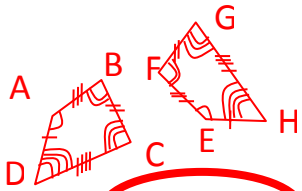Objective: Understand if polygons are congruent, how their corresponding parts match up and use that knowledge to solve for missing information.

Corresponding Parts: Pairs of sides or angles, one from each polygon, which are congruent ($\cong$)

Corresponding angles

ABCD $\cong$ EFGH

Corresponding sides

Notation for Measurement (Angles & Sides): "EQUALS"	Notation for Objects (Angles & Sides): "CONGRUENT"
Lengths: AB (no segment bar) m∠A (add "m" in front of name) Examples: 1) AB = 6 cm or AB = DE 2) m∠A = 60° or m∠A = m∠B	Same size AND shape Examples: 1) $\overline{AB} \cong \overline{CD}$ 2) $\angle A \cong \angle B$ ***Never use numbers or AB or m∠A with $\cong$ symbol***

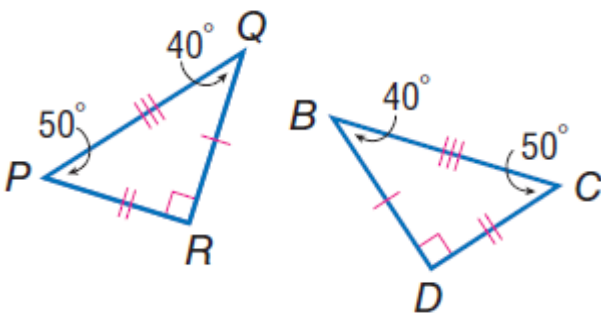**Note: When studying geometry, drawings are not always done to scale. This means:**

1) Objects may be congruent when they do not look like it – evidence is measurements given or congruent features marked

2) Objects may NOT be congruent when they look like they are – evidence is missing that would be needed in order to confirm congruence.

You should <u>NEVER</u> have to measure angles or lengths with rulers or protractors in these types of problems. You should rely only on the information provided or information that you can solve for using properties of the shapes or other math knowledge (algebra, etc.).
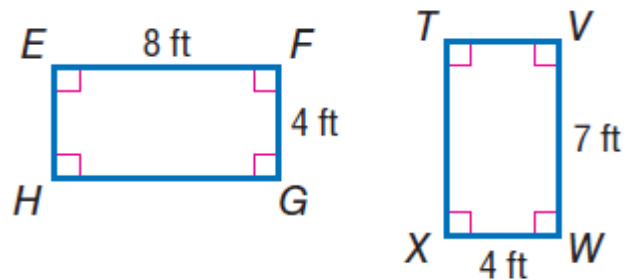

Examples:

1. Are each of the pairs of polygons below congruent? Why or why not? If they are, provide a congruence statement.

a.

40° Q, 50° P, R

40° B, 50° C, D

YES (circled)   NO   Why? __3 pairs $\cong$ sides, 3 pairs $\cong$ ∠'s__

$\cong$ Statement: ___ΔPRQ $\cong$ ΔCDB_____

b.

E — 8 ft — F, 4 ft, H, G

T, V, 7 ft, X, 4 ft, W

YES   NO (circled)   Why? ___Sides not $\cong$ (EF ≠ VW)___

$\cong$ Statement: ___N/A_____

*Note: the 3 ∠'s in a Δ add to 180°

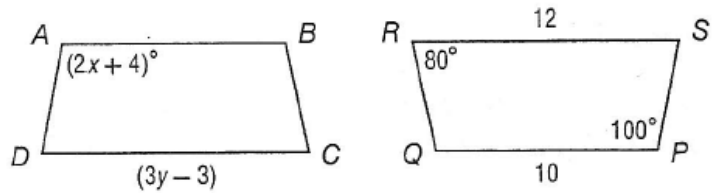2. Given $\Delta AFH \cong \Delta QRN$, fill in the missing information requested below.

a. $m\angle F =$ __75°__

b. $m\angle Q =$ __40°__

c. $m\angle R =$ __75°__

d. $m\angle N =$ __65°__

e. $\angle F \cong$ __$\angle R$__

e. QR = __13in__

f. RN = __9in__

g. $\overline{AH} \cong$ __$\overline{QN}$__

h. $\overline{NR} \cong$ __$\overline{HF}$__

i. AH = __QN__
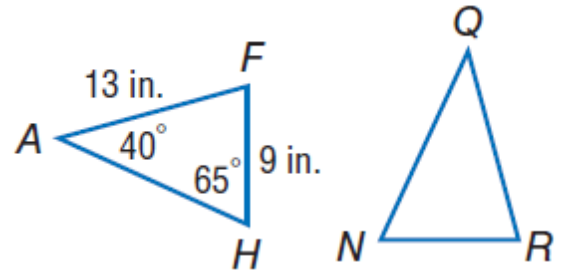
3. Given $ABCD \cong PQRS$:

a. Solve for x.

$m\angle A = m\angle P$

2x + 4 = 100

2x = 96

x = 48

b. Solve for y. $DC = SR$

3y − 3 = 12

3y = 15

y = 5

Circle the appropriate symbol and fill in the rest of the statement using the diagram above. Give the most specific answer possible:
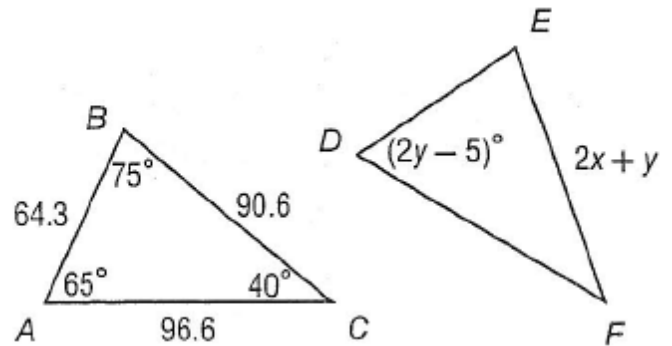
c. AD (=) __PS__   d. ∠A (≅) __∠P__   e. $m\angle A$ (=) __100°__   f. $\overline{CD}$ (≅) __$\overline{RS}$__

4. Given $\Delta ABC \cong \Delta DEF$:

a. Solve for x and y.

$m\angle D = m\angle A$
2y − 5 = 65
2y = 70
y = 35

$EF = BC$
2x + y = 90.6
2x + 35 = 90.6
2x = 55.6
x = 27.8

b. $m\angle E$ (=) __75°__   c. ∠F (≅) __∠C__   e. DE (=) __64.3__   f. $\overline{EF}$ (≅) __$\overline{BC}$__