Handout 3: Oh, Yeah? Prove It
Answers

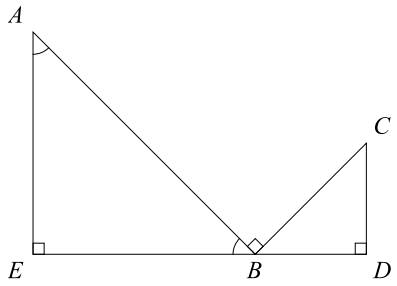

Figure 1

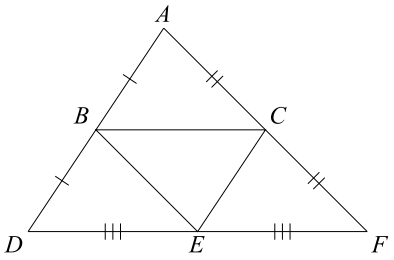

Figure 2

Use Figure 1 to prove that $\Delta ABE \sim \Delta CBD$ in questions 1-5.

1. What allows us to say that $\angle AEB = \angle CDB = \angle ABC = 90°$?
   This is given to us.
2. What's the sum of the measures of $\angle ABE$ and $\angle EAB$?
   $\angle ABE + \angle EAB = 90°$.
3. Fill in the blanks: _____ = _____ = 45°.
   $\angle EAB = \angle ABE = 45°$.
4. Find the measure of $\angle CBD$ and $\angle BCD$.
   $\angle ABE + \angle ABC + \angle CBD = 180° \Rightarrow \angle CBD = 4°$ and $\angle BCD = 180° - 45° - 90° = 45°$.
5. Prove that $\Delta ABE \sim \Delta CBD$.
   Since $\angle AEB = \angle CDB = 90°$, $\angle ABE = \angle CBD = 45°$, and $\angle EAB = \angle BCD = 45°$, we can pick any two and use the Angle-Angle Postulate to prove the triangles are similar.

Use Figure 2 to prove that $\Delta DAF \sim \Delta BEC$ in questions 6 – 10.

6. What allows us to say that B is the midpoint of $\overline{AD}$?
   Triangle Midsegment Theorem.
7. Find the ratio $BC : DF$.
   $\frac{BC}{DF} = \frac{1}{2}$.
8. Find the ratio $BE : AF$.
   $\frac{BE}{AF} = \frac{1}{2}$.
9. Find the ratio $CE : AD$.
   $\frac{CE}{AD} = \frac{1}{2}$.
10. Prove that $\Delta DAF \sim \Delta BEC$.
    Since $\frac{BC}{DF} = \frac{BE}{AF} = \frac{CE}{AD} = \frac{1}{2}$, by the Side-Side-Side Postulate, the triangles are similar.

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