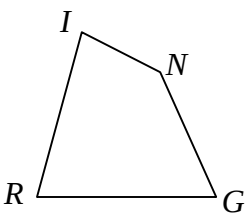
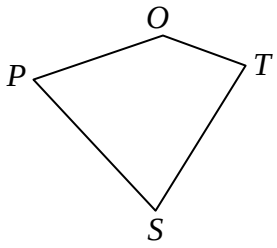
Geometry Notes TG - 9: Rigid Motions and Congruence

Congruence

Informal definition: Two polygons are *congruent* (≅) if they are the

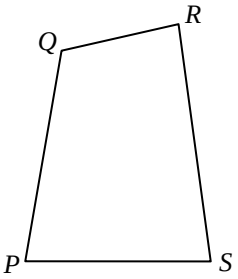
Notation: In a statement of congruence of two polygons, the polygons are written so that corresponding (matching) vertices are in the same order.

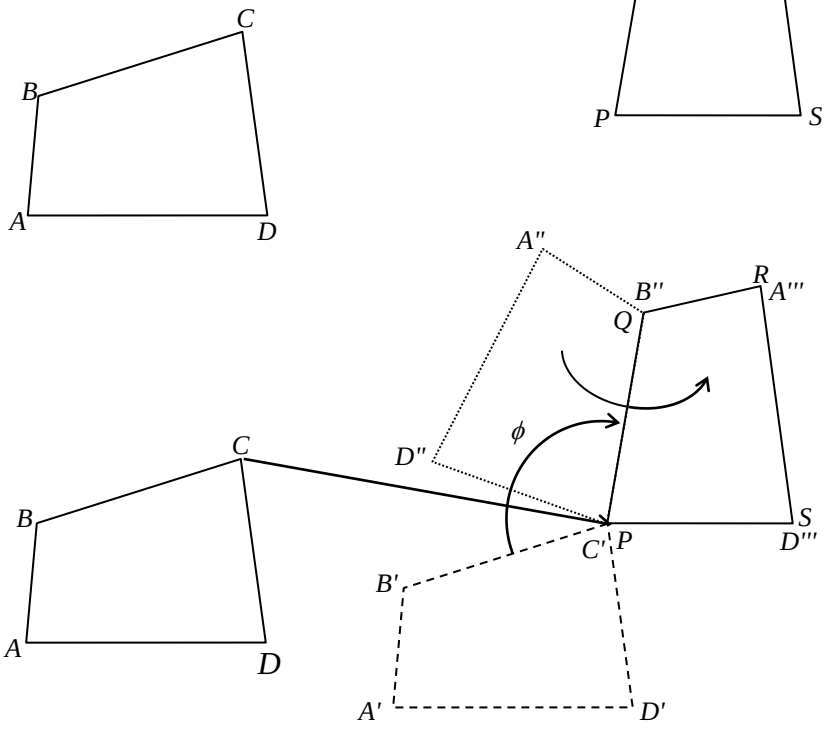




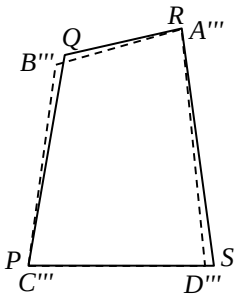
Definition: Two figures are *congruent* if

Ex: Assuming they are congruent, describe a rigid motion that will take quadrilateral *ABCD* onto the other quadrilateral.





Note: For a polygon, congruence is only possible if



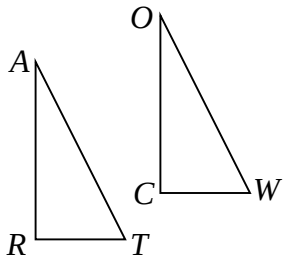
Ex: If $\Delta DOG \cong \Delta CAT$,

a. Name three pairs of congruent angles.

b. Name three pairs of congruent sides.

Ex: Describe a rigid motion that will take ΔRAT onto the other triangle.

a.



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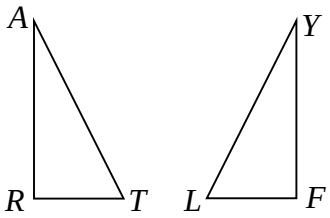
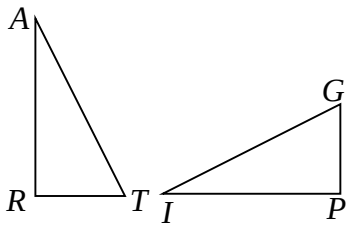
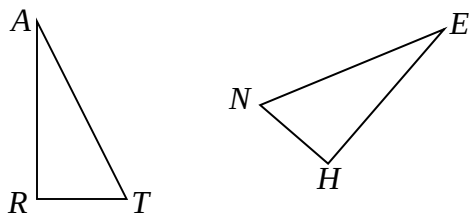


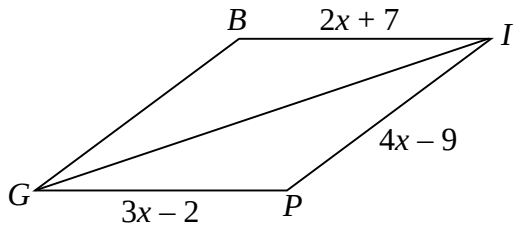
c.



d.



