

Name: \_\_\_\_\_

Class: \_\_\_\_\_

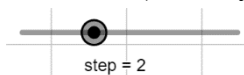
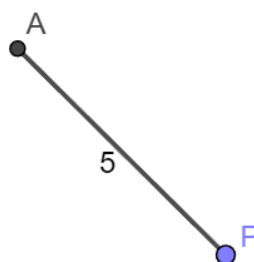
**Definition of Locus**

1. A locus is a collection of points which satisfy one or more given conditions. The locus of a moving point may be a line, a curve, or a region.
2. In describing the locus of a moving point, we should state the main features of the locus such as the shape, the size, and the position of the locus.
3. To sketch a locus means to draw a figure showing the main features of the locus as described.

**Part I**

Please follow the instructions and answer the question.

1. Suppose  $P$  is a moving point that maintains fixed distance from  $A$ , where  $AP = 5$  units.
  - (a) Drag the moving point  $P$  from the software and observe its locus, sketch the locus on the graph below.
  - (b) Describe the locus of  $P$ . (Check your answer by dragging the slider on the software to “step 2”).

**(a)****(b)**

## **Part II**

1. Proceed to “step 3” by dragging the slider on the software. The points  $A$  and  $P$  are now introduced to the coordinate plane, where  $A = (0, 0)$  and  $P = (x, y)$ .

Let  $B(3, 4)$  and  $C(-4, 3)$  be two points on the coordinate plane.

(a) Evaluate the distance of  $AB$  and  $AC$ .

(b) Does the locus of  $P$  pass through  $B$  and  $C$ ? (Check your answer at “step 4”)

(c) Express the distance of  $AP$  in terms of  $x$  and  $y$ .

(d) Proceed to “step 5”, discuss the meaning of the solution obtained from (c).