

SIMILARITY & RIGHT TRIANGLE TRIGONOMETRY - 6.5

6.5 Measured Reasoning

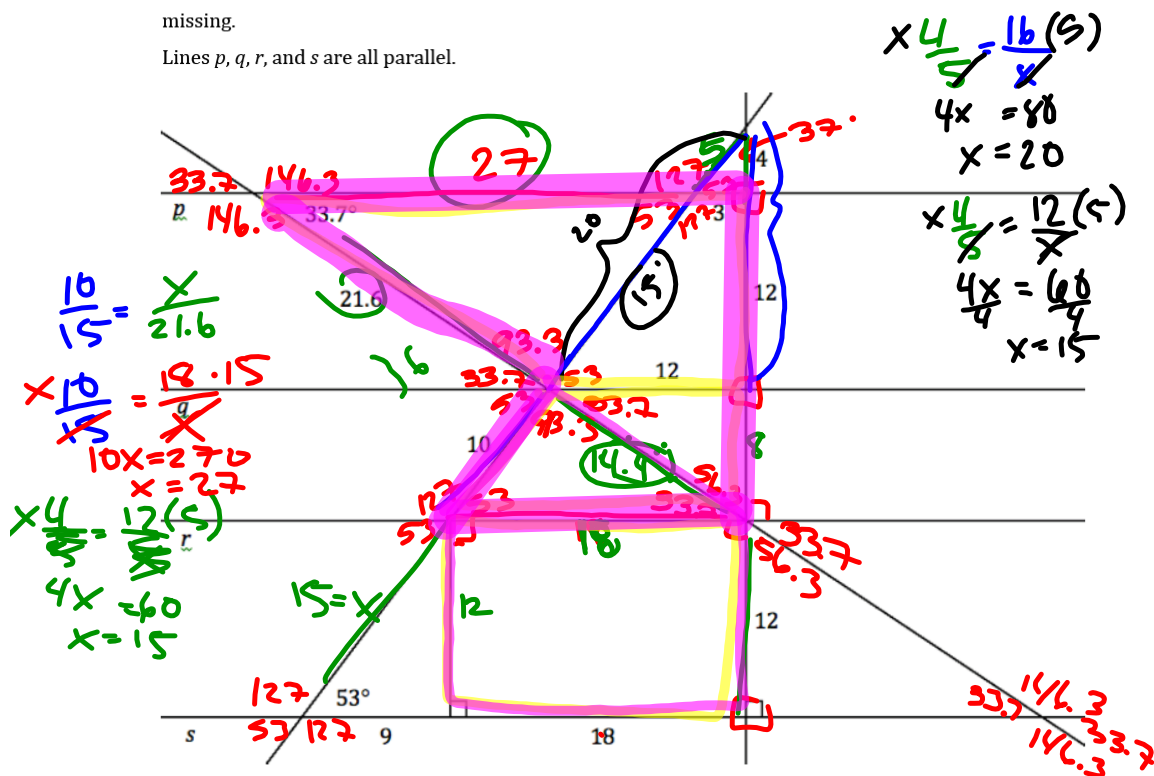
A Practice Understanding Task



Start puzzle on 6.5

Find the measures of all missing sides and angles by using geometric reasoning, not rulers and protractors. If you think a measurement is impossible to find, identify what information you are missing.

Lines *p*, *q*, *r*, and *s* are all parallel.

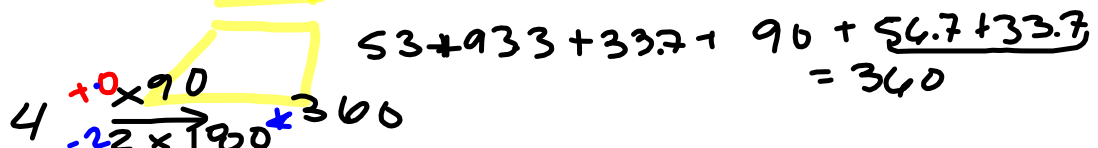


3-2 $1(180) = 180 \checkmark$

1. Identify at least three different quadrilaterals in the diagram. Find the sum of the interior angles for each quadrilateral. Make a conjecture about the sum of the interior angles of a quadrilateral.