Ex: In the diagram at right $\Delta BIG \cong \Delta PIG$.
Find the perimeter of quadrilateral $BIPG$.



Ex: If $\Delta BUG \cong \Delta COW$, $m\angle B = x$, $m\angle U = 2x - 3y$, $m\angle C = 3y - 20$ and $m\angle O = y + 20$, find the numerical measures of $\angle G$ and $\angle W$.

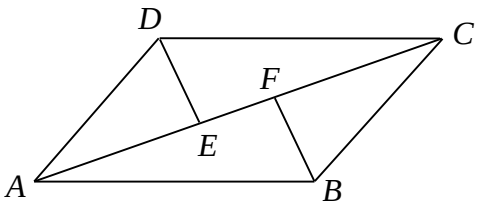
Geometry HW: Transformations - 9

1. What is necessary for two line segments to be congruent?

2. What is necessary for two angles to be congruent?

3. In the diagram at right, $\Delta CDE \cong \Delta ABF$.
   a. Name three pairs of congruent angles.

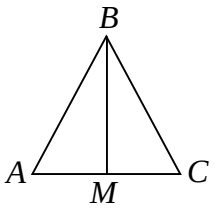
   b. Name three pairs of congruent sides.



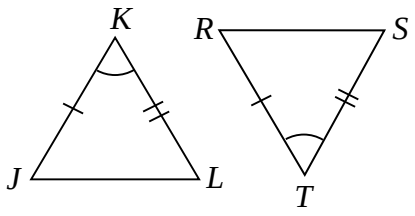
3. If all four pairs of corresponding angles of two quadrilaterals are congruent, must the quadrilaterals be congruent? Draw a diagram to justify your answer.

5. If all four pairs of corresponding sides of two quadrilaterals are congruent, must the quadrilaterals be congruent? Draw a diagram to justify your answer.

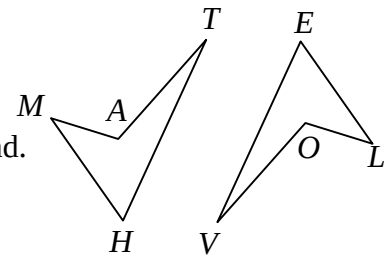
6. The two triangles shown at right are congruent.
   a. Complete the congruence statement: $\Delta ABM \cong$ _____
   b. Describe a rigid motion that would take the first figure onto the second.



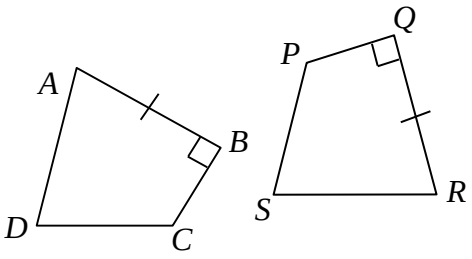
7. The two triangles shown at right are congruent.
   a. Complete the congruence statement: $\Delta JKL \cong$ _____
   b. Describe a rigid motion that would take the first figure onto the second.



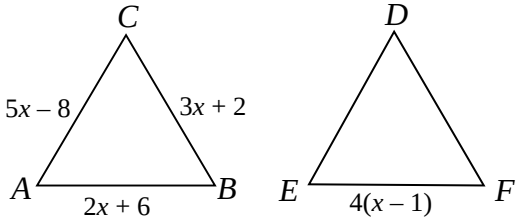
8. The two quadrilaterals shown at right are congruent.
   a. Complete the congruence statement: $MATH \cong$ _____
   b. Describe a rigid motion that would take the first figure onto the second.



9. The two quadrilaterals shown at right are congruent.
   a. Complete the congruence statement: $ABCD \cong$ _____
   b. Describe a rigid motion that would take the first figure onto the second.



10. In the diagram, $\Delta ABC \cong \Delta DEF$. If $AB = 2x + 6$, $BC = 3x + 2$, $CA = 5x - 8$ and $EF = 4(x - 1)$, find the numerical value of the perimeter of ΔABC.



11. In the diagram (not drawn to scale), $\Delta BIG \cong \Delta CAT$. Find the numerical measure of $\angle T$.