Problem Set 2: Polygons

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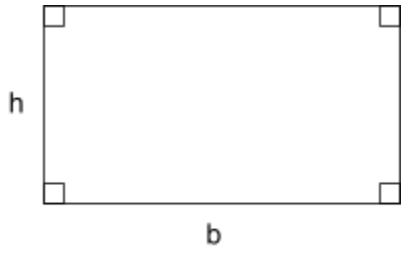
Getting started

- implement the specified functions in the code template below:
  - You should not do any input or printing in your functions
- Note: The old PS2a and PS2b have been archived:
  - Problem set 2a
  - Problem set 2b

```
'''
Name: YOUR NAME HERE
Problem set 2
'''

import turtle

def rectArea( b, h ):
    pass

def circleArea( r ):
    pass

def triangleArea( b, h ):
    pass

def houseArea( b, h ):
    pass

def drawRect( x,y, b, h ):
    pass

def drawCircle( x,y, r ):
    pass

def drawTriangle( x1,y1, x2,y2,x3,y3 ):
    pass

def drawHouse( x,y, b, h ):
    pass

def drawPent(x,y,s):
    pass

def drawStar(x,y,d):
    pass
```

```
def turtleStuff():

    drawRect( 100,100, 150, 100 )

    drawCircle( 100,-100, 50 )

    # test drawTriangle

    drawHouse( -100,100, 150, 100)

    # test drawPent and drawStar too!

def main():
    ra = rectArea( 4, 3 )
    print( ra )                 # 12

    ca = circleArea( 3 )
    print( ca )                 # 28.3

    ta = triangleArea( 4, 3 )   # 6
    print( ta )

    ha = houseArea( 4, 3 )      # 16
    print( ha )

    s = turtle.Screen()
    try:
        turtleStuff()
    finally:
        s.mainloop()

main()
```

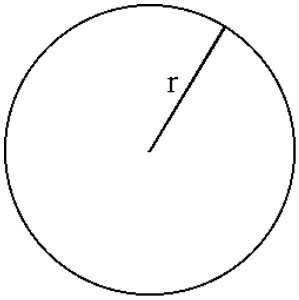
Areas



rectArea(b, h)

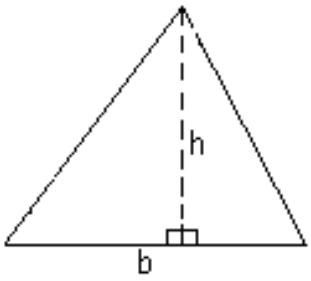
- parameters
  - b: base width of rectangle
  - h: height of rectangle
- return
  - area of rectangle

circleArea(r)



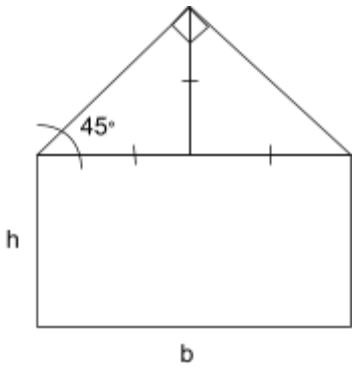
- formula:
  - $A = \pi r^2$
- parameters:
  - r: radius of circle
- return
  - area of circle

triangleArea(b, h)



- formula:
  - $A = \frac{bh}{2}$
- parameters
  - b: base width of triangle
  - h: height of triangle (perpendicular to base)
- return:
  - area of triangle

houseArea(b, h)



- parameters
  - b: base length of house
  - h: height of house to roofline (bottom of roof)
- return
  - area of house
- note:
  - you can assume that the roof is formed by two adjacent isosceles triangles. in other words, each triangle's base and height are each one-half the base length of the house.

Drawing

drawRect(x, y, b, h)

- parameters:
    - x, y: position
    - b, h: width and height

drawCircle(x, y, r)

- parameters:
    - x, y: position
    - r: radius of circle

drawTriangle(x1, y1, x2, y2, x3, y3)

- draw a triangle
- parameters:
    - Indicate the three points of the triangle

drawHouse(x, y , b, h)

- parameters
    - x, y: position
    - b, h: same as above

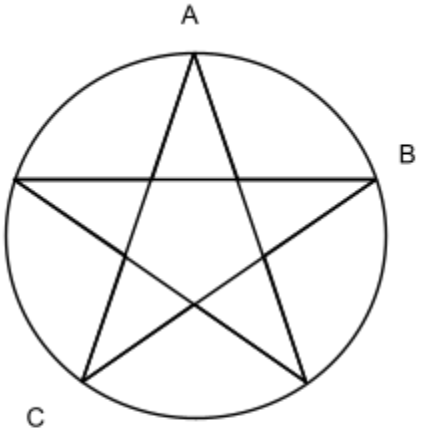
drawPent(x, y, s)

- Draw a regular pentagon
- Parameters:
    - x, y: position
    - S: side length

drawStar(x, y, d):

- Draw a 5-pointed star
- Parameters:
    - x, y: position
    - d: diameter

Hints



The measure of arc AB is 2X the measure of angle ACB.

For example, for a 5-pointed star:
m arc AB = 360/5 = 72 degrees.
m angle ACB = 72/2 = 36 degrees.