Getting ready for….

FSA Geometry EOC

Congruency, Similarity, Right Triangles, and Trigonometry

2014-2015

Student Packet

FS Geometry EOC Review

MAFS.912.G-CO.1.1

Definition of an Angle

1. Draw and label $\angle$ *ABC*.

2. Define the term *angle* as clearly and precisely as you can.

Definition of Perpendicular Lines

1. Draw and label a pair of perpendicular lines.

2. Define *perpendicular lines* as clearly and precisely as you can.

Definition of Parallel Lines

1. Draw a pair of parallel lines.

2. Define parallel lines as clearly and precisely as you can.

Definition of Line Segment

1. Draw and label $\overline{AB}$. Clearly indicate what part of your drawing is the line segment.

2. Define the term *line segment* as clearly and precisely as you can.

Definition of a Circle

1. Draw and label a circle.

2. Define the term circle as clearly and precisely as you can.

FS Geometry EOC Review

MAFS.912.G-CO.1.1 EOC Practice

1. Let's say you opened your laptop and positioned the screen so it's exactly at 90°—a right angle—from your keyboard. Now, let's say you could take the screen and push it all the way down beyond 90°, until the back of the screen is flat against your desk. It looks as if the angle disappeared, but it hasn't. What is the angle called, and what is its measurement?

   A. Straight angle at 180°
   B. Linear angle at 90°
   C. Collinear angle at 120°
   D. Horizontal angle at 180°

2. What is defined below?
   __________: a portion of a line bounded by two points

   A. arc
   B. axis
   C. ray
   D. segment

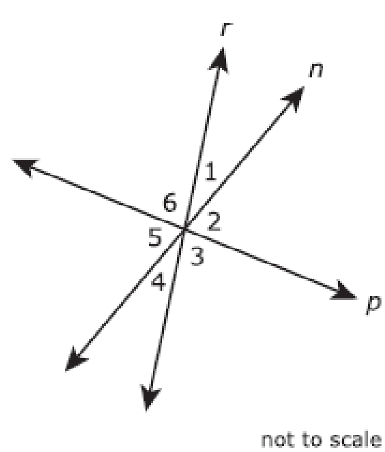
3. Given $\overleftrightarrow{XY}$ and $\overleftrightarrow{ZW}$ intersect at point A.
   Which conjecture is **always** true about the given statement?

   A. $XA = AY$
   B. $\angle XAZ$ is acute.
   C. $\overleftrightarrow{XY}$ is perpendicular to $\overleftrightarrow{ZW}$
   D. X, Y, Z, and W are noncollinear.

4. The figure shows lines r, n, and p intersecting to form angles numbered 1, 2, 3, 4, 5, and 6. All three lines lie in the same plane.

   Based on the figure, which of the individual statements would provide enough information to conclude that line r is perpendicular to line p? Select **ALL** that apply.

- [ ] $m\angle 2 = 90°$
- [ ] $m\angle 6 = 90°$
- [ ] $m\angle 3 = m\angle 6$
- [ ] $m\angle 1 + m\angle 6 = 90°$
- [ ] $m\angle 3 + m\angle 4 = 90°$
- [ ] $m\angle 4 + m\angle 5 = 90°$



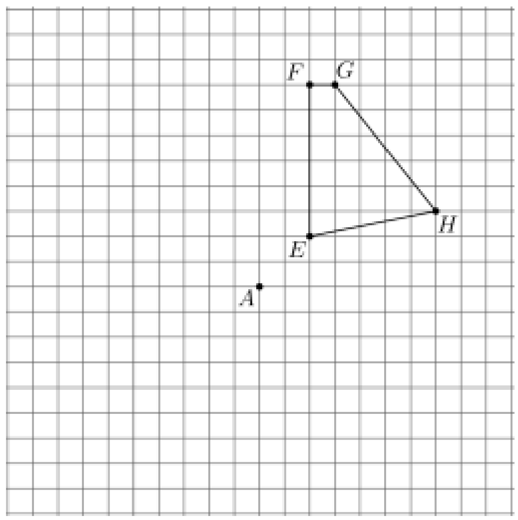
MAFS.912.G-CO.1.2

Demonstrating Rotations

Trace the figure onto a transparency or tracing paper.

