

# MATH 7 Accelerated: Week of May 4

- Go through the slides (notes) and work through the examples on a separate piece of paper.
  - Do the given practice problems (again, on a separate piece of paper).
  - Check your answers with the key given (last slide).
  - Take a photo or scan in your work and submit it in Google Classroom.
- If you have questions or would like feedback on your work, add that as a comment with your submitted work.
- The other option for turn in is to send it in on Monday when the new packet is available.
  - Zoom help session invites will be sent to your school email address.

Day 1: Slides 2-6  
Day 2: Slides 7-13  
Day 3: Slides 14-17  
Answers on Slide 18

Day 1

## L9: Special Triangles

Target: Find measures of angles in isosceles and equilateral triangles.

### Equilateral and Isosceles Triangle Angle Properties

Equilateral Triangle:  
Each angle in an equilateral triangle is  $60^\circ$ .

Isosceles Triangle : The angles which are across from the congruent sides will be equal in measure.

### Example 1

$\triangle MNP$  is an equilateral triangle. The measure of  $\angle M$  is  $(2x + 6)^\circ$ . Find the value of  $x$ .

Each angle in an equilateral triangle is  $60^\circ$ .

Set the angle equal to  $60^\circ$ .

Subtract 6 from each side.

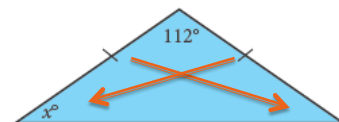
Divide by 2 on each side.

The value of  $x$  is 27.

$$\begin{array}{r} 2x + 6 = 60 \\ \underline{-6} \quad \underline{-6} \\ 2x = 54 \\ \underline{\div 2} \quad \underline{\div 2} \\ x = 27 \end{array}$$

### Example 2

Find the value of  $x$ .



- ▶ The triangle is isosceles. The angles that are across from the congruence marks must be equal. So,

- ▶ Combine like terms.
- ▶ Subtract 112 from each side.

- ▶ Divide by 2 on each side.

- ▶ The value of  $x$  is 34.

$$\begin{array}{r} 112 + x + x = 180 \\ 112 + 2x = 180 \\ \underline{-112} \quad \underline{-112} \\ 2x = 68 \\ \underline{\div 2} \quad \underline{\div 2} \\ x = 34 \end{array}$$

### L9 Practice Problems:

Write and solve equations to find the value of  $x$  in each diagram.

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### L9 Practice Problems:

- $\triangle JEP$  has two angles that measure  $27^\circ$ .
  - Sketch a diagram of  $\triangle JEP$ . Mark the sides that are congruent.
  - Find the measure of the third angle.
  - Classify  $\triangle JEP$  based on its angle measures and side lengths.
- All three sides in  $\triangle WRD$  are 3 inches in length.
  - Sketch a diagram of  $\triangle WRD$ .
  - What is the degree measure of each angle in  $\triangle WRD$ ?
  - Classify  $\triangle WRD$  based on its angle measures and side lengths.

END DAY 1

Day 2

# L10: Congruent and Similar Triangles

Target: Determine if triangles are similar or congruent and find missing measures.

## Vocabulary

**Congruent Figures:** Two figures that are the exact same shape and the exact same size.

**Similar Figures:** Two figures that have the exact same shape but not necessarily the exact same size.

**Corresponding Parts:** The parts of the figures that match.

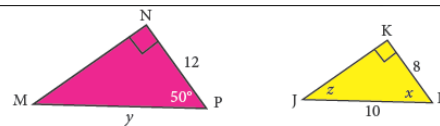
## Congruent and Similar Triangles

- ▶ **Congruent Triangles:** All corresponding angles are congruent and all corresponding sides are congruent.
- ▶ **Similar Triangles:** All corresponding angles are congruent and all corresponding sides are proportional.

## Angle-Angle Similarity Rule

- ▶ If two angles of one triangle are congruent to two angles of another triangle, the triangles are similar.

### Example 1



$\triangle MNP$  is similar to  $\triangle JKL$ . Find the value of  $x$ ,  $y$ , and  $z$ .

- ▶ Corresponding angles are congruent.  $m\angle L = m\angle P, x = 50$
- ▶ Corresponding sides are proportional.

$$\frac{12}{8} = \frac{y}{10} \rightarrow \text{SOLVE} \rightarrow y = 15$$

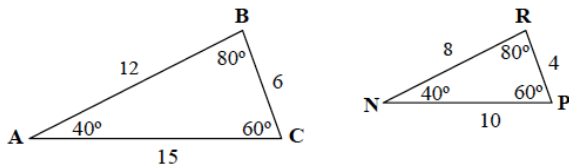
- ▶ The sum of the angles of a triangle is  $180^\circ$ .

- Write an equation.  $50 + 90 + z = 180$
- Combine like terms.  $140 + z = 180$
- Subtract 140 from each side.  $\frac{-140}{z = 40} \quad \frac{-140}{z = 40}$

$x = 50, y = 15$  and  $z = 40$

## L10 Practice Problems:

- List the corresponding sides and corresponding angles.



