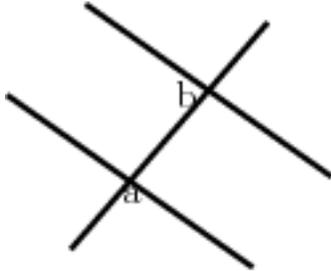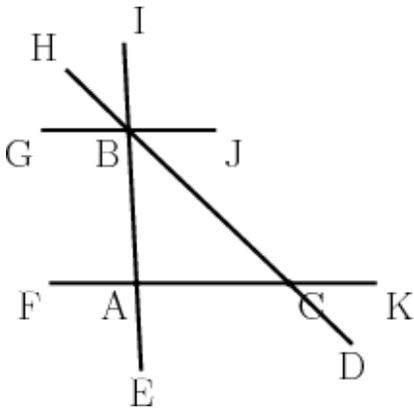Name _____   Date _____

1. QUESTION: What is the relationship between this pair of angles (equivalent or supplementary)?


ANSWER: Supplementary because b corresponds to the angle that is supplementary to a.

2. QUESTION: ∠ FAE measures $93°$. ∠ ABC measures $43°$. Find the measure of ∠ BCA.

ANSWER: 44 degrees because angle FAE is 93, which means that BAC is also 93 since they are vertical angles. Then 93 + 43 equals 136 and you need 44 more degrees to complete the 180 degrees in a triangle.
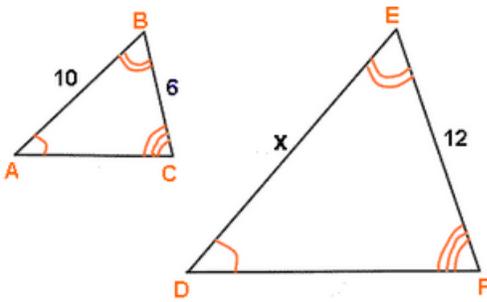
3. QUESTION: Are the two triangles similar? Explain.

39°
82° 79° 61°
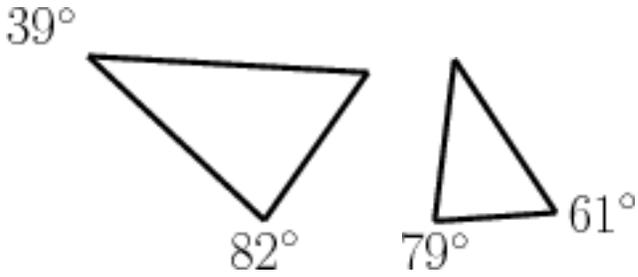
ANSWER: No, because not all the corresponding angles are congruent.
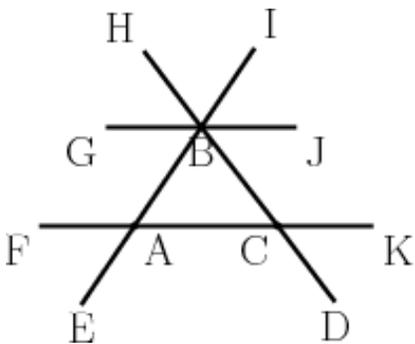
4.

Find x:

Answer: Scale factor is 12/6 = 2. Then 10 times 2 will give x, which is 20.

5. QUESTION: ∠ ACB measures 53°. ∠ ABC measures 71°. Find the measure of ∠ CAE.

ANSWER: 124° because by the exterior angle theorem, the sum of the non-adjacent interior angles should equal the exterior angle. Therefore, 71 + 53 should equal angle CAE.

6. Answer: The triangles are similar because all the corresponding angles are congruent (1 pair of right, 1 pair with the dot symbol are the same, and the last angle BAC is shared by both triangles).