4 Conjecture: $33.7 + 93.3 + 57 + 90 + 90 = 360$



2. Identify at least three different pentagons in the diagram. (Hint: The pentagons do not need to be convex.) Find the sum of the interior angles for each pentagon. Make a conjecture about the sum of the interior angles of a pentagon.

5 $\frac{93.3 + 53 + 90 + 90 + 90 + 33.7}{180 \Delta + \square 360} = 540$

Conjecture: $33.7 + 90 + 90 + 53 + (93.3 + 53 + 33.7 + 93.3) = 540$
 $5 \rightarrow 6 \cdot 90 = 540$
 $\rightarrow 3 \cdot 180 = 540$

3. Do you see a pattern in the sum of the angles of a polygon as the number of sides increases? How can you describe this pattern symbolically?

6 $\rightarrow 720$ $n = \# \text{ of sides}$ Adding a $\Delta = 180$, with every side added
 $\rightarrow 4 \cdot 180$
 $(n-2)180 = \text{sum}$

4. How can you convince yourself that this pattern holds for all n -gons?

- 3 \checkmark
- 4 \checkmark
- 5 \checkmark
- 6 \checkmark
- n :

SECONDARY MATH II // MODULE 6
SIMILARITY & RIGHT TRIANGLE TRIGONOMETRY - 6.5

6.5

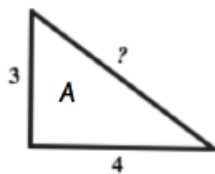
READY, SET, GO!	Name _____	Period _____	Date _____
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READY

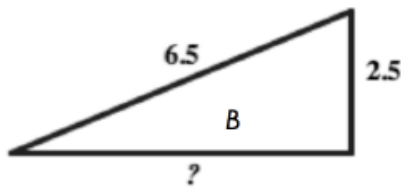
Topic: Pythagorean Theorem and ratios of similar triangles

Find the missing side in each right triangle. Triangles are not drawn to scale.

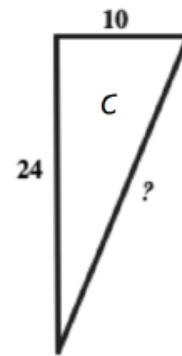
1.



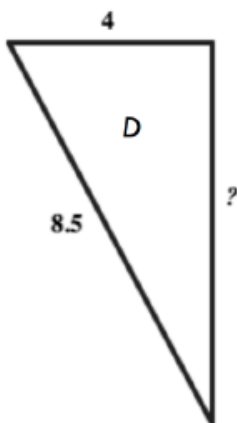
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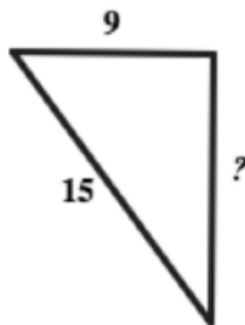
3.



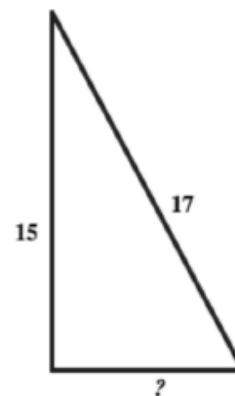
4.



5.



6.



