



**Problem 1 – The Angle Bisector Theorem**

1. What were the measures of the two angles created by your angle bisector ( $\angle BAX$  and  $\angle CAX$ )?

2. Record some of the measurements from page 1.3 after moving point  $X$ :

Distance from $X$ to side $\overline{AB}$	Distance from $X$ to side $\overline{AC}$

3. Complete the conjecture:

Any point on the angle bisector of an angle is \_\_\_\_\_ from the sides of the angle.

**Problem 2 – One Angle Bisector in a Triangle**

4. Record some of the measurements from page 2.2 after moving a vertex of  $\triangle ABC$ :

$AB$	$AC$	$BD$	$CD$

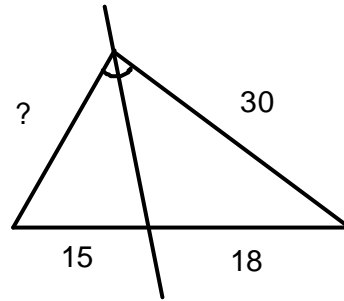
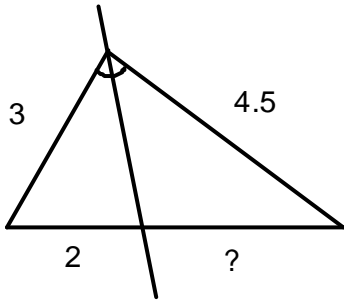
# Angle Bisectors in a Triangle

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5. Identify a pair of ratios that are equal. Drag a vertex of the triangle to confirm your conjecture.

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

6. Use your proportion to find the missing values for each:



### Problem 3 – One Angle Bisector and the Incenter of a Triangle

7. What is the value of the ratio  $\frac{DI}{DG}$ ? What is the value of the ratio  $\frac{DE + DF}{P}$ ?
8. What happens to these values when a vertex of the triangle is dragged?
9. Show the hidden angle bisector of  $\angle E$  or  $\angle F$ . Confirm that your conjecture is true for this other bisector. Drag a vertex of the triangle and observe the results.