1.01 - CONSTRUCTION BASICS

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Objective(s) * Create diagrams using a straightedge * Use a compass to construct a circle

Required materials: compass, straightedge, patty paper

Warm Up

Gain familiarity with the construction tools by drawing multiple lines and circles. Then, follow these steps: * Draw a point, label it A * Draw a circle centered at A * Mark a point on the circle, label it B * Draw a circle centered at B going through A * Draw segment $\overline{AB}$

DEFINITIONS

Line segment: a set of points on a line with two endpoints . . . **Circle**: a set of all points that are the same distance (radius) from a given point (center)

Illegal Moves

Given segment $\overline{AB}$, follow these steps: * Draw a circle centered at A with radius AB * Mark a point at the middle of $\overline{AB}$, label it C * Draw a circle centered at B with radius BC * Label the intersection above B as D and below B as E * Draw segments $\overline{AD}$, $\overline{DE}$, and $\overline{AE}$, and trace ΔADE onto patty paper

DISCUSSION

Compare your ΔADE with your neighbors.

Why might they be different? How could we ensure they are all the same?

VALID CONSTRUCTION MOVES

- Draw points in blank space, on objects, and at intersections
- Draw segments, rays, and lines through two points
- Draw a circle centered at a point and through another point
- Set compass to a length between two points then move the compass

Perfect Copy

The figure shows the first few steps of constructing a regular hexagon. Complete the construction.

(image)

REFLECTION

How does your regular hexagon compare to your neighbors?

A **regular polygon** has sides with equal lengths. How can you be sure your hexagon is a regular hexagon?

Summary

A straightedge can be used to create line segments. Line segments are named by its endpoints.

A compass can be used to create circles. Circles are named by its center and radius.