$\overline{AB}$  corresponds to \_\_\_\_\_

$\angle A \cong \angle$  \_\_\_\_\_

$\overline{BC}$  corresponds to \_\_\_\_\_

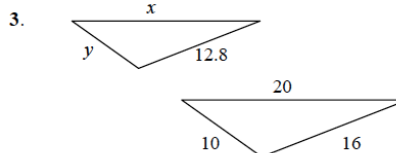
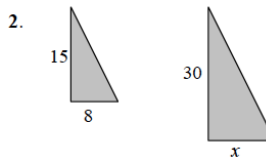
$\angle B \cong \angle$  \_\_\_\_\_

$\overline{CA}$  corresponds to \_\_\_\_\_

$\angle C \cong \angle$  \_\_\_\_\_

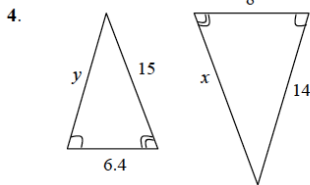
## L10 Practice Problems:

Write and solve proportions to find the missing side length(s) for each set of similar figures.

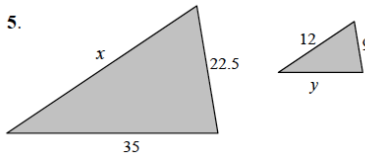
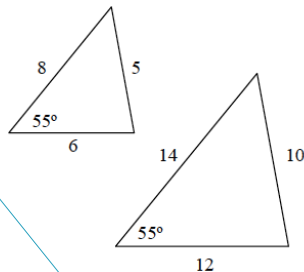


## L10 Practice Problems:

Write and solve proportions to find the missing side length(s) for each set of similar figures.



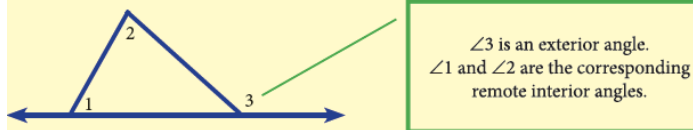
6. Are the triangles below similar? Explain your answer.



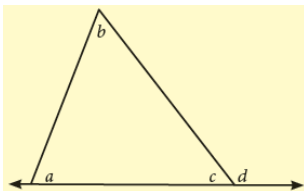
**END DAY 2**

## Day 3: Exterior Angles

The sum of the remote interior angles in any triangle is congruent to the measure of the corresponding exterior angle. Below is a diagram showing the remote interior angles and the corresponding exterior angle.



An algebraic proof of the exterior angle and remote interior angles relationship shows that the sum of the remote interior angles equals the measure of the corresponding exterior angle.



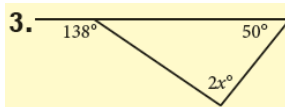
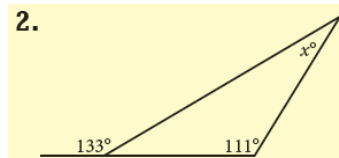
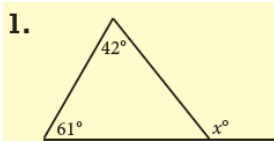
### Statement

$$\begin{aligned} a + b + c &= 180^\circ \\ c + d &= 180^\circ \\ a + b + c &\neq c + d \\ \hline -c & \quad -c \\ \hline a + b &= d \end{aligned}$$

### Reason

The sum of the angles of a triangle is  $180^\circ$ .  
Angles  $c$  and  $d$  are supplementary.  
Substitute  $c + d$  for  $180^\circ$ .  
Subtract  $c$  from both sides.

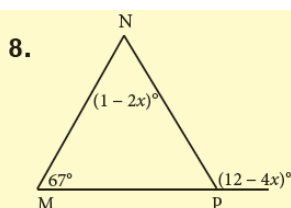
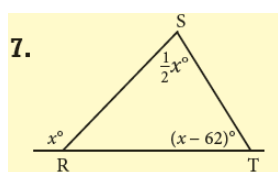
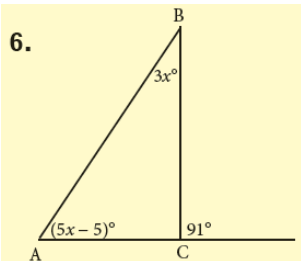
Solve for  $x$ .



4. One of the remote interior angles is  $66^\circ$ . The exterior angle is a right angle. What is the degree measure of the other remote interior angle?

5. The exterior angle measures  $78^\circ$ . Give a possible pair of degree measures that the remote interior angles could be.

Solve for  $x$ . Find the measure of each angle inside the triangle.



**End Day 3**

## Practice Problems: ANSWER PAGE

Day 3:  
1.  $x = 103$   
2.  $x = 22$   
3.  $x = 44$   
4.  $24^\circ$   
5. Must have a sum of  $78^\circ$   
6.  $x = 12$ ;  $m\angle A = 55^\circ$ ;  $m\angle B = 36^\circ$   
7.  $x = 124$ ;  $m\angle SRT = 56^\circ$ ;  $m\angle T = 62^\circ$ ;  $m\angle M = 28^\circ$   
8.  $m\angle N = 57^\circ$ ;  $m\angle P = 56^\circ$

Day 2:  
1.  $\overline{NR}$ ,  $\overline{RP}$ ,  $\overline{PN}$ ;  $\angle N$ ,  $\angle R$ ,  $\angle P$   
2.  $x = 16$   
3.  $x = 16$ ,  $y = 8$   
4.  $x = 18$ ,  $75$ ,  $y = 112$   
5.  $x = 30$ ,  $y = 14$   
6. No, sides are not proportional

Day 1:  
1.  $x = 45$   
2.  $x = 108$   
3.  $x = 7$   
4.  $x = 26$   
5.  $x = -6$   
6.  $x = 164$   
7. a. (Drawn triangle)  $126^\circ$   
b.  $126^\circ$   
8. a. (Drawn triangle) c. Obtuse, isosceles and equilateral

**MATH 7A: LAST SLIDE for this week!**