

QUIZ DATE: _____

Math 2 – Honors

Unit 6 – Triangles & Congruence

Lesson 1 → Congruent Triangles & CPCTC

TEST DATE: _____

Name _____

Date _____ Pd _____

➤ **Review:** Similar triangles are the SAME SHAPE but DIFFERENT SIZES. In order for two triangles to be similar, the **corresponding angles** must be **congruent** and the **corresponding sides** must be **proportional**.

➤ **Congruent Triangles:** Triangles that are the same Shape and the same Size.

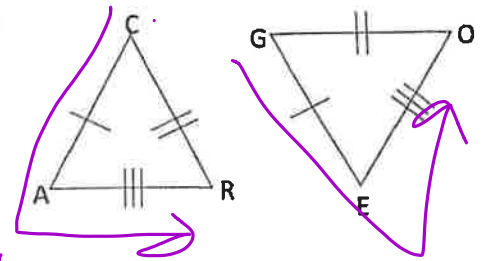
- Each triangle has three congruent angles and three congruent sides.
- If all **SIX** of the corresponding parts of two triangles are congruent, then the triangles are Congruent.

➤ **Definition of Congruent Triangles (CPCTC):**

- Two triangles are congruent if and only if their corresponding parts are congruent.
- **CPCTC – Corresponding Parts of Congruent Triangles are Congruent**

1. Write a congruency statement for the two triangles at right.

$\triangle CAR \cong \triangle GEO$



2. List ALL of the congruent parts if $\triangle EFG \cong \triangle HGF$.

$\overline{EF} \cong \overline{HG}$ / $\overline{EG} \cong \overline{HF}$ / $\overline{GF} \cong \overline{FG}$ / $\angle E \cong \angle H$ / $\angle F \cong \angle G$ / $\angle G \cong \angle F$

3. $\triangle WXY \cong \triangle ZYX$ Solve for p and q .

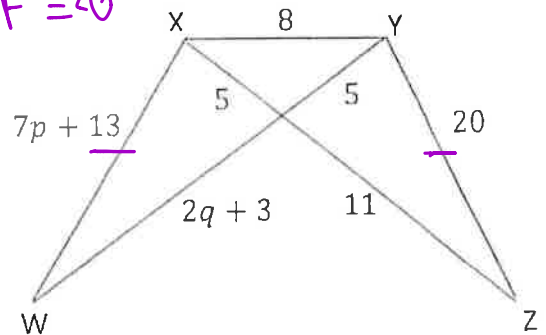
$7p + 13 = 20$
 $-13 \quad -13$

$7p = 7$
 $\frac{7p}{7} = \frac{7}{7}$

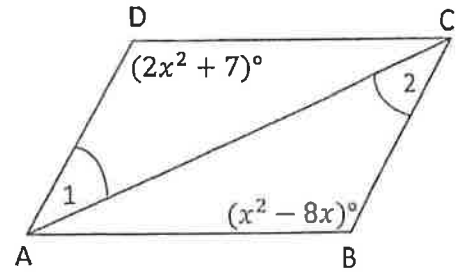
$p = 1$

$2q + 3 = 11$
 $-3 \quad -3$

$2q = 8$
 $\frac{2q}{2} = \frac{8}{2}$
 $q = 4$



4. $\triangle ADC \cong \triangle CBA$ Solve for x . Then find the $m\angle B$ & $m\angle D$.



➤ Draw and label a diagram. Solve for the missing variable(s).

5. If $\triangle BAT \cong \triangle DOG$, and $m\angle B = 14^\circ$, $m\angle G = 29^\circ$ and $m\angle O = (10x + 7)^\circ$, find x and $m\angle O$.

