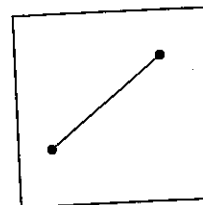## Open Investigation 2.2

FOLDING THE PERPENDICULAR BISECTOR OF A LINE SEGMENT

Step 1: Use your straightedge to draw a line segment on a patty paper.

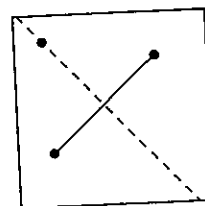**Step 2:** Experiment to find the perpendicular bisector of this segment by folding.

Step 3: Place a dot at the midpoint of the segment.

Describe the method you used to fold the perpendicular bisector of a segment.

_____

_____

Explain how you know that the line you folded is perpendicular to the original segment.

_____

_____

This is a very useful construction. You can use this method to find midpoints, construct perpendiculars, make 90 degree angles, and divide segments into congruent parts. If you wish to create just a midpoint, bring the endpoints of the segment together, and pinch!

Step 4: Place a point on the perpendicular bisector. What is special about each point on the perpendicular bisector? Experiment with your patty paper to find out.
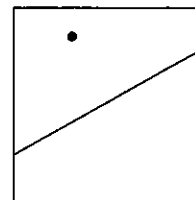
Guided Investigation 2.3
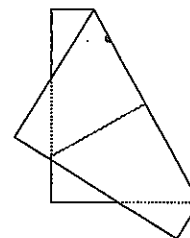
FOLDING A PERPENDICULAR FROM A GIVEN POINT TO A GIVEN LINE

one way to do this construction. You may want to experiment to find other ways.

Fold or draw a line on a patty paper. Place a dot on your patty paper to represent the given point.

Fold the line on top of itself so that the fold passes through the given point.

Step 3: Use a corner of another patty paper to check if the angles formed by the crease and the given line are right angles.

construction allows you to fold an altitude. It is also a way to determine the shortest distance from

...DING AN ANGLE BISECTOR
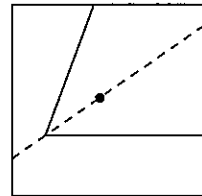
...our straightedge to draw an
...le on a patty paper.
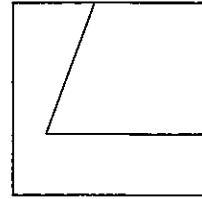
...ld the paper so that the crease appears to be the angle bisector.

...est to make sure this is true.

...the method you used to fold the angle bisector.

_____

_____

...ow you know the crease you folded is the angle bisector.

_____

_____

Step 4: Draw a point on the angle bisector.
What is special about this point?
Experiment with your patty paper
to find out.

Write a conjecture about the distances from a point on the angle bisector to the sides of an angle.

5 _____

_____

_____

In a later investigation you will use this conjecture to find the center of the inscribed circle of a triangle.