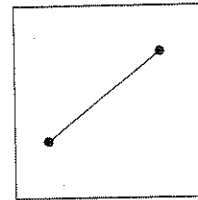




Open Investigation 2.2

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.

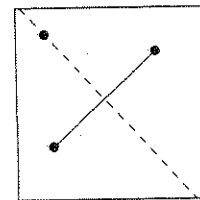
Step 3: Place a dot at the midpoint of the segment.

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.



Write a conjecture about the distances from a point on the perpendicular bisector to the endpoints of the line segment.



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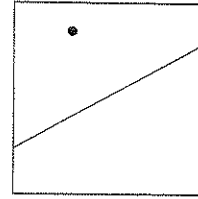
In a later investigation you will use this conjecture to find the center of the circumscribed circle of a triangle.



Open Investigation 2.3

FOLDING A PERPENDICULAR FROM A GIVEN POINT TO A GIVEN LINE

Step 1: Fold or draw a line on a patty paper.
Place a dot on your patty paper to represent the given point.



Step 2: Fold your patty paper so that the crease passes through the given point and is perpendicular to the given line. You may need to experiment a couple of times to find the perpendicular, but you can do it!

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.

Describe the method you used to fold a perpendicular from a given point to a given line.

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