Practice Exercise #08: Triangle Centroid

http://www.comp.nus.edu.sg/~cs1020/4_misc/practice.html

Reference: Week 2 OOP Part 1

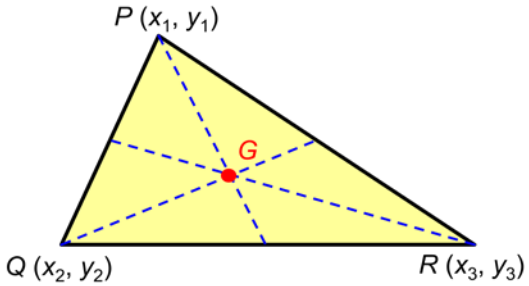
Objectives:

1. Using **Point** class (package: java.awt)
2. Using **Point2D.Double** class (package: java.awt.geom)

Task statement:

In a triangle, a *median* is a line that connects a vertex to the midpoint of its opposite side. The intersection the of 3 medians is called the ***centroid***.

In the diagram on the right, the medians are shown as blue dotted lines, and point *G* is the centroid.



Write a program **TriangleCentroid.java** to read in the coordinates (type **int**) of 3 vertices *v1*, *v2* and *v3* of a triangle.

Your program should call the method

centroid(v1, v2, v3)

to compute the centroid of the triangle, and return the centroid as an object of class **Point2D.Double** (because the co-ordinates of the centroid may not be integers).

Hint 1: The x-coordinate (y-coordinate) of the centroid is the average value of the x-coordinates (y-coordinates) of the 3 vertices.

Hint 2: To print a **Point** or **Point2D.Double** object, say *pt*, in their default format, you may write `System.out.println(pt.toString())` or simply `System.out.println(pt)` .

Sample runs:

Triangle with vertices (1, 2), (3, 10) and (5, 6):

```
Enter 3 vertices: 1 2 3 10 5 6
Centroid at Point2D.Double[3.0, 6.0]
```

Triangle with vertices (1, 9), (2, 5) and (12, 6):

```
Enter 3 vertices: 1 9 2 5 12 6
Centroid at Point2D.Double[5.0, 6.666666666666667]
```