

# Geometry B Live Lesson Class

## U2L6 – Similarity Unit Review



# Agenda



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1. Review lesson material associated with similarity to prepare for the Unit 2 test.

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

# 2-Column Notes Template



1. Announcements/To Do's
2. School-Wide Learner Outcomes
3. LL Objectives
4. Vocabulary words
5. Problems
6. Summary (End of class)

1. Write down important details.
2. What are you going to work on this week?
- 3.
4. Definitions (fill in as we go)
5. Steps to solving problems
6. 1 or 2 sentences about the LL class.

# U2L6 – Objectives



- Review lesson material associated with similarity to prepare for the Unit 2 test

# U2L6 – Vocabulary



- Cross Products Property
- extended proportion
- extended ratio
- extremes
- geometric mean
- indirect measurement
- means
- proportion
- ratio
- scale
- scale drawing
- scale factor
- similar figures
- similar polygons

# U2L6 – Things to Know for the Test



- Working with ratios between values with different units
- Extended ratios
- Scale drawings
- Determining if two polygons are similar
- Solving proportions to find missing lengths in similar figures
- Proportions in triangles
- Finding the geometric mean
- Similarity in right triangles (altitude drawn to the hypotenuse)
  - Writing similarity statements among the three triangles
  - Use geometric mean formulas to find missing lengths (corollary 1 and 2 of Theorem 7-3)
- Using the Properties of Proportions



## U2L6 - Ratios

The diameter of a salad plate is 8 inches. The diameter of a dinner plate is 1 foot. Write the ratio of the diameter of the salad plate to the diameter of the dinner plate.

$$\frac{8 \text{ in.}}{12 \text{ in.}} = \frac{3}{4}$$

## U2L6 – Extended Ratios



The ratio of cups of tomatoes, onions, and avocado to make guacamole is 2:1:3. If you want to make 12 cups of guacamole for a party, how many cups of avocado do you need?

$$2x + 1x + 3x = 12$$

$$6x = 12$$

$$x = 2$$

4 cups of tomatoes

2 cups of onions

**6 cups of avocados**





# U2L6 – Proportions

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Use the proportion  $\frac{x}{z} = \frac{6}{5}$ . Complete each statement.]

$$\frac{z}{x} = \frac{\boxed{5}}{\boxed{6}}$$

$$5x = \boxed{6z}$$

$$\frac{x + z}{z} = \frac{\boxed{6+5}}{\boxed{5}}$$

# U2L6 – Scale Drawings



A photo is 5 inches by 7 inches. You want to enlarge the photo and put it on a canvas that is 120 inches by 200 inches. Will the enlarged photo fit on the canvas?

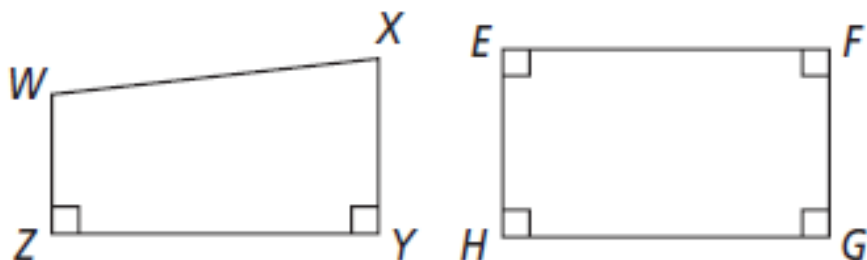
$$\frac{5}{7} \quad \frac{120}{200}$$

$$\frac{120}{200} = \frac{12}{20} = \frac{3}{5}$$

# U2L6 – Similar Polygons



Are the two polygons similar? Explain.



# U2L6 – Proving Triangles Similar

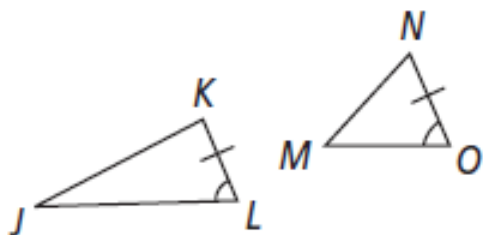


	First show that...	To use the...
$\angle S \cong \angle M$ and $\angle R \cong \angle L$ 	Two angles of one triangle are congruent to two angles of another triangle	AA ~ Postulate
$\frac{AB}{QR} = \frac{AC}{QS}$ and $\angle A \cong \angle Q$ 	If an angle of one triangle is congruent to an angle of a second triangle, and the sides that include the two angles are proportional	SAS ~ Theorem
$\frac{AB}{QR} = \frac{AC}{QS} = \frac{BC}{RS}$ 	Corresponding sides of two triangles are proportional	SSS ~ Theorem

