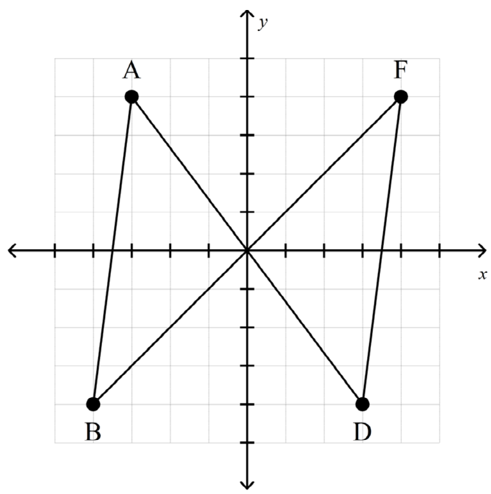
Name: ____________________

CCGPS Analytic Geometry - EOTT Study Guide

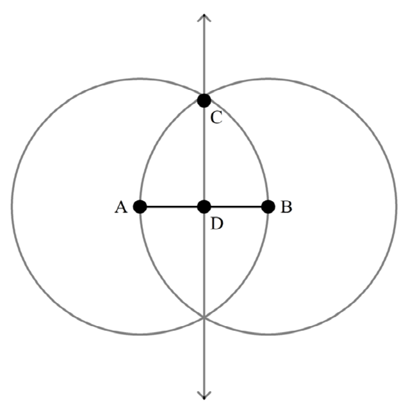
Short Answer - *Show what you did to find your answer.*

1. Use the image as necessary to answer the question. Let Point C be at the origin.



Identify the statements below that correctly identify the corresponding parts of the congruent triangles above and uses SAS to prove congruence.

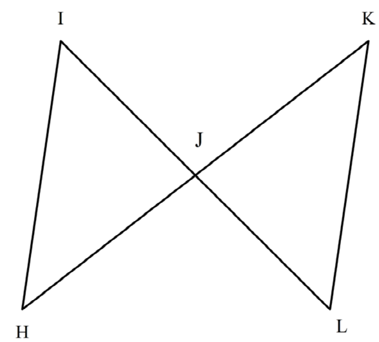
2. Use the image below to answer this question.



Identify the statement that is true.

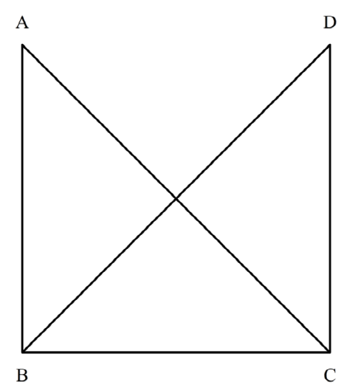
3. Given $\overline{HK}$ bisects $\overline{IL}$ and $\angle IHJ \cong \angle LKJ$.

What triangle congruence postulate proves that $\triangle JHI \cong \triangle JKL$?



4. Identify the congruency statements that prove the two triangles congruent.

Given $\overline{AB} \cong \overline{DC}$, $\overline{AB} \perp \overline{BC}$, and $\overline{DC} \perp \overline{CB}$.

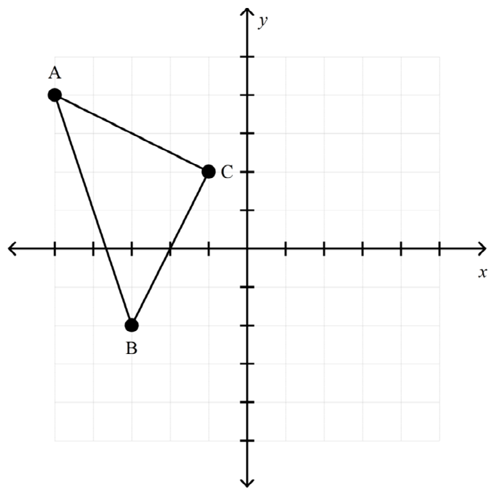


Select your answer based only on the given information.

Name: ____

5. *MCC9-12.G.CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.*

   Perform the rigid motion indicated below, then respond to the question.



