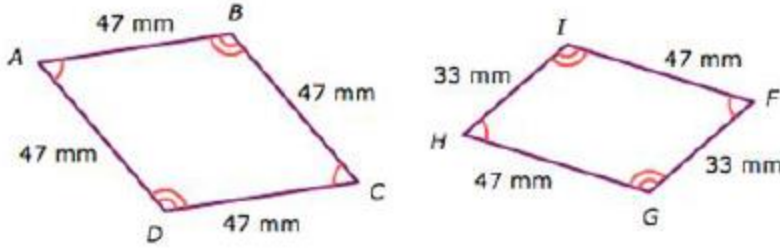Name: _____   Date: _____

UNIT 5   **LESSON 2**

**AIM: WHAT ARE THE PROPERTIES OF SIMILAR TRIANGLES?**

Do Now: Are these shapes similar? Explain your reasoning.

NOTES:

- Rigid motions produce _____ figures. Corresponding side and angle measures are _____!
- Dilations produce _____ figures. Corresponding angle measures are _____, but
- corresponding side measures are _____!
- Corresponding _____ are also in proportion! In other words, perimeters share the same scale factor as the corresponding side lengths.
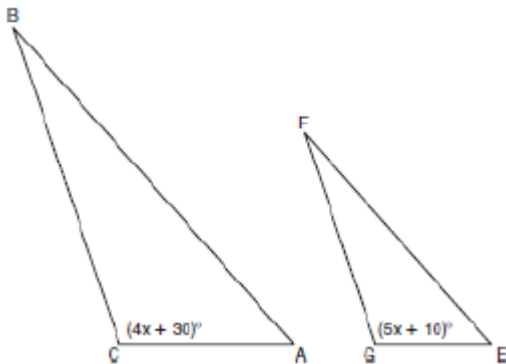- To identify corresponding sides and angles, follow the order of the letters!

If $\triangle ABC \sim \triangle DEF$, identify all corresponding sides and angles.
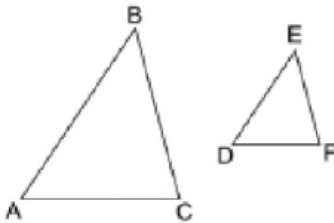
$$\frac{AB}{DE} = \frac{\square}{DF} \qquad \frac{EF}{\square} = \frac{DE}{AB} \qquad \frac{AC}{BC} = \frac{\square}{EF}$$
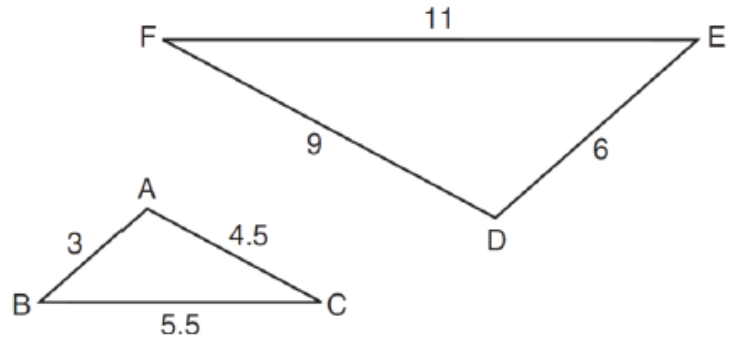
SIDES	ANGLES

1. In the triangle below, $\triangle ABC \sim \triangle EFG$, $\angle C = 4x + 30$ and $\angle G = 5x + 10$. Determine the value of x.
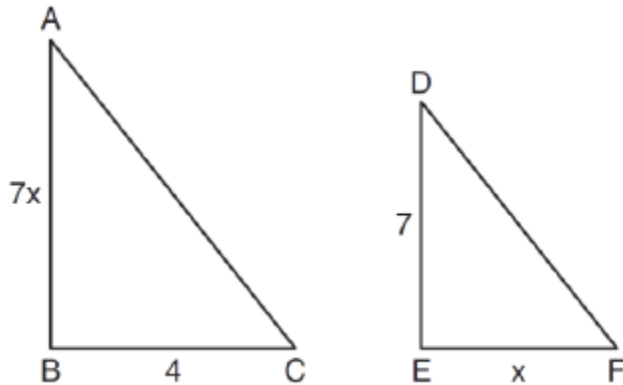
2. In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of 180° and a dilation where $\overline{AB} = 3, \overline{BC} = 5.5, \overline{AC} = 4.5, \overline{DE} = 6, \overline{FD} = 9$ and $\overline{EF} = 11$. Which relationship must always be true?