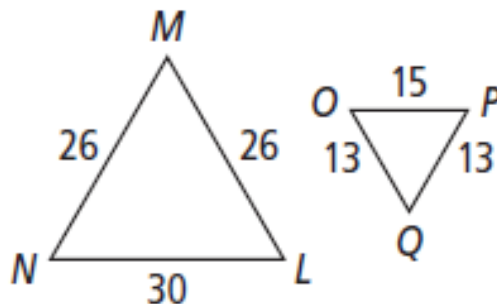
# U2L6 – Similar Triangles



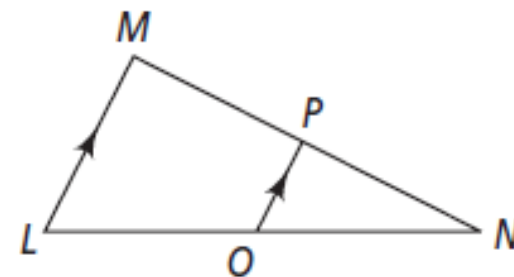
Determine whether the triangles are similar. If so, write a similarity statement and name the postulate or theorem you used. If not, explain.



No, not enough info.



$\triangle NML \sim \triangle PQO$  by SSS~



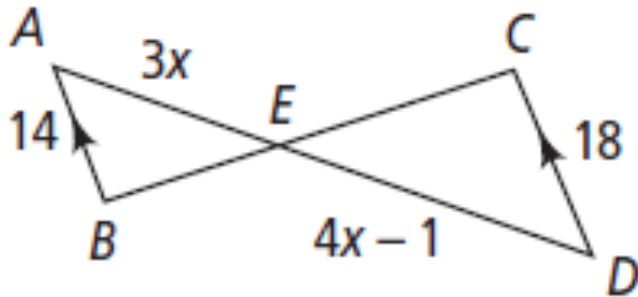
$\angle NML \cong \angle NPO$  and  $\angle NLM \cong \angle NOP$

$\triangle NML \sim \triangle NPO$  by AA~



# U2L6 – Similar Triangles

The triangles are similar. Find the value of  $x$ .



$$\frac{3x}{4x - 1} = \frac{14}{18}$$

$$18(3x) = 14(4x - 1)$$

$$54x = 56x - 14$$

$$54x - 54x = 56x - 54x - 14$$

$$0 = 2x - 14$$

$$\mathbf{x = 7}$$

$$\frac{21}{14} = \frac{27}{18}$$

$$\frac{3}{2} = \frac{3}{2}$$

## U2L6 – Geometric Mean



Find the geometric mean of 5 and 25.

$$\frac{5}{x} = \frac{x}{25}$$

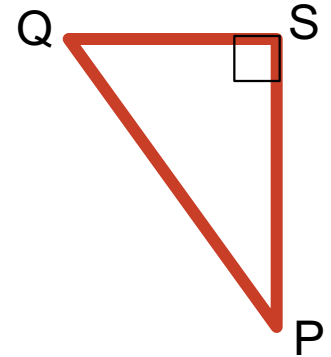
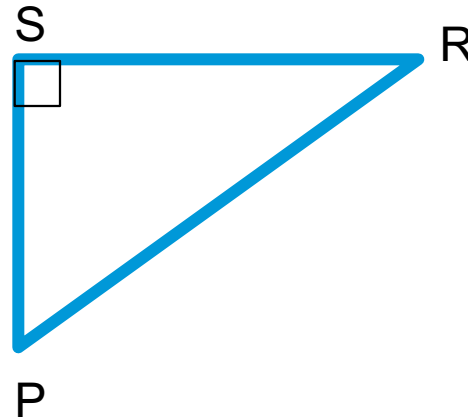
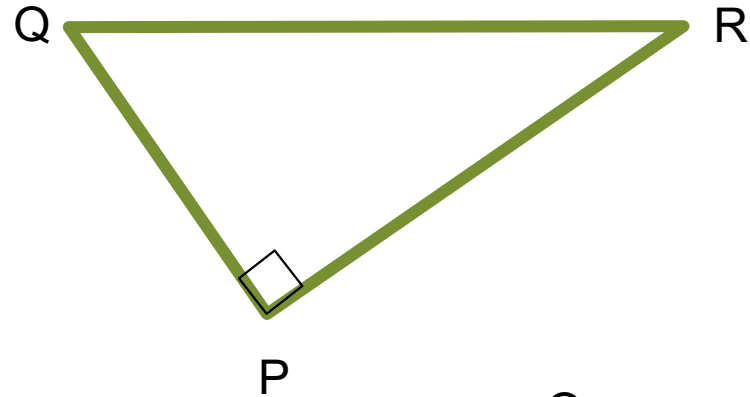
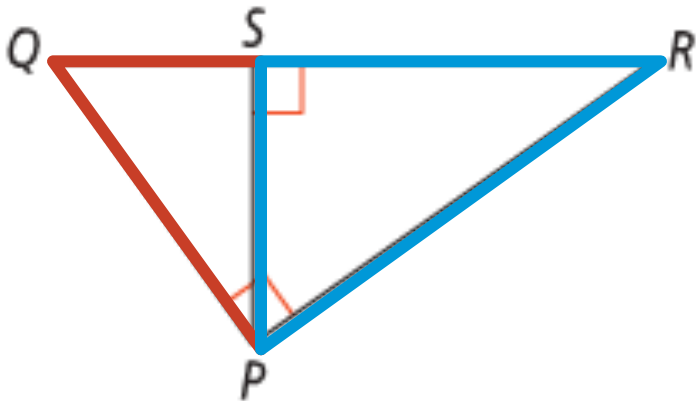
$$x^2 = 125$$