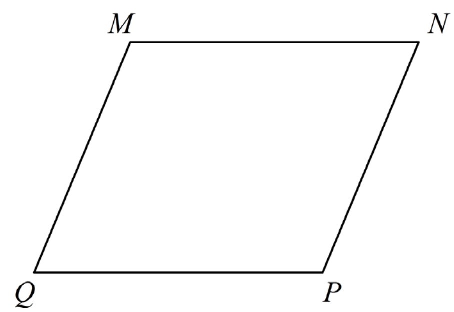
   Reflec the image of $\triangle ACB$ across the y-axis. Label the reflection $\triangle DFE$. Identify the corresponding part to $\overline{BA}$.

6. *MCC9-12.G.CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.*

   Identify the following transformations that do NOT result in a congruent triangle to $\triangle JKL$.

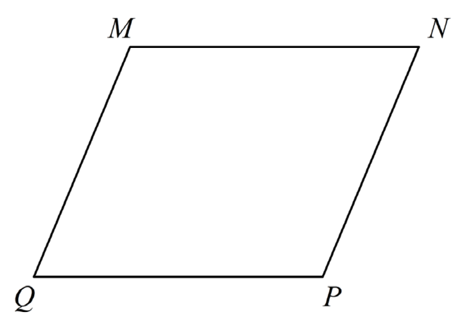
7. *MCC9-12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.*

   The quadrilateral below is best described as a parallelogram. Which of the following statements is NOT necessary to prove that $\triangle QMN \cong \triangle QPN$ using SSS?

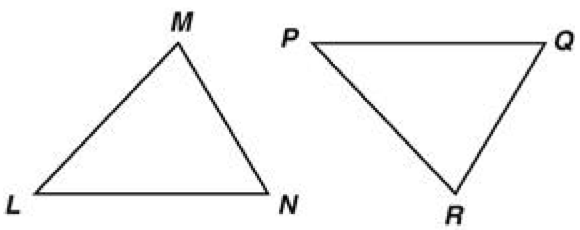


8. *MCC9-12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.*

   The quadrilateral below is best described as a parallelogram. Which of the following statements is NOT necessary to prove that $\triangle QMN \cong \triangle QPN$ using ASA?



9. *MCC9-12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.*



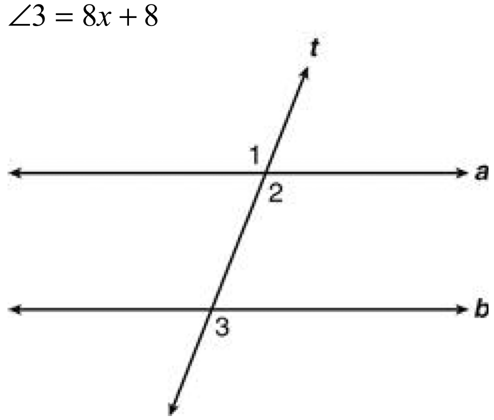
Which of the followign statements does NOT prove that the two triangles above are congruent?

10. *MCC9-12.G.CO.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.*

$\triangle DEF$ is mapped onto $\triangle JKL$ by Transformation T. Which set of statements does not require that T be a rotation, a reflection, or a translation?

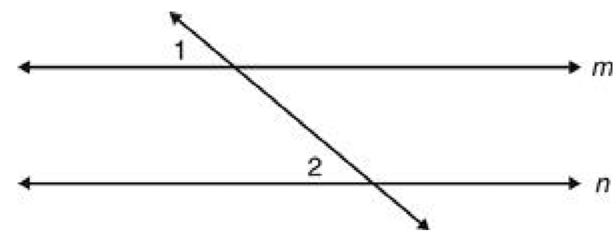
11. *MCC9-12.G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*

Let $a \parallel b$. $\angle 1 = 11x - 4$, $\angle 2 = 12y - 5$, and $\angle 3 = 8x + 8$



Solve for x and y.