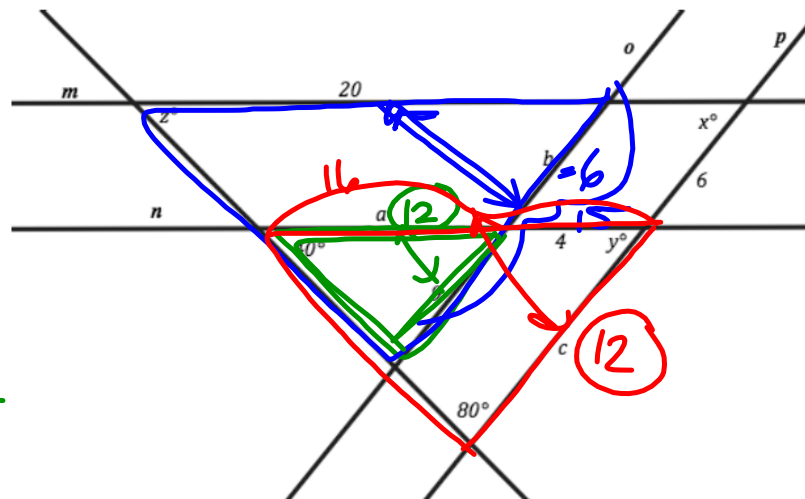
7. Based on ratios between side lengths, which of the right triangles above are mathematically similar to each other? Provide the letters of the triangles and the ratios.

SET

Topic: Using parallel lines, and angle relationships to find missing values.

In each of the diagrams use the given information provided to find the missing lengths and angle measurements.

8. Line $m \parallel n$ and $o \parallel p$, find the values of angles x, y and z . Also, find the lengths of a, b and c .



$$\frac{15a}{9} = \frac{26(9)}{15}$$

$$\frac{15a}{15} = \frac{180}{15}$$

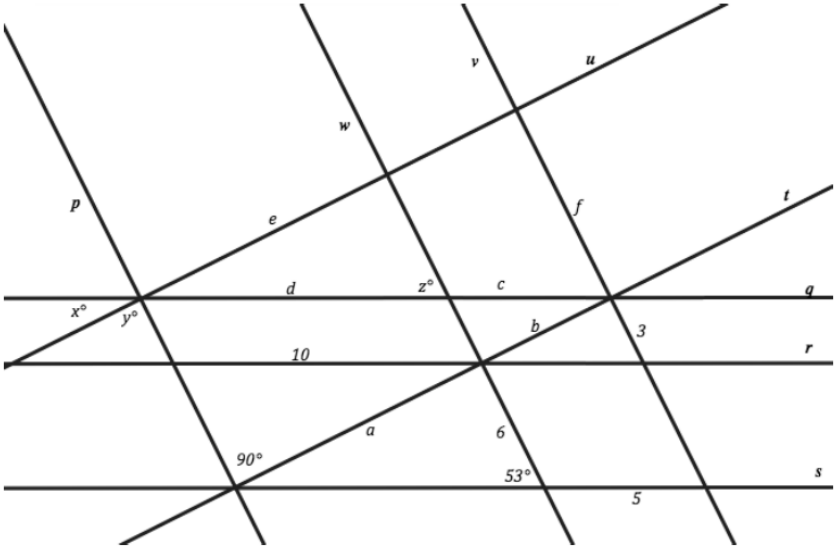
$$a = 12$$

$$c \frac{12}{9} = \frac{16(9)}{2}$$

$$\frac{12c}{12} = \frac{144}{12}$$

$$c = 12$$

9. Line $q \parallel r \parallel s$ and $t \parallel u$ and $p \parallel w \parallel v$, find the values of angles x, y and z . Also, find the lengths of a, b, c, d, e, f .



GO

Topic: Solve equations including those including proportions

Solve each equation below.

10.

$$3x - 5 = 2x + 7$$

11.

$$\frac{5}{7} = \frac{x}{21}$$

12.

$$\frac{3}{x} = \frac{18}{5x+2}$$

$$15x + 6 = 18x$$

$$-15x \quad -15x$$

$$6 = 3x$$

$$x = 2$$

13.

$$\frac{1}{2}x - 7 = \frac{3}{4}x - 8$$

14.

$$17 + 3(x - 5) = 2(x + 3)$$

15.

$$\frac{x+5}{6} = \frac{3(x+2)}{9}$$

16.

$$x + 2 + 3x - 8 = 90$$

17.

$$\frac{5}{12} = \frac{x}{8}$$

18.

$$\frac{4}{5} = \frac{x+2}{15}$$

