MATH 7 Accelerated:
Week of May 11

• 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 2-4	Day 2: Slides 5-9
Day 3: Slides 10-15	Day 4: Slides 16-17

Answers on Slide 18

Day 1

L11: Parallel Lines and Similar Triangles

Target: Use properties of special angle pairs to show that triangles are similar.

In the first block of this book you learned about parallel lines, transversals, and special angle pairs. In this lesson, you will use some of these special angle pairs.

Similar triangles can be formed by sets of parallel lines and two transversals that intersect one another.

• step 1: Use the figure below. Notice the parallel lines.
• step 2: Angles 1 and 3 make what special angle pair?
• step 3: What type of special angle pair are ∠4 and ∠2?
• step 4: What is true about the pairs of angles in steps 2 and 3?
• step 5: What can you conclude about ΔABC and ΔDEC? Why?
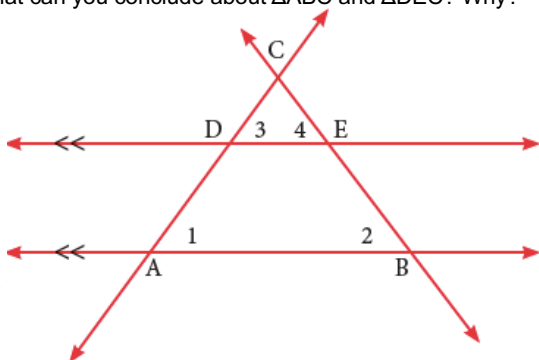
• step 6: Explain how this is the same type of problem as the previous diagram.
• step 7: What angle is shared by ΔSTU and ΔRTV?
• step 8: Find the measure of ∠STU.
• step 9: What is the measure of ∠TVR?
• step 10: Because the angles in ΔSTU and ΔRTV are congruent, the triangles are similar. Find the value of x using a proportion.
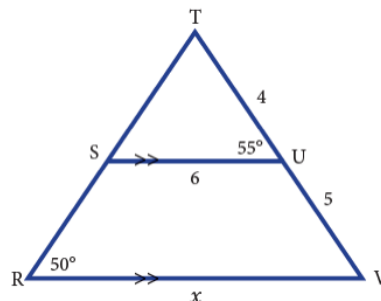
END DAY 1

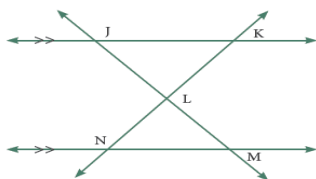
Day 2

Example 1

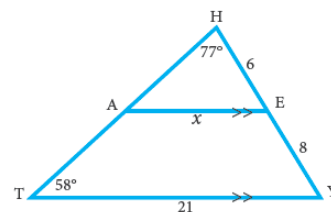Show that ΔJKL ~ ΔMNL.

▸ ∠LJK ≅ ∠LMN because they are alternate interior angles.

▸ ∠LNM ≅ ∠LKJ because they are alternate interior angles.

▸ ΔJKL ~ ΔMNL because two angles in each triangle are congruent to one other. This is based on the Angle-Angle Similarity Rule.

Example 2ab

Find the missing measures in the two similar triangles.

a. $m\angle HAE$

Corresponding angles are congruent. $m\angle T = m\angle HAE$
Substitute 58° for ∠T. $58° = m\angle HAE$

b. $m\angle Y$

The sum of three angles in a triangle is 180°.
Write an equation with the angle measures. $58° + 77° + m\angle Y = 180°$
Combine like terms. $135° + m\angle Y = 180°$
Subtract 135 from each side. $\underline{-135°\qquad\quad -135°}$
                                                                              $m\angle Y = 45°$

Example 2c

H
77° 6
A   E
x
8
T 58°
21   Y
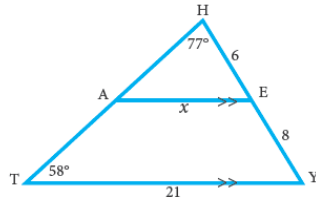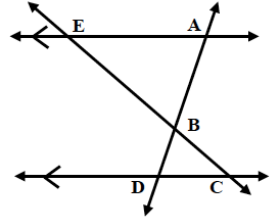
Find the value of x.