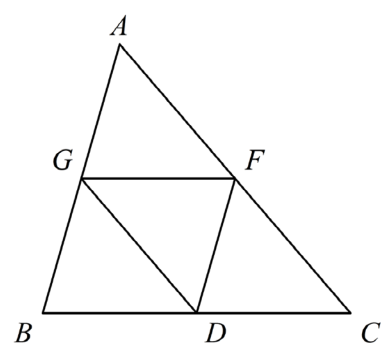
12. *MCC9-12.G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*



If $\angle 1$ and $\angle 2$ are corresponding angles because of the transversal, which statement is FALSE?

13. *MCC9-12.G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*

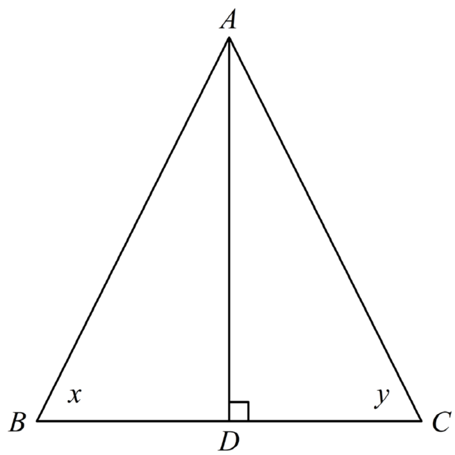
F is the midpoint of $\overline{AC}$, D is the midpoint of $\overline{BC}$, and G is the midpoint of $\overline{AB}$.



If $\overline{AB} = 14$, $\overline{BC} = 13$, and $\overline{AC} = 12$, then what is the perimeter of $\triangle GFD$?

14. *MCC9-12.G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*

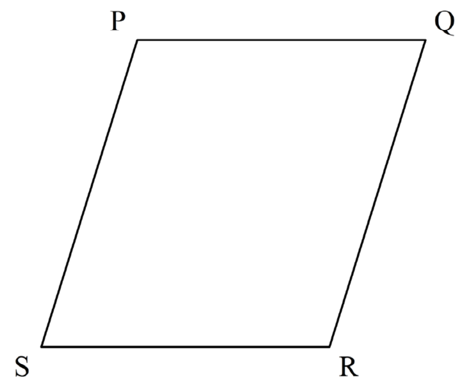
$\triangle CAB$ is an isosceles triangle.



Which statement is NOT true?

15. *MCC9-12.G.CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*

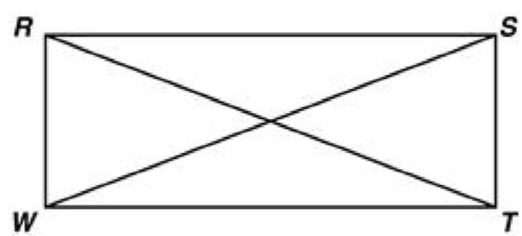
The image below is a parallelogram. Let $\overline{PQ} = 9x - 7$ and $\overline{RS} = 9x - 8$



What is the perimeter of the parallelogram?

16. *MCC9-12.G.CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*

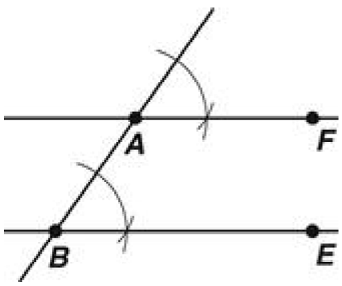
Which of the following statements is sufficient to prove that $\square RSTW$ is a rectangle?



Name: ____________________

17. *MCC9-12.G.CO.12 Make formal geometric constructions with a variety of tools and methods. Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*

What is being constructed in the figure?



18. *MCC9-12.G.CO.12 Make formal geometric constructions with a variety of tools and methods. Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*

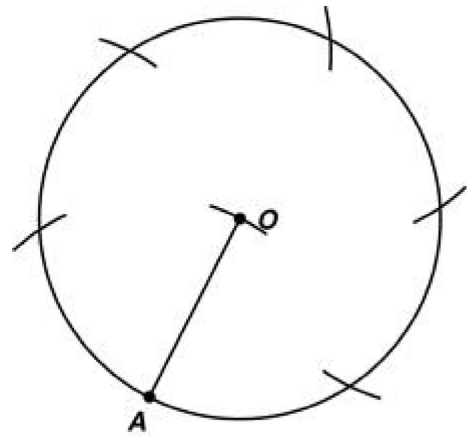
Which of the figures below is the correct construction of an angle bisector?