The scale factor is 2 since 6/3 is 2. That means the sides on the larger triangle is doubled from the sides on the smaller triangle. In order to make line AD double of line AB, we need two 4's so x has to be 4. Then AD is 8 and 8 is double x = 4.
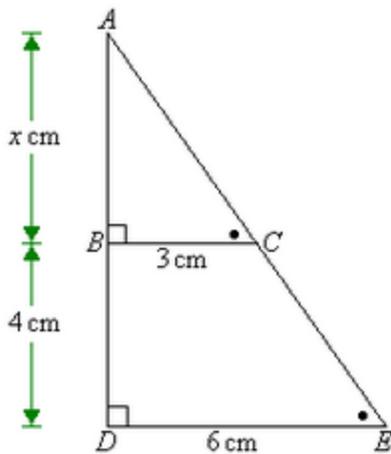
7. QUESTION: What is the relationship between this pair of angles (congruent or supplementary)?
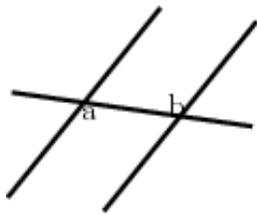
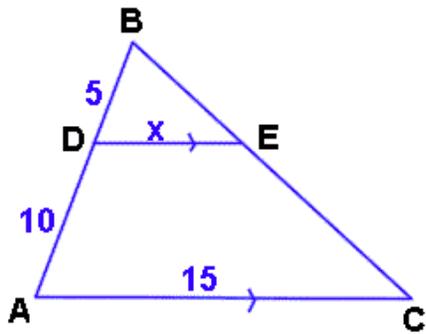ANSWER: Congruent because a and b are alternate interior angles.

8. QUESTION: What is the measure of each unlabeled angle as an algebraic expression?

ANSWER: The vertical angle, the corresponding angle, and the angle vertical to the corresponding angle "x." The other four angles are "180-x."

9. Triangles BDE and ABC are similar. DE and AC are parallel which means angles BDE and BAC are congruent (corresponding) and angles BED and BCA are also congruent. Both triangles share the third angle ABC so all corresponding angles in the two triangles are congruent.
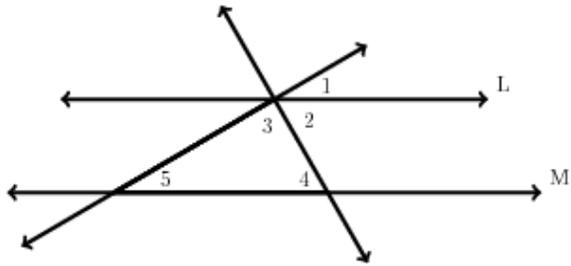
SF = 3 and x= 5

10. QUESTION: What is the relationship between this pair of angles (congruent or supplementary)?
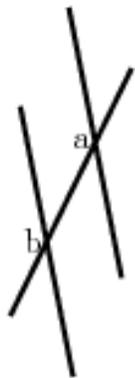
ANSWER: Congruent because a and b are corresponding.

11. QUESTION: Line L and Line M are parallel. Show that m $\angle 3$ +m $\angle 4$ + m $\angle 5$ = $180°$.

ANSWER: $\angle1 + \angle2 + \angle3 = 180°$

$\angle5 \cong angle1$ by corresponding angles

$\angle4 \cong angle2$ by alternate interior angles , $\angle3 + \angle4 + \angle5 = 180°$

12. Lines AC and A'C' are parallel. Triangles ABC and A'BC' are similar because are the corresponding angles are congruent. Since AC and A'C' are parallel, angles CAB and C'A'B are congruent (since they are corresponding) and angles BCA and BC'A' are also congruent (also corresponding). Lastly, the third angle ABC is shared by both triangles.

