Geometry 1: Triangle Congruence
Unit Review

Name _____

Period _____ Date _____

G-CO.7. Learning Target: *I can show that two triangles are congruent through rigid motions if and only if the corresponding pairs of sides and corresponding pairs of angles are congruent.*

1. Given that $\triangle A'B'C'$ is a rotation of $\triangle ABC$
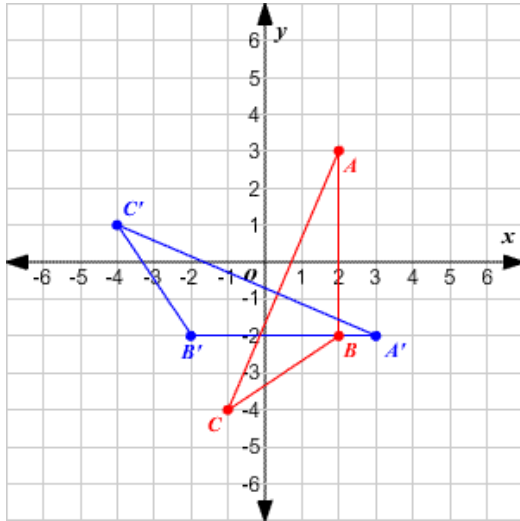
(a) Are the two triangles congruent? Explain why or why not.

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_____
_____
_____

(b) Is $\angle B' \cong \angle B$? Explain why or why not.

_____
_____

2. Parallelogram ABCD has diagonals $\overline{AC}$ and $\overline{BD}$ that bisect each other. They intersect at point E. If $\overline{AE}$ is 4x – 15 and $\overline{CE}$ is 10x - 50, what is the value of x and the measure of diagonal $\overline{AC}$? Round to the nearest hundredth.
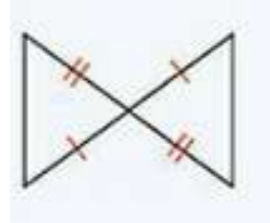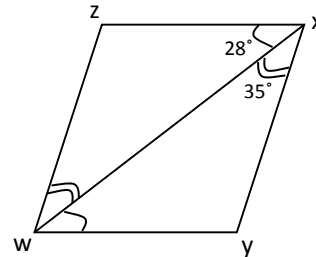
G-CO.8. Learning Target: *I can explain which series of angles and sides are essential in order to show congruence through rigid motions*

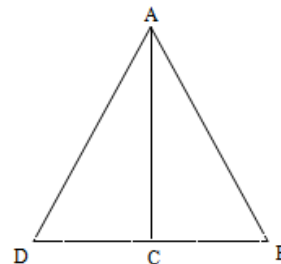3. For each of the following pairs of triangles, explain why they are congruent.

(a)

_____
_____

(b)

_____
_____

(c) $\overline{AC}$ is the perpendicular bisector of $\overline{DB}$.

_____
_____

If $\angle D = 40°$, find the measurement of $\angle DAB$.

_____

G-CO.9. Learning Target: *I can prove the following theorem in narrative paragraphs, flow diagrams, in two column format, and/or using diagrams without words: points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. I can make the following formal constructions using a variety of tools: constructing perpendicular bisectors.*
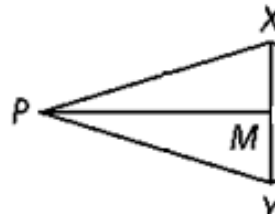
4. (a) Given the following segment $\overline{AB}$, construct and name its perpendicular bisector.

A

B

(b). Using your construction, explain how any point on the perpendicular bisector is equidistant from the endpoints of the segment.

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_____
_____
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5. Given the following diagram, fill in the reasons for the following proof.

Given: $\overline{PM}$ is the perpendicular bisector of $\overline{XY}$
**Prove:** $\overline{PX} \cong \overline{PY}$

X

P

M

Y

Statements	Reasons
1.	
2.	
3.	
4.	
5.	
6.	

G-CO.10. Learning Target: *I can prove the following theorems in narrative paragraphs, flow diagrams, in two-column format, and/or using diagrams without words: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the medians of a triangle meet at a point.*
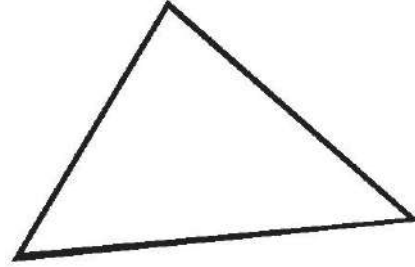
6. Given the following isosceles triangle, explain the theorem that "if two sides of a triangle are congruent, then the angles opposite those sides are congruent."