19. *MCC9-12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.*

Which set of instructions should result in a square inscribed in a circle?

20. *MCC9-12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.*

A construction on Circle O with radius $\overline{OA}$ is shown below.



Which polygons could be inscribed in Circle O using the markings shown?

21. *MCC9-12.G.SRT.1 Verify experimentally the properties of dilations given by a center and a scale factor: b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.*

Which transformation results in a figure that is similar to the original figure but has a smaller area?

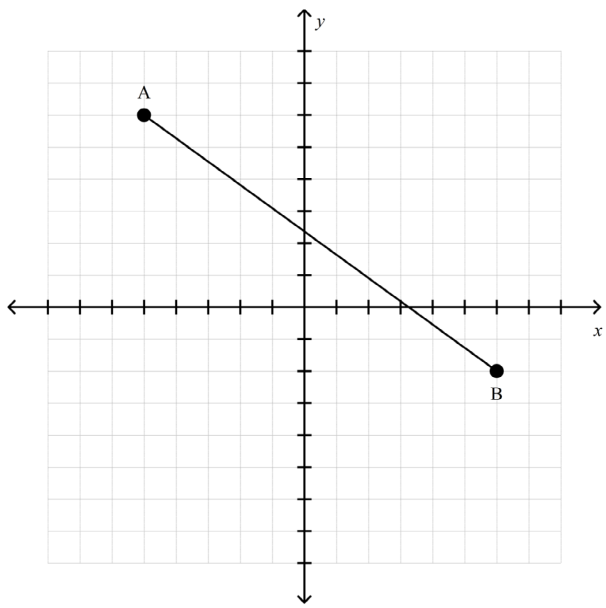
22. *MCC9-12.G.SRT.1 Verify experimentally the properties of dilations given by a center and a scale factor: b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.*

The initial image of a triangle is situated about the points $(8,13)$, $(2,3)$, and $(9,-2)$. After a dilation, with a scale factor of $\frac{2}{3}$, what are the three points of the resulting image?

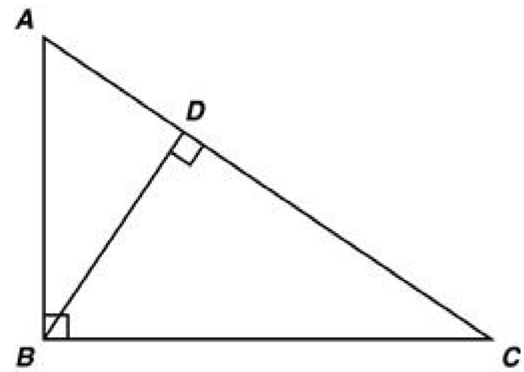
Name: ____

23. *MCC9-12.G.SRT.1 Verify experimentally the properties of dilations given by a center and a scale factor: b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.*

    Which image represents the dilation of $\overline{AB}$ about the origin with a scale factor of $\frac{6}{5}$?



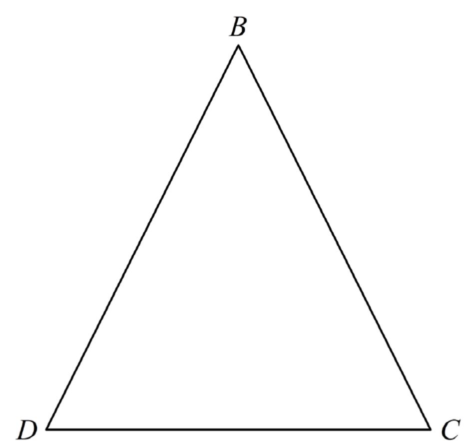
24. *MCC9-12.G.SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.*



    Identify which of the following statements is FALSE.