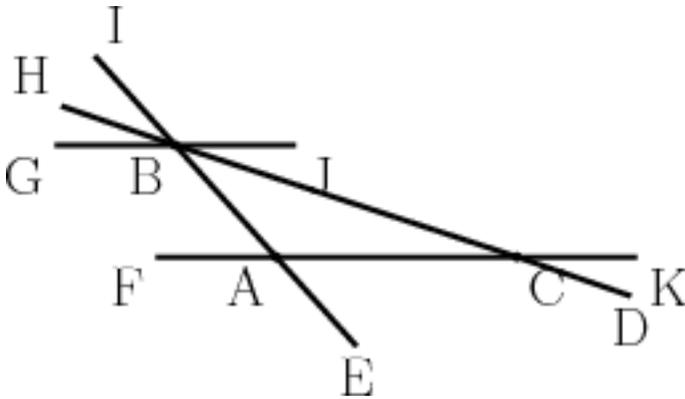SF = 22/14 and AB is about 47.14 so minus 30 makes x = 17.14
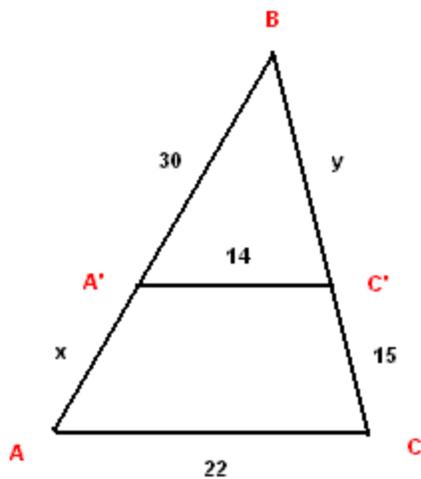
13.

Are triangles *PQR* and *STR* similar?
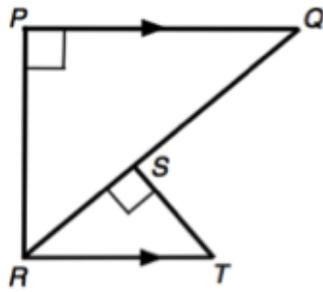
QUESTION:

ANSWER: Yes, both have a right angle and angles PQR and SRT are congruent since they are alternate interior angles. Then the third angle must also be congruent. All corresponding angles are congruent.
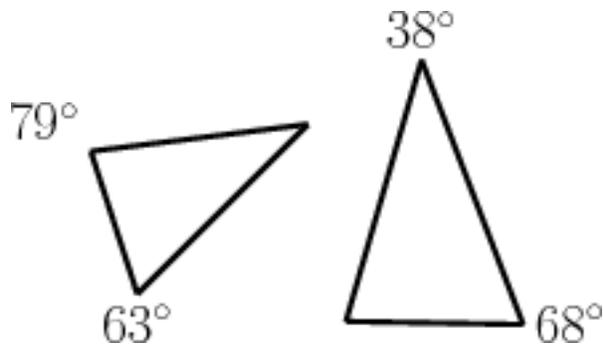
14. QUESTION: ∠ BAC measures $132°$. ∠ ACB measures $19°$. Find the measure of ∠ CBI.

ANSWER: $151°$ because by the exterior angle theorem, the sum of the non-adjacent interior angles should equal the exterior angle. Therefore, 132 + 19 should be the measurement for angle CBI.
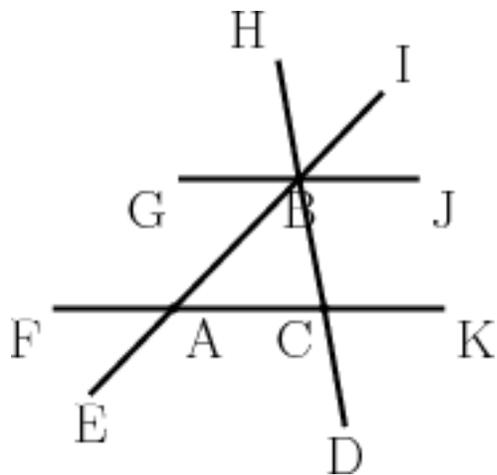
Alternatively, find the third angle measurement inside the triangle by 180 - 132 - 19 = 29. Angle ABC is 29 then angle CBI has to be 151 since they are supplementary.