B

A   C

$AB = BC$

_____
_____
_____
_____
_____
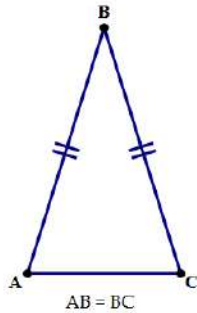
7. Given the triangle below, find the value of x and the measurement of each angle. The figure is not drawn to scale.

A

$x + 75°$ C

$4x + 18°$

$3x + 27°$

B
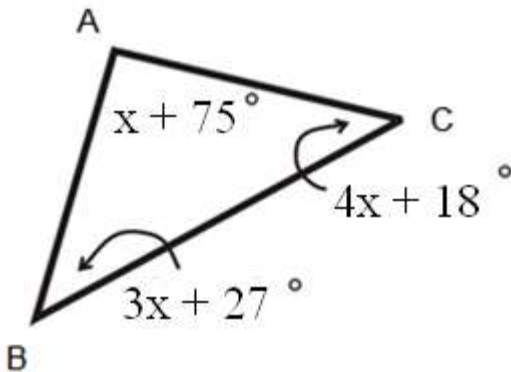
8. Given acute scalene triangle, $\triangle$ ABC, construct the medians.

(b) Using your construction, define a centroid and explain its characteristics.

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_____
_____
_____
_____
_____

G.CO-13. Learning Target: *I can make the following formal constructions using a variety of tools: an equilateral triangle inscribed in a circle.*

9. Construct an equilateral triangle inscribed in a circle. Leave all your construction marks.
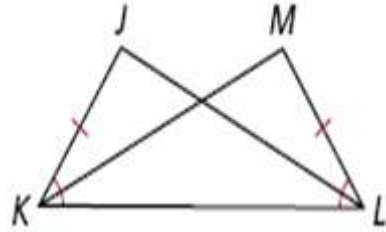

center
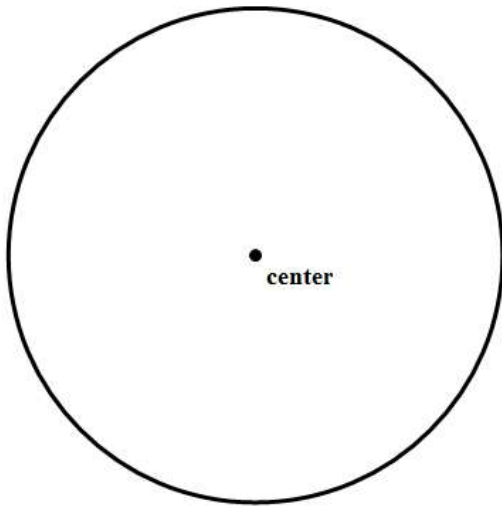
G-SRT.5. Learning Target: *I can prove relationships in geometric figures using congruence criteria for triangles.*

10. If $\triangle ABC \cong \triangle CDA$, which of the following must be true? (Circle <u>all</u> that apply.)
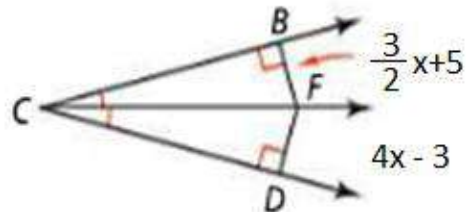
a. $\overline{AB} \cong \overline{CA}$

b. $\overline{BC} \cong \overline{DA}$

c. $\angle CAB \cong \angle ACD$

d. $\angle ABC \cong \angle CAD$

11. Given the following diagram, which of the following statements must be true? (Circle all that apply.)

(a) $\angle KJL \cong \angle MLK$
(b) $\overline{JL} \cong \overline{MK}$
(c) $\angle JLK \cong \angle JKL$
(d) $\overline{KJ} \cong \overline{KL}$
(e) $\angle JLK \cong \angle MKL$

12. Find the value of x and the length of $\overline{BF}$. $\overline{CB} \cong \overline{CD}$.

$\frac{3}{2}x+5$
$4x - 3$

G-SRT.8. Learning Target: *I can solve real world problems involving right triangles using the Pythagorean Theorem.*

13. A kite frame consists of two pieces of wood placed along the diagonals. Decorative binding will be placed along the perimeter of the kite.

If the binding costs $1.50 a foot, what will be the total cost?

HINT: there are 12 inches in a foot.
Round your perimeter to the nearest foot.