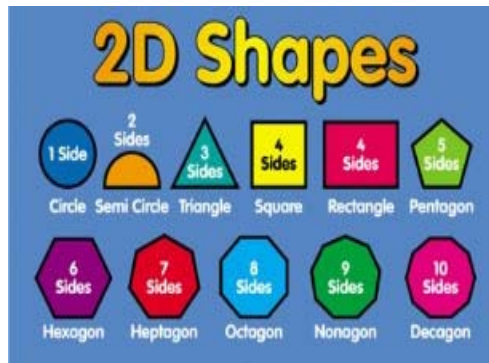
- To calculate the area of an object, all measures must in the same units. Therefore prior to performing any calculations convert all measurements to the same units.

- A composite figure is a figure that is made up through the combination of 2 or more basic shapes. For example the shape below is a composite figure that is made up of a triangle and a square.
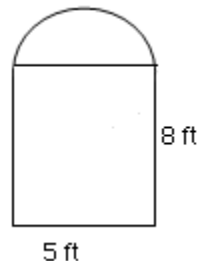

http://www.localpropertyindex.com/Search/ForSale/Rural%20House/derbyshire/400000/500000/0
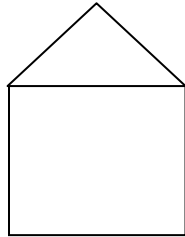
Example

The Norman window in the hallway of a house is in the shape of a rectangle with a semicircle top. The rectangular portion has a width of 5 ft and height of 8 ft.

a) Determine the area of the glass in the window to the nearest tenth of a square foot.

b) Determine the perimeter of the window to the nearest tenth of a foot.

http://www.bedfordshire.gov.uk/CommunityAndLiving/ArchivesAndRecordOffice/CommunityArchives/LittleBarford/LittleBarfordChurchArchitecture.aspx

Solution

a) Calculate the area of the rectangular portion of the window.

Calculate the area of the semicircular portion of the window. The radius of the semicircle is half the width of the window, or 2.5 ft.


To calculate the total area of the window you must add the area of the rectangle and the area of the semicircle together

Therefore the window is approximately 49.8 ft^2.

b) Calculate the perimeter of the rectangular portion of the window.

Calculate the perimeter of the semicircular portion of the window.

Determine the perimeter of the window by adding the perimeter of the rectangular and semicircular portions of the window

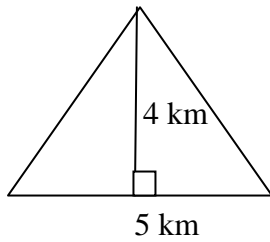Therefore the perimeter of the window is approximately 28.9 ft.

Practice

1. Calculate the area of each shape showing all work while maintaining proper units throughout.
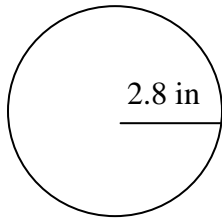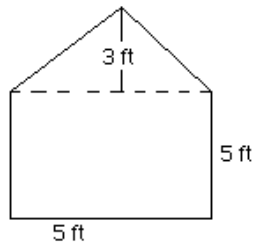
a)

3 m

2.2 m

5 m

b)

4 km

5 km

c)

2.8 in
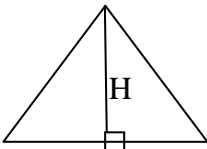
d)

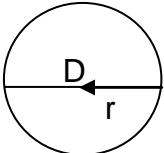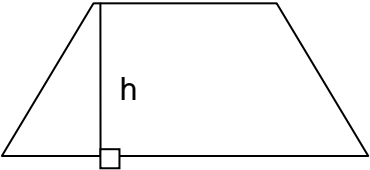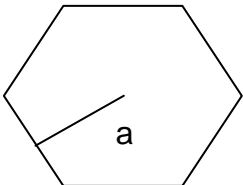

3 ft

5 ft

5 ft

e)

7 m

5 m

4 m

3 m
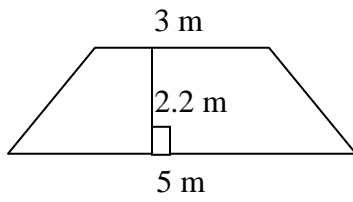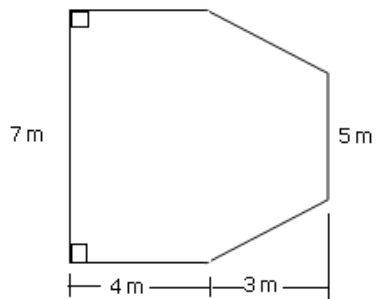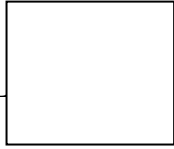
2. Delmar hired a contractor to tile his bathroom floor. The dimensions of the laundry room are 4.5 ft by 6.75 ft. He plans to use square tiles that are 14 in. by 14 in. and that cost $1.49 per square foot.
   a) What is the minimum number of tiles that Delmar should purchase, including 10% for wastage?
   b) Determine the total cost before and after taxes considering a 13% HST tax.
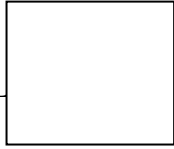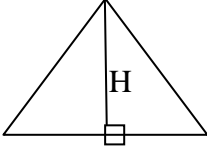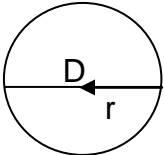
3. Delmino designed a deck as shown

http://hoehnenlandscaping.com/hardscape/design/custom-wood-decks
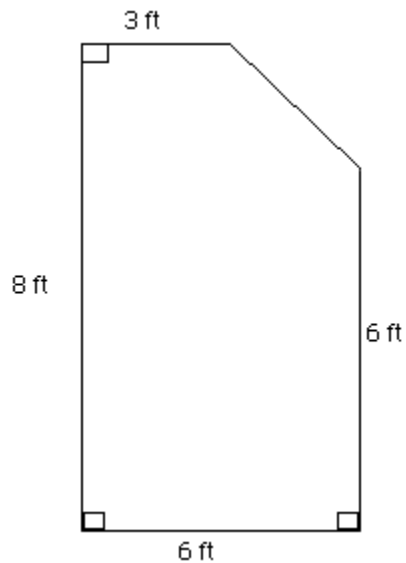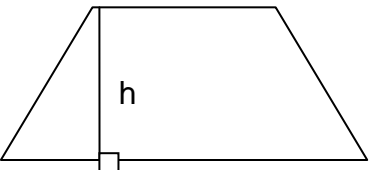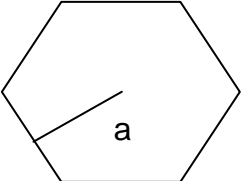
   a) Explain how Delmino could calculate the area of his deck.
   b) Describe a second alternate method that Delmino could use to calculate the area.
   c) Calculate the area of Delmino's deck.

Formula Sheet – Student Copy

Shape and Diagram	Area
Square L	
Rectangle w ... L	
Triangle H B	
Circle D r	
Trapezoid a h b	
Polygon a	

Formula Sheet – Teacher Copy

Shape and Diagram	Area
Square L L	
Rectangle w L	
Triangle H B	——
Circle D r	
Trapezoid a h b	———
Polygon a	——