25. *MCC9-12.G.SRT.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.*

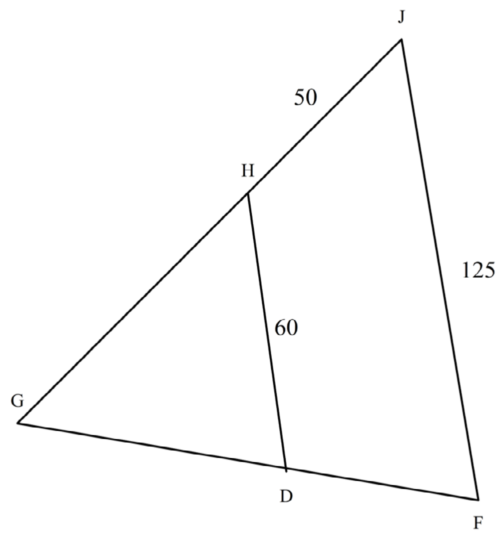
    In the figure below, $BF \perp DC$. What else would you need to show to prove $\triangle BCF \sim \triangle BDF$?



Name: ____

26. *MCC9-12.G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*

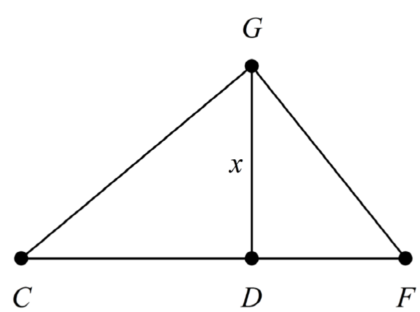
    Use the image below to response to the question. $\overline{DH} \parallel \overline{FJ}$.



    What is the value of $\overline{GI}$?

27. *MCC9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.*

    Let $\overline{CD} = 5.75$ and $\overline{DF} = 3.75$. Identify the measure of x.



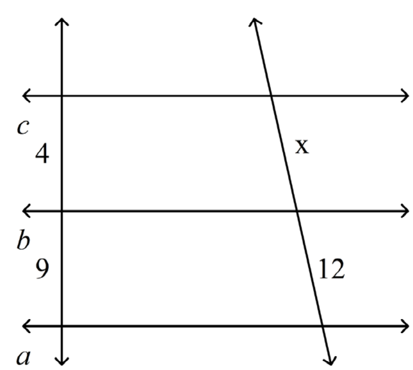
28. *MCC9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.*

    Question 1-3: Students will be expected to know how to use similarity to solve problems in a variety of contexts - shadow of a person when considering the shadow of a billboard to the person, right triangle connected to the hypoteneuse of another, amongst other types.

    In every case, students will be expected to use algebra to solve for variables and then use those variables to find the actual lengths of sides of triangles.

29. *MCC9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.*

    Let $a \parallel b$ and $b \parallel c$.



    Find the value of x.

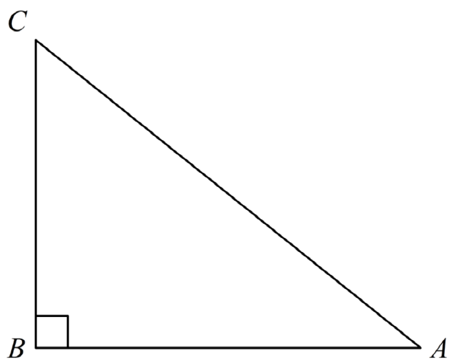
30. *MCC9‒12.G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.*

    For a right triangle $\triangle ABC$, $\angle A < 90$. If $\angle B = 90$, then which of the following statements is always true?

Name: ______________________________

31. *MCC9–12.G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.*

For $\triangle ABC$, the measure of $\angle CAB = 35°$. The measure of $\overline{BC} = 19$. Identify the trigonometric equation that enables you to solve for the hypoteneuse.



32. *MCC9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*

Building A measures 250 feet from the street to the top of the building. Building B measures 160 feet from street to the top of the building. There is an angle of elevation that measures 38 degrees from Building B to Building A.

What is the distance from Building A to Building B?

33. *MCC9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*

For a right triangle, $\triangle ABC$, the right angle is situated at the vertex of B. If the $Cos\,A = \frac{6}{25}$, then what is the $Sin\,A$?

34. *MCC9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*

An 12-ft ladder is positioned x feet from the base of a wall. If the angle of elevation from the base of the ladder to the top of the wall is $43.2°$, then how far is the base of the ladder from the wall?

