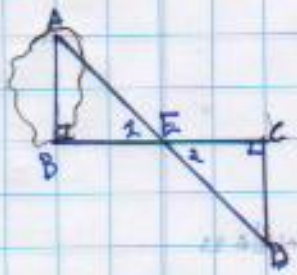
k. From the answers to the questions above, what can you say about the bisectors of two adjacent supplementary angles?

The bisector of two adjacent supplementary angles shall be perpendicular to each other, forming four equal angles onto its vertex.

4. AB represents the distance across a lake. BE is measured in a direction perpendicular to AB from B and EC is made equal to BE in length. Then CD is laid perpendicular to EC from C to a point D in a straight line with E and A. What do you know about $\angle 1$ and $\angle 2$? About $\angle B$ and $\angle C$?



What is true about $\angle 1$ and $\angle 2$? About $\angle B$ and C? What is true of triangles ABE and ECD? What line on dry land should be measured to find the width of the lake?

$EC = BE$ $\angle 1 + \angle 2 = 90^\circ$ $\angle 1$ and $\angle 2$ are supplementary angles, as their sum shall be a ~~straight~~ right angle.

$\angle B$ and $\angle C$ are equal, and their sum add up to a straight angle.

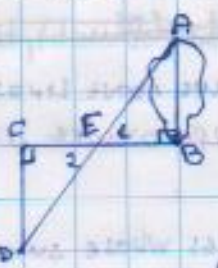
$\angle 1$ and $\angle 2$ are supplementary angles and equal to each other, or $\frac{1}{2}$ of a right angle.

$\angle B$ and $\angle C$ are half of a straight angle (each).

Triangles ABE and ECD are similar triangles, being right triangles.

CD or CE can be measured on land to find the height and width of the lake respectively.

5. A variation of problem 4 employs similar triangles. Instead of measuring off $EC = BE$, CD is paced off any length and A, E and D are sighted to be in a straight line. If two triangles have 2 angles equal and their corresponding sides are proportional. Knowing the lengths of BC, EC and CD, AB may be found from $AB/CD = BE/EC$.



If BE = 100 ft., EC = 35 ft. and CD = 49 ft, find AB.

$\frac{AB}{CD} = \frac{BE}{EC}$ $\frac{AB}{49} = \frac{100}{35}$ $AB = 140$ ft

$AB = 49\left(\frac{100}{35}\right)$

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2/26/2013