1. Use the original and the traced version to demonstrate how to rotate quadrilateral $EFGH$ about point A 90° clockwise. Explain how you rotated the figure.

2. Draw and label the rotated image as $E'F'G'H'$ on the grid below.

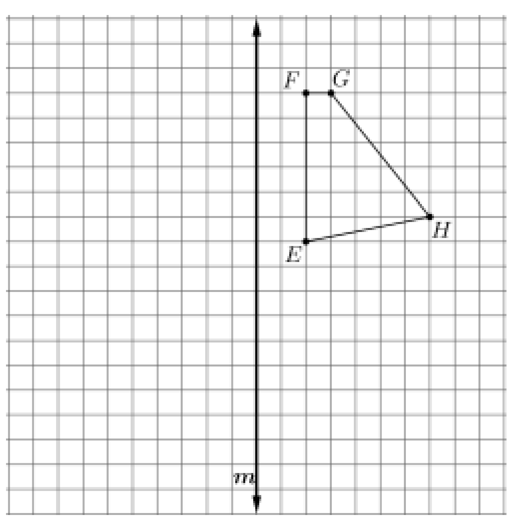


Demonstrating Reflections

1. Trace the figure onto a transparency or tracing paper.

2. Use the original and the traced version to demonstrate how to reflect quadrilateral $EFGH$ across line m.

3. Draw and label the reflected image as $E'F'G'H'$ on the grid below.



Transformations And Functions

Three transformations of points in the plane are described below. Consider each point in the plane as an input and its image under a transformation as its output. Determine whether or not each transformation is a function. Explain.

1. Transformation *T* translates each point in the plane three units to the left and four units up.

2. Transformation *R* reflects each point in the plane across the *y*-axis.

3. Transformation *O* rotates each point in the plane about the origin 90° clockwise.

Comparing Transformations

Determine whether or not each transformation, in general, preserves distance and angle measure. Explain.

1. Dilations

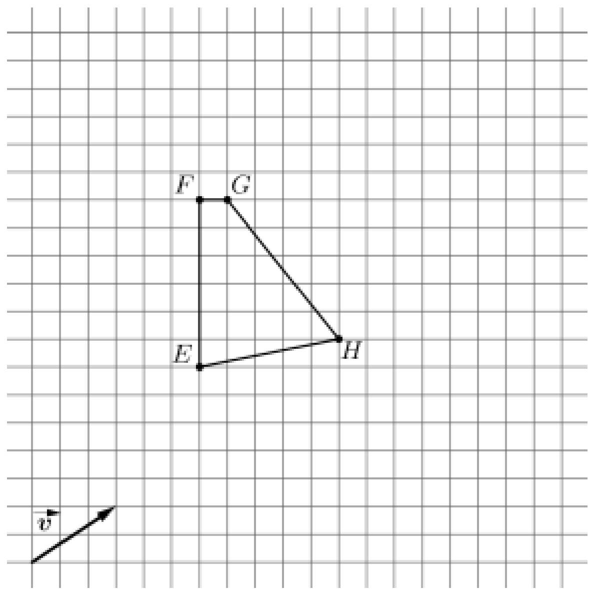
2. Reflections

Demonstrating Translations

1. Trace the figure onto a transparency or tracing paper.

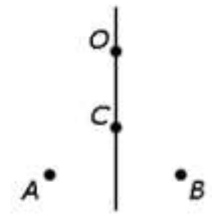
2. Use the original and the traced version to demonstrate how to translate quadrilateral $EFGH$ according to vector *v* shown below.