1) $\dfrac{m\angle A}{m\angle D} = \dfrac{1}{2}$

2) $\dfrac{m\angle C}{m\angle F} = \dfrac{2}{1}$

3) $\dfrac{m\angle A}{m\angle C} = \dfrac{m\angle F}{m\angle D}$

4) $\dfrac{m\angle B}{m\angle E} = \dfrac{m\angle C}{m\angle F}$

3. In the diagram below, $\triangle ABC \sim \triangle DEF$, what is the value of $\overline{AB}$?

4. In the movie, *Innerspace* (1987), Dennis Quaid is miniaturized and accidentally injected into a nervous grocery clerk, played by Martin Short. Quaid travels throughout the human body in a miniaturized ship. If the dimensions of the ship and its miniaturized version are depicted by the triangles below, find the height of the original ship.
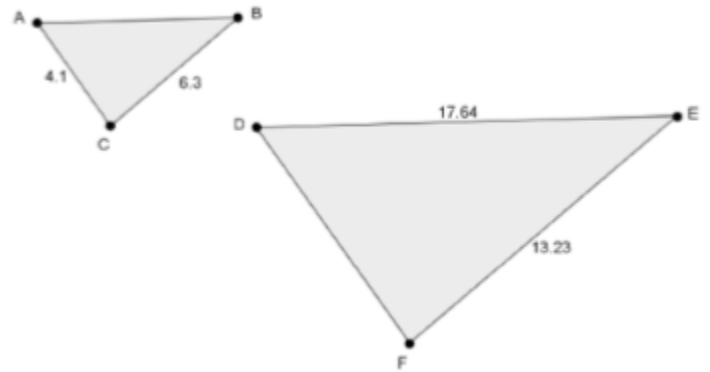
5. In the diagram below, $\triangle QRS \sim \triangle LMN$, find the length of $\overline{ML}$.
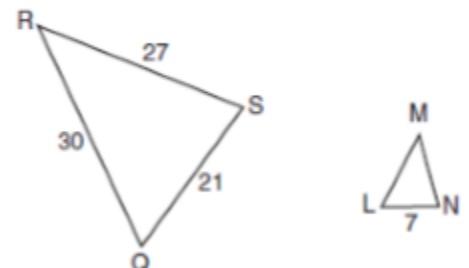
6. Given the labeled diagram, find x.
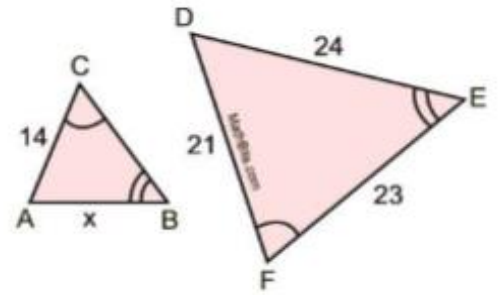
7. Given that $\Delta ABC \sim \Delta DEF$, find the length of $\overline{AB}$ and $\overline{DF}$.

8. Two triangles are similar. The lengths of the sides of the smaller triangle are 3, 5, and 6, and the length of the longest side of the larger triangle is 18. What is the perimeter of the larger triangle?

9. On a scale drawing of a new school playground, a triangular area has sides with lengths of 8 centimeters, 15 centimeters, and 17 centimeters. If the triangular area located on the playground has a perimeter of 120 meters, what is the length of its longest side?
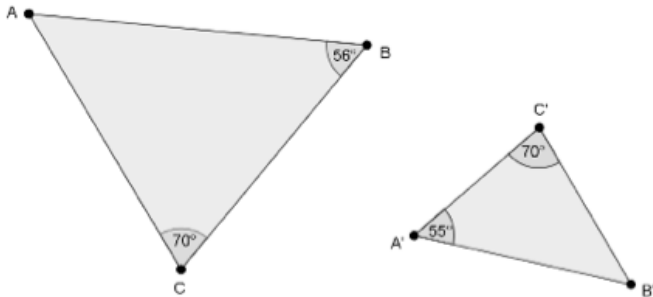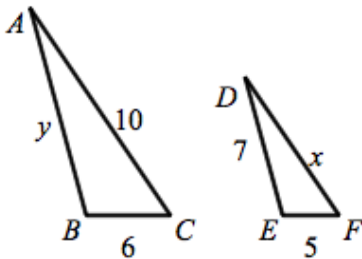
HOMEWORK

1) Are the triangles shown below similar? Justify your answer.	2) If $\triangle ABC \sim \triangle ZXY$, $m\angle A = 50$, and $m\angle C = 30$, what is $m\angle X$?
3) Given: $\triangle ABC \sim \triangle DEF$, solve for x and y.	4) The base of an isosceles triangle is 5 and its perimeter is 11. The base of a similar isosceles triangle is 10. What is the perimeter of the larger triangle?

5) Delroy's sailboat has two sails that are similar triangles. The larger sail has sides of 10 feet, 24 feet, and 26 feet. If the shortest side of the smaller sail measures 6 feet, what is the perimeter of the *smaller* sail?