$$x \approx 11.18 \text{ or } 5\sqrt{5}$$

# U2L6 – Similarity in Right Triangles



What similarity statement can you write relating the three triangles in the diagram?



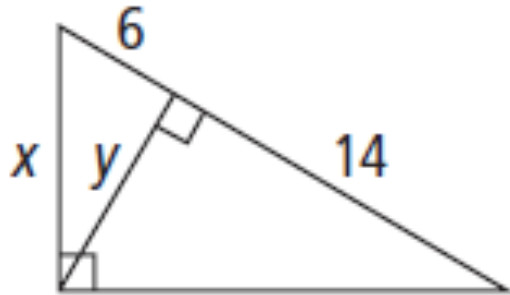
$$\Delta RPQ \sim \Delta RSP \sim \Delta PSQ$$



# U2L6 – Similarity in Right Triangles



Find the values of  $x$  and  $y$ .



$$\frac{6}{y} = \frac{y}{14}$$

$$\frac{20}{x} = \frac{x}{6}$$

$$y^2 = 84$$

$$x^2 = 120$$

$$\sqrt{y^2} = \sqrt{84}$$

$$\sqrt{x^2} = \sqrt{120}$$

$$y \approx 9.17$$

$$x \approx 10.95$$

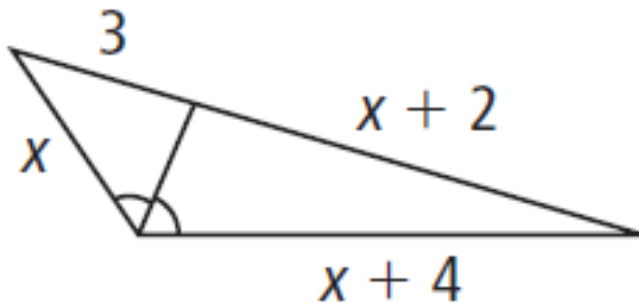
$$\frac{\text{small piece of hypotenuse}}{\text{altitude}} = \frac{\text{altitude}}{\text{large piece of hypotenuse}}$$

$$\frac{\text{Total hypotenuse}}{\text{Leg}} = \frac{\text{Leg}}{\text{Adjacent piece of hypotenuse}}$$

# U2L6 – Proportions in Triangles



Solve for x.



$$\frac{x + 2}{3} = \frac{x + 4}{x}$$

$$3(x + 4) = x(x + 2)$$

$$3x + 12 = x^2 + 2x$$

$$3x - 3x + 12 = x^2 + 2x - 3x$$

$$12 = x^2 - x$$

$$12 - 12 = x^2 - x - 12$$

$$0 = x^2 - x - 12$$

$$0 = (x - 4)(x + 3)$$

$$x - 4 = 0 \text{ or } x + 3 = 0$$

$$x = 4 \text{ or } x = -3$$

$$\mathbf{x = 4}$$

$$\frac{4 + 2}{3} = \frac{4 + 4}{4}$$

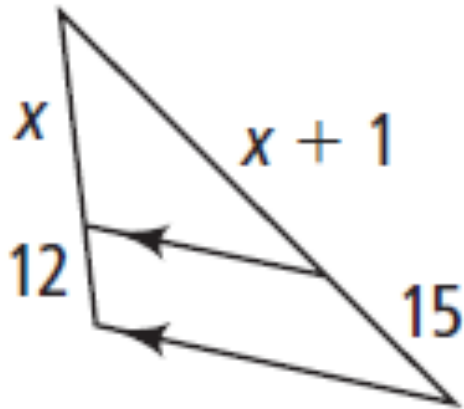
$$\frac{6}{3} = \frac{8}{4}$$

$$\frac{2}{1} = \frac{2}{1}$$

# U2L6 – Proportions in Triangles



Solve for x.



$$\frac{x}{12} = \frac{x + 1}{15}$$

$$15x = 12(x + 1)$$

$$15x = 12x + 12$$

$$3x = 12$$

$$\mathbf{x = 4}$$

$$\frac{4}{12} = \frac{4 + 1}{15}$$

$$\frac{4}{12} = \frac{5}{15}$$

$$\frac{1}{3} = \frac{1}{3}$$

# Questions?

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- Check the Message Board first
- Send a WebMail
- You can also make an appointment at <https://elizondo.youcanbook.me>
- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.