$14 + 29 + 10x + 7 = 180$
 $10x + 50 = 180$
 $\quad -50 \quad -50$
 $\frac{10x}{10} = \frac{130}{10}$
 $x = 13$
 $10(13) + 7 = 130 + 7 = 137^\circ$

6. If $\triangle COW \cong \triangle PIG$, and $CO = 25$, $CW = 18$, $IG = 23$ and $PG = 7x - 17$, find x and PG .

$18 = 7x - 17$
 $+17 \quad +17$
 $35 = 7x$
 $\frac{35}{7} = \frac{7x}{7}$
 $x = 5$
 $PG = 18$

7. If $\triangle DEF \cong \triangle PQR$ and $DE = 3x - 10$, $QR = 4x - 23$, $PQ = 2x + 7$ and $EF = y$, find x and y .

$3x - 10 = 2x + 7$
 $-2x \quad -2x$
 $x - 10 = 7$
 $+10 \quad +10$
 $x = 17$
 $y = 4x - 23$
 $y = 4(17) - 23$
 $y = 45$

8. If $\triangle DEF \cong \triangle JKL$ and $DE = x^2 - 3x$, $KJ = 28$, $m\angle E = (8y^2 - 6y)^\circ$ and $m\angle K = 5^\circ$, find x and y .

$x^2 - 3x = 28$
 $x^2 - 3x - 28 = 0$
 $(x - 7)(x + 4) = 0$
 $x = 7 \quad x = -4$
 $\checkmark \quad \checkmark$
 $5 = 8y^2 - 6y$
 $-5 \quad -5$
 $0 = 8y^2 - 6y - 5$
 $y^2 - 6y - 40$
 $(y - \frac{10}{8})(y + \frac{4}{8})$
 $(y - \frac{5}{4})(y + \frac{1}{2})$
 $(4y - 5)(2y + 1)$
 $y = \frac{5}{4}$
 $y = -\frac{1}{2}$

$$\text{pg 3 \# 4: } \frac{2x^2 + 7}{-x^2} = \frac{x^2 - 8x}{-x^2}$$

$$x^2 + 7 = -8x$$

$$+8x \quad +8x$$

$$x^2 + 8x + 7 = 0$$

$$(x+7)(x+1) = 0$$

$$x = -7 \quad x = -1$$

$$2(-7)^2 + 7 = 105$$

$$2(-1)^2 + 7 = 9$$

Math 2 – Honors
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- $\triangle PQR \cong \triangle ABC$
- Find the values of x and y

Given:
 1. $m\angle R = (5x + 70)^\circ$ $QR = 4y + 2$
 $m\angle C = (24x - 25)^\circ$ $BC = x + y$

Handwritten work:
 $4y + 2 = (5) + y$
 $4y + 2 = 5 + y$
 $3y = 3$ $y = 1$
 $4y + 2 = x + y$
 $4(1) + 2 = x + 1$
 $6 = x + 1$
 $5 = x$
 $x = 5, y = 1$

Given:
 2. $m\angle R = (90 - y)^\circ$ $PR = 3x + y - 1$
 $m\angle C = 13^\circ$ $AC = 32 - x$

Handwritten work:
 $90 - y = 13$
 $-y = -77$
 $y = 77$
 $3x + y - 1 = 32 - x$
 $3x + 77 - 1 = 32 - x$
 $3x + 76 = 32 - x$
 $4x = -44$
 $x = -11$
 $x = -11, y = 77$

Given:
 3. $PQ = 5x - 31$ $AB = x + 1$
 $QR = -3y - 1$ $BC = 9 - y$

Given:
 4. $m\angle A = (15y - 3)^\circ$ $PQ = 11 - x$
 $m\angle P = (43 - x)^\circ$ $AB = 3y + 1$

Given:
 5. $AB = 2x + y$ $PQ = 7$
 $QR = 4x + y$ $BC = 11$

Given:
 6. $m\angle P = (x + 10)^\circ$ $m\angle Q = (3x)^\circ$
 $m\angle A = (y + 20)^\circ$ $m\angle B = (x + 3y)^\circ$

Find the $m\angle P$ and the $m\angle Q$.

HW