

6.4 - Similarity Theorems

Mental Floss: Wed, Feb 14th

Solve the following proportion. (Hint: 2 solutions!)

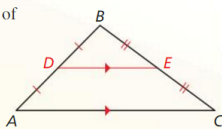
$$\frac{x+1}{x-1} = \frac{2x-1}{x+1}$$

$$\begin{aligned} \frac{x+1}{x-1} &= \frac{2x-1}{x+1} & x &= 0 \\ (x+1)(x+1) &= (2x-1)(x-1) & \frac{1}{-1} &= \frac{-1}{+1} \\ x^2 + 2x + 1 &= 2x^2 - 3x + 1 & -1 &= -1 \\ x^2 - 5x &= 0 & x &= 5 \\ x(x-5) &= 0 & \frac{6}{4} &= \frac{9}{6} \\ x &= 0, 5 & \frac{3}{2} &= \frac{3}{2} \end{aligned}$$

Theorem Triangle Midsegment Theorem

The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long as that side.

\overline{DE} is a midsegment of $\triangle ABC$, $\overline{DE} \parallel \overline{AC}$, and $DE = \frac{1}{2}AC$.



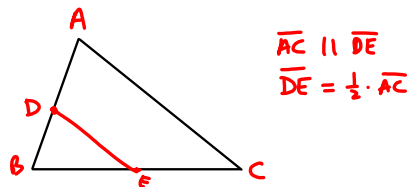
Proportion Theorems

1. Draw a triangle, labeling the vertices A, B, and C.
2. Using a ruler, find the midpoint of segments AB and BC. Label these D and E, respectively.
3. Draw segment DE.

Observations

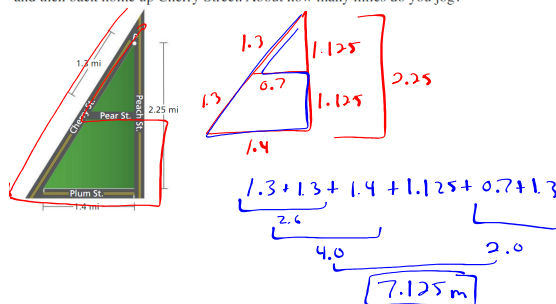
What appears to be the relationship between segments DE and AC?

There are 2 key points we are looking for. Write your observations below and discuss with your group.



Example #1 Modeling with Mathematics

Pear Street intersects Cherry Street and Peach Street at their midpoints. Your home is at point P. You leave your home and jog down Cherry Street to Plum Street, over Plum Street to Peach Street, up Peach Street to Pear Street, over Pear Street to Cherry Street, and then back home up Cherry Street. About how many miles do you jog?



Homework

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