

Warm Up

Use the diagram of  $\triangle ABC$  where D, E, and F are the midpoints of the sides.

Facts:  $AE = 16$ ,  $FE = 26$ ,  $AB = 5y + 7$ ,  $DF = -3x - 5$

Solve for x:

$$-3x - 5 = 16$$

$$-3x = 21$$

$$x = -7$$

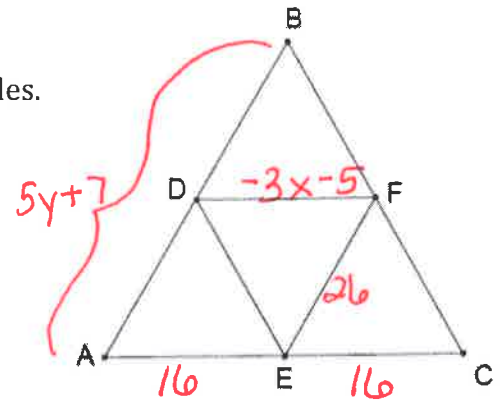
Solve for y:

$$2(26) = 5y + 7$$

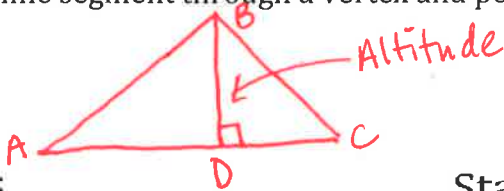
$$52 = 5y + 7$$

$$45 = 5y$$

$$9 = y$$



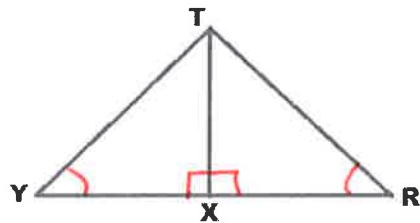
Altitude: a line segment through a vertex and perpendicular to the opposite side.



Example 1:

Given:  $\triangle TRY$  is isosceles  
 $\overline{TX}$  is an altitude

Prove:  $\frac{YT}{TR} = \frac{YX}{XR}$

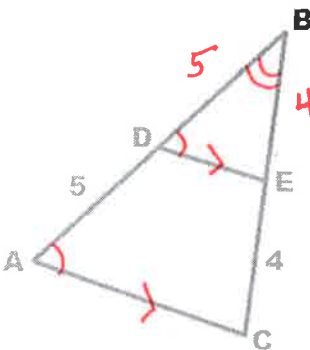


Statements	Reasons
1. $\triangle TRY$ is isosceles	1. Given
2. $\angle Y \cong \angle R$	2. Def. of Isosceles Triangles
3. $\overline{TX}$ is an altitude	3. Given
4. $\angle TXY \cong \angle TXR$	4. Def. of Altitude
5. $\triangle TYX \sim \triangle TRX$	5. AA ~ Postulate
6. $\frac{YT}{TR} = \frac{YX}{XR}$	6. Def. of Similar $\Delta$ 's

Example 2:

Given:  $\overline{DE}$  is a midsegment  
 $\overline{AD} = 5$ ;  $\overline{CE} = 4$

Prove:  $\triangle ABC \sim \triangle DBE$



Statements	Reasons
1. $\overline{DE}$ is a midsegment	1. Given
2. $\overline{AD} = 5$ ; $\overline{CE} = 4$	2. Given
3. $\overline{DE} \parallel \overline{AC}$	3. Def. of Midsegment
4. $\angle BDE \cong \angle A$	4. Corresp. $\angle$ 's are $\cong$
5. $\angle B \cong \angle B$	5. Reflexive Prop.
6. $\triangle ABC \sim \triangle DBE$	6. AA ~ Postulate