CCGPS Analytic Geometry - EOTT Study Guide
Answer Section

SHORT ANSWER

1. ANS:
$\overline{DC} \cong \overline{AC}$

$\angle FCD \cong \angle BCA$

$\overline{CF} \cong \overline{CB}$

PTS: 1 STA: G.CO.6; G.CO.7

2. ANS:
$\overline{BC} \cong \overline{AC}$

PTS: 1 STA: G.CO.12

3. ANS:
AAS

PTS: 1 STA: G.CO.7

4. ANS:
$\overline{AB} \cong \overline{DC}$

$\angle ABC \cong \angle DCB$

$\overline{BC} \cong \overline{CB}$

PTS: 1

5. ANS:
$\overline{EF}$

PTS: 1 STA: G.CO.7

6. ANS:
Reflection along $\overline{JL}$ and a dilation of $\triangle JKL$ by a scale factor not equal to one

PTS: 1

7. ANS:
$\angle MQN \cong \angle PNQ$

PTS: 1

8. ANS:
$\overline{MN} \cong \overline{MQ}$

PTS: 1

9. ANS:
$\angle LNM \cong \angle PQR$, $\overline{NM} \cong \overline{QR}$, and $\overline{ML} \cong \overline{RP}$

PTS: 1

10. ANS:
$\angle D \cong \angle J$, $\angle E \cong \angle K$, and $\angle F \cong \angle L$

PTS: 1

11. ANS:
$x = 4$ and $y = 3.75$

PTS: 1

12. ANS:
$m \parallel n$

PTS: 1

13. ANS:
19.5

PTS: 1

14. ANS:
$x° + y° + 90° = 180°$

PTS: 1

15. ANS:
$36x - 30$

PTS: 1

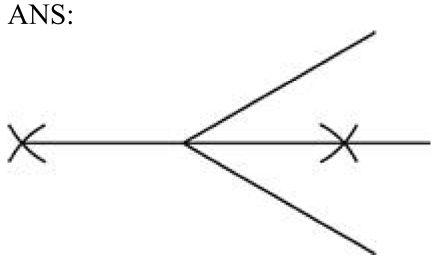
16. ANS:
$\overline{RT}$ bisects $\overline{SW}$

PTS: 1

17. ANS:
$\overline{AB} \parallel \overline{FE}$

PTS: 1

18. ANS:



PTS: 1

19. ANS:
Start with a circle with Center C. Draw a diameter. Construct a perpendicular to the diameter through C that intersects the circle. Connect adjacent intersection points on the circle with segments.

PTS: 1

20. ANS:
an equilateral triangle and a regular hexagon

PTS: 1

21. ANS:
A dilation of $\triangle PRS$ by a scale factor of $\frac{1}{3}$

PTS: 1

22. ANS:
$(5.3333, 8.6667)$, $(1.3333, 2)$, and $(6, -1.3333)$

PTS: 1 STA: G.SRT.1b

23. ANS:
Answer not avaialble at the moment.

PTS: 1

24. ANS:
$\frac{\overline{AB}}{\overline{BC}} = \frac{\overline{DB}}{\overline{CD}}$

PTS: 1

25. ANS:
$\angle BDC \cong \angle BCD$

PTS: 1

26. ANS:
$\overline{GI} \approx 96.1538$

PTS: 1

27. ANS:
$x = \sqrt{22}$

PTS: 1

28. ANS:

PTS: 1

29. ANS:
$x = 5.3$

PTS: 1

30. ANS:
$\sin A = \cos B$

PTS: 1

31. ANS:
$\cos 55° = \dfrac{19}{x}$

PTS: 1

32. ANS:
The distance from building A to Building B is approximately 115.1947 feet.

$\tan 38 = \dfrac{90}{x} \Rightarrow x \cdot \tan 38 = 90 \Rightarrow x = \dfrac{90}{\tan 38} \approx 115.1947$

PTS: 1

33. ANS:
$\sin A = \dfrac{\sqrt{589}}{25}$

PTS: 1

34. ANS:
The ladder is approximately 8.7 feet from the wall.

0.729

PTS: 1

