

Math 6140, Fall 2013: Homework # 8.

- See Figure 1. Given: M , N and P are midpoints; $DE = AP$, $DF = BN$, and $EF = CM$. To prove: the area of $\triangle DEF$ is $3/4$ of the area of $\triangle ABC$. (Hint: The triangle $\triangle DEF$ turns out to be congruent to a triangle that appears in the Figure illustrating Problem 3 of Homework 7. You may use what you proved in those problems.)

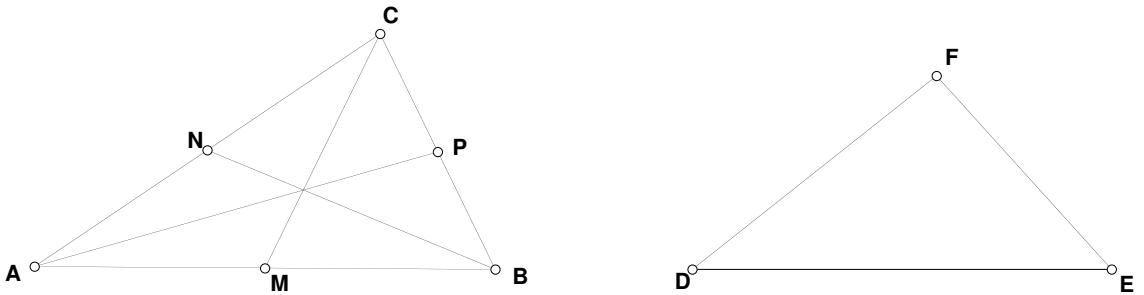


Figure 1

- (In this problem we prove what you discovered in Problem 2 of Assignment 7.) See Figure 2. Given: the things that look like squares are squares. To prove: the areas of the shaded triangles are all equal.

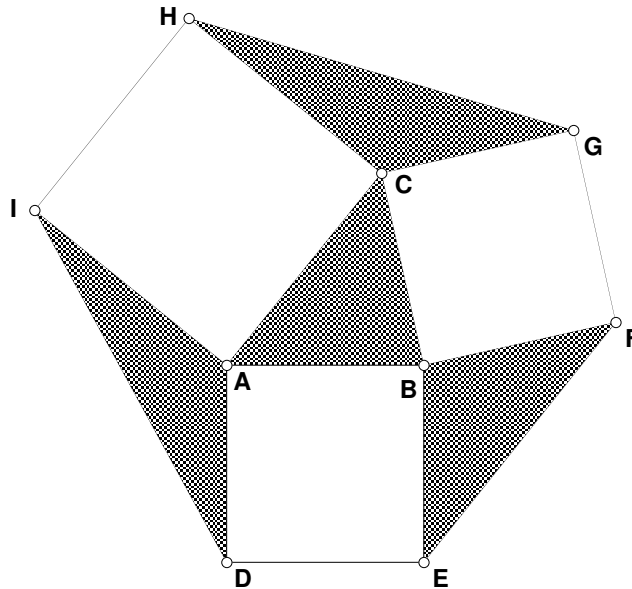


Figure 2

3. (See Figure 3.) Given: $AC = BC$ and $AD = BF$. To prove: $DE = EF$. Do not draw in any extra lines!

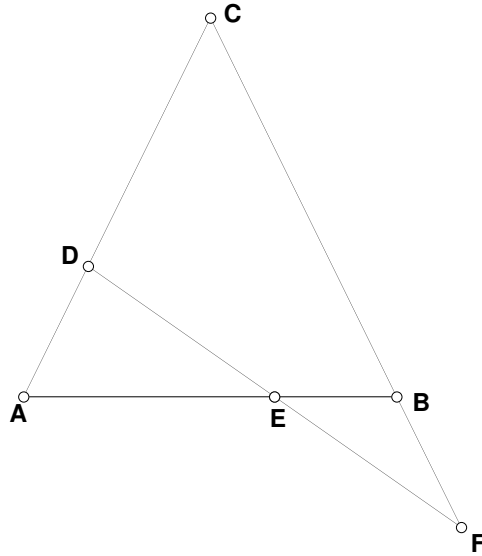


Figure 3

4. (See Figure 4.) Given: M , N and P are the midpoints of AB , AC and BC . To prove: $\frac{AD}{DB} = \frac{1}{2}$.

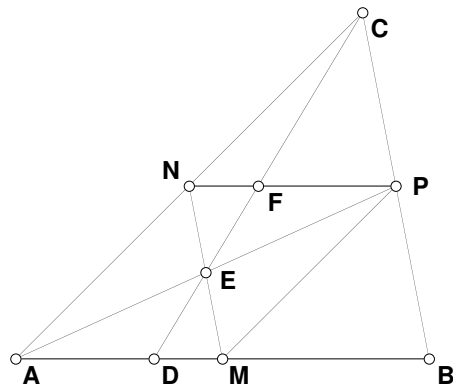


Figure 4

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