15. QUESTION: Are the two triangles similar? Explain.

38°

79°

63°   68°

ANSWER: No, because not all the corresponding angles are congruent.

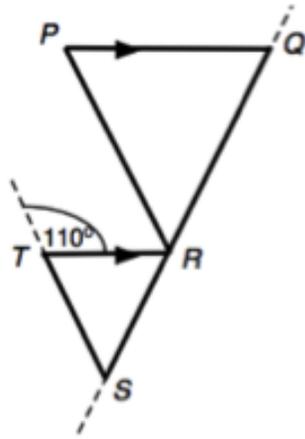16. QUESTION: ∠ BAC measures $46°$. ∠ ACB measures $80°$. Find the measure of ∠ ABH.

ANSWER: $126°$ because by the exterior angle theorem, the sum of the non-adjacent interior angles should equal the exterior angle. Therefore, 46 + 80 should equal angle ABH.

17. QUESTION: ∠ ACB measures $69°$. ∠ ABC measures $41°$. Find the measure of ∠ CAE.
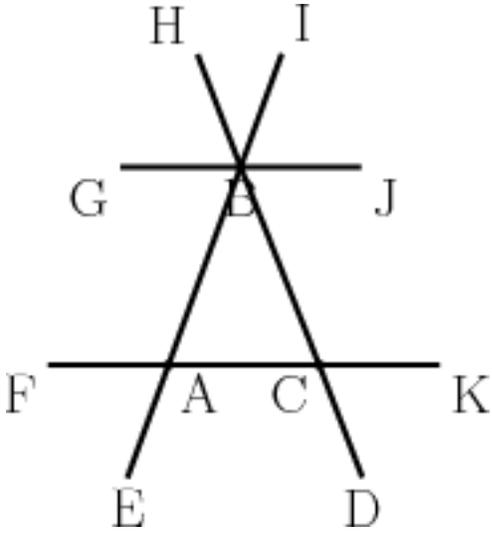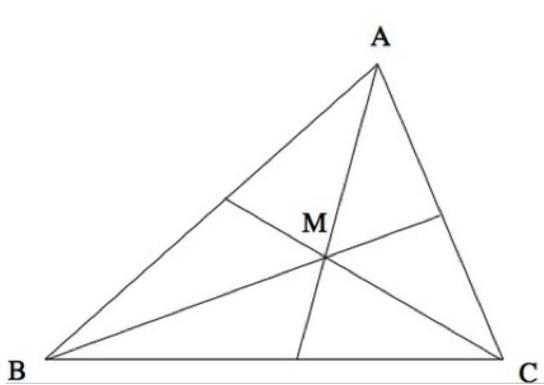
ANSWER: 110°

Are triangles PQR and TRS similar?

14. QUESTION:

ANSWER: No, they are not similar. We cannot assume that PR is parallel to TS.

15. QUESTION: In triangle $\triangle$ ABC, point M is the point of intersection of the bisectors of angles $\angle$ BAC, $\angle$ ABC, and $\angle$ ACB. The measure of $\angle$ ABC is $42°$, and the measure of $\angle$ BAC is $64°$. What is the measure of $\angle$ BMC?

ANSWER: The problem is solved by applying the Triangle Sum Theorem twice. First apply it to the triangle ABC to find the measure of angle ACB. This angle has measure $180°$ - $(64°$ $+42°)= 180°$ $-(106°)= 74°$. Now consider the triangle BMC. The measure of angle MBC is half the measure of angle ABC, so m $\angle$ MBC is $21°$. Similarly, the measure of angle MCB is half of angle ACB, so m $\angle$ MCB is $37°$. Now use the Triangle Sum Theorem on the triangle BMC to find that the measure of angle BMC is $180°$ - $(37° +21°)= 180°$ - $58°=122°$.