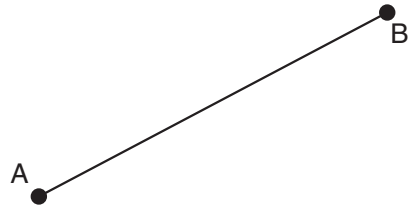
Project:

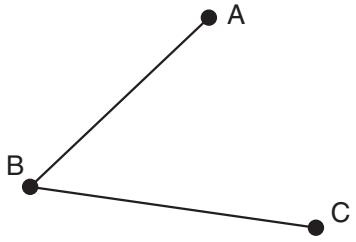
Two Basic Paper Folding Constructions and Why They Work!

This project deals with constructing the perpendicular bisector of a segment and constructing the bisector of an angle. These constructions are basic because many other constructions (e.g., constructing a square or finding the incenter of a triangle) are done by applying a combination of these basic constructions. Beyond knowing how to do these constructions, we will be particularly interested in understanding exactly why these constructions work. We will do these constructions using paper folding. Here are the two constructions:

Basic Construction A: Construct the perpendicular bisector of segment AB.



Basic Construction B: Construct the angle bisector of angle ABC.



A1: Def 2 pts
A2: Const 2 pts
A3: Describe 2 pts
A4: Why? 3 pts
B1: Def 2 pts
B2: Const 2 pts
B3: Describe 2 pts
B4: Why? 3 pts
Content: 4 pts
Style: 3 pts
Total: 25 pts

Your project is to take several pages in a standard sized notebook. These pages need to be presented in such a way that they would be readable and attractive if displayed on the wall of a geometry classroom. Be creative and visual – we want to support the idea that geometry can be both fascinating and beautiful. Be sure to read *Projects and Project Notebooks* which gives general information about projects (see page vi in the opening pages of the text).

For full credit your presentation must meet the following conditions:

Condition A1: Define in words and illustrate with pictures or a diagram what "perpendicular bisector of a segment" means.

Condition A2: Clearly show a paper folding construction of Basic Construction A.

Condition A3: Present a clear and detailed description of the construction given under condition A2.

Condition A4: Describe and/or illustrate how we know that the line (or crease) constructed really does bisect and is perpendicular to the segment we started out with.

Condition B1: Define in words and illustrate with pictures or a diagram what "bisector of an angle" means.

Condition B2: Clearly show a paper folding construction of Basic Construction B.

Condition B3: Present a clear and detail description of the construction given under condition B2.

Condition B4: Describe and/or illustrate how we know that the line (or crease) constructed really does bisect the angle we started out with.