Write a proportion with corresponding sides. $\dfrac{AE}{TY} = \dfrac{HE}{HY}$

Fill in the known lengths. $\dfrac{x}{21} = \dfrac{6}{14}$

← Add lengths, 6 + 8

Solve the proportion. $9 = x$


L11 Practice Problems:

1. Use the diagram at the right.
   a. What special angle pair do ∠BCD and ∠BEA represent?
   b. Circle the correct term: ∠BAE and ∠BDC are congruent/supplementary.
   c. Fill in the blank: ΔEAB ~ Δ_____

E A
B
D C

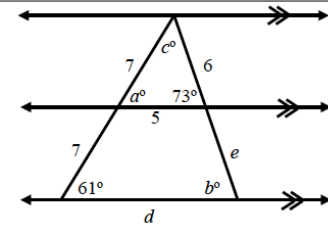2. Use the diagram at the right.
   a. What angle besides ∠LNK measures 58°?
   b. What is the measure of ∠HLN?
   c. What is the measure of ∠R?
   d. Find the value of x.

R
4
H 24° K
x
12
L 58° N
15

L11 Practice Problems:

15
18 y
9.5 12
x
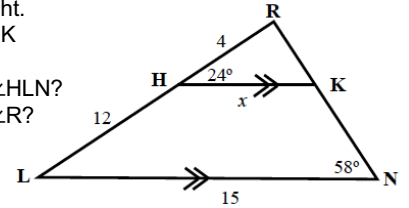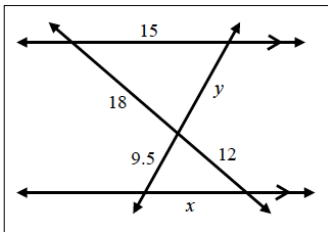
3. Use proportions to find the values of x and y in the pair of similar triangles.

c°
7 6
a° 73°
5
7 e
61° b°
d

4. Find the measure of a, b, c, d and e. You will need two proportions.

END DAY 2

L12: Angle Sum of a Quadrilateral

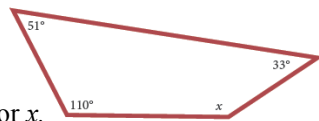Target: Find angle measures in a quadrilateral.

Vocabulary

Quadrilateral:
A polygon with four sides.

Quadrilateral Angle Sum

The sum of the measures of the angles of a quadrilateral is 360°.

Example 1

51°
33°
110° x

Set up an equation and solve for x.

▸ The sum of the angles of a quadrilateral is 360°.
$$51 + 110 + 33 + x = 360$$
▸ Combine like terms. $194 + x = 360$
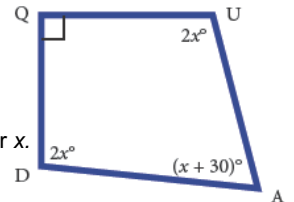▸ Subtract 194 from each side. $\underline{-194 \quad -194}$
$$x = 166$$

▸ ✔ $110 + 51 + 33 + 166 = 360$
$$360 = 360$$

Example 2ab

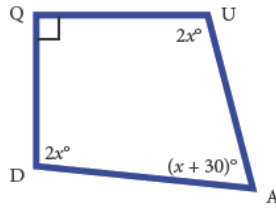In quadrilateral QUAD, $m\angle U = 2x°$, $m\angle A = (x + 30)°$, $\angle U \cong \angle D$ and ∠Q is a right angle.

Q   U
2x°
2x°
D (x + 30)°
A

a. Draw a diagram and label it.

b. Set up and equation and solve for x.

