Constructions Using Miras™

Construct a line through a given point perpendicular to a given line

Step 1: Draw a line on your paper. Label the line *m*. Draw a point on your paper that is **not** on line *m* and label this point P.

Step 2: Place a Mira™ on your paper so that the beveled edge of the Mira™ coincides with point P.

Step 3: Slide the Mira™ so that point P remains on the beveled edge of the Mira™ and all the points of the line *m* coincide with the reflection of line *m* in the Mira™.

Step 4: Using the beveled edge of the Mira™ as a guide, draw the line of reflection. Label this line *n*.

Step 5: What is the relationship of line *n* to $\overline{AB}$? Use mathematics to justify your answer.

Construct the perpendicular bisector of a line segment

Step 1: Draw a line segment on your paper. Label the endpoints A and B.

Step 2: Place a Mira™ on your paper so that the reflection of point A coincides with point B in the Mira™.

Step 3: Using the beveled edge of the Mira™ as a guide, draw the line of reflection. Label this line *n*.

Step 4: What is the relationship of line *n* to line *m*? Use mathematics to justify your answer.

Construct an angle bisector

Step 1: Draw an angle on your paper. Label the angle $\angle ABC$.

Step 2: Place the Mira™ on your paper so that the vertex of the angle coincides with the beveled edge of the Mira™.

Step 3: Slide the Mira™ so that ray BA coincides with ray BC.

Step 4: Using the beveled edge of the Mira™ as a guide, draw the ray that has B as its endpoint and that passes through the interior of $\angle ABC$. Label the ray BF.

Step 5: What is the relationship between $\angle CBF$ and $\angle ABF$? Use mathematics to justify your answer.

Answers: Construct a line through a point perpendicular to a given line

Step 5: Perpendicular. Perpendicular lines can be justified by measuring the right angles.

Constructing the perpendicular bisector of a line segment

Step 4: Perpendicular. The perpendicular bisector can be justified by measuring the right angles and congruent segments.

Construct an angle bisector

Step 5: Congruent angles. Angle congruence can be justified by measurement