▸ $90 + 2x + (x + 30) + 2x = 360$
▸ $120 + 5x = 360$
▸ $\underline{-120 \qquad -120}$
▸ $\dfrac{5x}{5} = \dfrac{240}{5}$
▸ $x = 48$

Example 2c

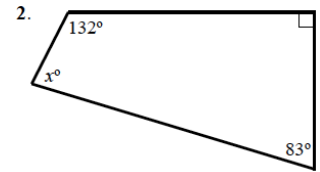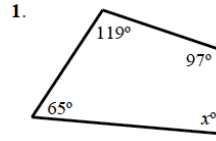In quadrilateral QUAD, $m\angle U = 2x°$, $m\angle A = (x + 30)°$, $\angle U \cong \angle D$ and $\angle Q$ is a right angle.

c. Find the degree measure for each angle.

In 2b, $x = 48$. To find the degree measures substitute 48 for x.

- $m\angle Q = 90°$
- $m\angle U = m\angle D = 2(48) = 96°$
- $m\angle A = ((48) + 30) = 78°$

- To check: the four angles should have a sum of 360°.

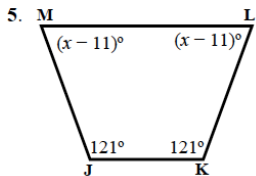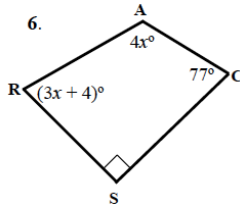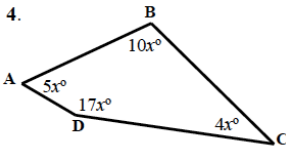## L12 Practice Problems:

Set up an equation and solve for *x*.

1.

2.

3. A quadrilateral has angles that measure 54°, 117° and 61°. What is the measure of the missing angle?

L12 Practice Problems:

Set up an equation and solve for *x*. Find the degree measures of each unknown angle.

4.

5.

6.

END DAY 3

Day 4: Sum of Interior Angles

The sum of the three angles in a triangle is $180°$.
Discover how to find the sum of the angles of any polygon based on its number of sides.

1. Copy and complete the chart on the next slide.

2. Does a pattern form in the angle sums? How does the pattern relate to the number of sides of the polygon?

3. Write a formula to calculate the degree measure of any polygon based on its number of sides, n.

4. Find the degree measure of these polygons:
   a. Dodecagon (12 sides)   b. 15-gon

   c. 24-gon   d. 41-gon

Polygon name and number of sides	Diagram	Number of triangles	Sum of degree measures in the triangles	Conclusion: Angle sum
Quadrilateral 4 sides		2	180° + 180° or 2(180)°	360°
Pentagon 5 sides		3		
Hexagon 6 sides				
Heptagon 7 sides				
Octagon 8 sides				
Nonagon 9 sides				
Decagon 10 sides				

ANSWER PAGE

Day 1:
1. (no answer needed)
2. Corresponding
3. Corresponding
4. They are congruent
5. △ABC and △DEC are similar; they have two congruent angles.
6. There are similar triangles because of parallel lines cut by transversals.
7. ∠T   8. 75°   9. 55°
10. x=13.5

Day 2:
1. a. Alternate interior angles. b. congruent c. ∆CDB
2. a. ∠HKR b. 24° c.
3. y=14.25, x = 10
4. a = 61, b = 73, c = 98   d. x = 3.75
46. d = 10, e = 6

Day 3:
1. x = 79
2. x = 55
3. 128°
4. x = 10 $m\angle A = 50°$, $m\angle B$ = 100°, $m\angle C = 40°$, $m\angle D = 170°$
5. x = 70 $m\angle M = 59°$, $m\angle L = 59°$
6. x = 27 $m\angle A = 108°$, $m\angle R$ = 85°

Day 4:
1. Chart
2. The number of triangles is two less than the number of sides.
3. $180(n - 2)$ = angle sum
4. a. 1800°   b. 2340°
   c. 3960°   d. 7020°

MATH 7A: LAST SLIDE for this week!