3. Draw and label the translated image as $E'F'G'H'$ on the grid below.



MAFS.912.G-CO.1.2 EOC Practice

1. A transformation takes point A to point B. Which transformation(s) could it be?

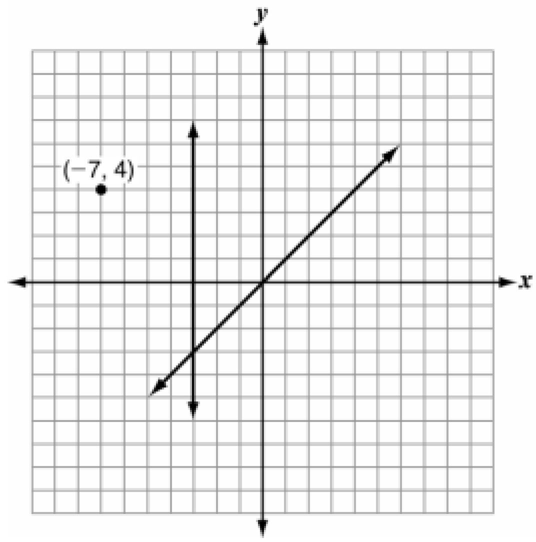


$\overleftrightarrow{AB} \perp \overleftrightarrow{OC}$ $\quad AC = CB$

F is some reflection.
R is some rotation about *O*.
T is some translation.

   A. F only
   B. F and R only
   C. F and T only
   D. F, R, and T

2. The point $(-7,4)$ is reflected over the line $x = -3$. Then, the resulting point is reflected over the line $y = x$. Where is the point located after both reflections?



   A. $(-10,-7)$
   B. $(1,4)$
   C. $(4,-7)$
   D. $(4,1)$

3. Given: $\overline{AB}$ with coordinates of $A(-3,-1)$ and $B(2,1)$
   $\overline{A'B'}$ with coordinates of $A'(-1,2)$ and $B'(4,4)$

   Which translation was used?

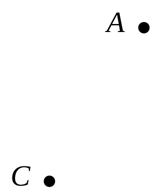
   A. $(x',y') \rightarrow (x+2, y+3)$
   B. $(x',y') \rightarrow (x+2, y-3)$
   C. $(x',y') \rightarrow (x-2, y+3)$
   D. $(x',y') \rightarrow (x-2, y-3)$

4. Point P is located at (4, 8) on a coordinate plane. Point P will be reflected over the x-axis. What will be the coordinates of the image of point P?

   A. $(28,4)$
   B. $(24,8)$
   C. $(4,28)$
   D. $(8,4)$

MAFS.912.G-CO.1.4

Define a Rotation



1. Rotate point *A* 90° clockwise around point *C*. Then describe the sequence of steps you used to rotate this point.

2. Develop a definition of rotation in terms of any of the following: angles, circles, perpendicular lines, parallel lines, and line segments. Write your definition so that it is general enough to use for a rotation of any degree measure, but make it detailed enough that it can be used to perform rotations.

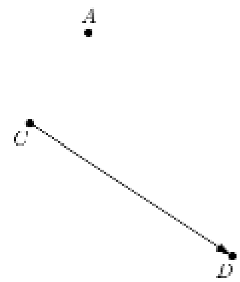
Define a Reflection

1. Reflect point *C* across $\overleftrightarrow{AB}$.

2. Develop a definition of reflection in terms of any of the following: angles, circles, perpendicular lines, parallel lines, and line segments. Write your definition so that it is general enough to use for any reflection, but make it detailed enough that it can be used to perform reflections.

Define a Translation

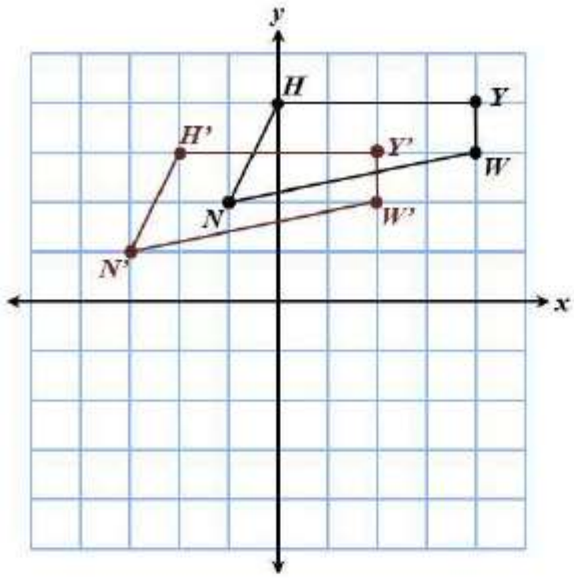
3. Translate point A according to $\overrightarrow{CD}$. Then, describe the sequence of steps you used to translate this point.



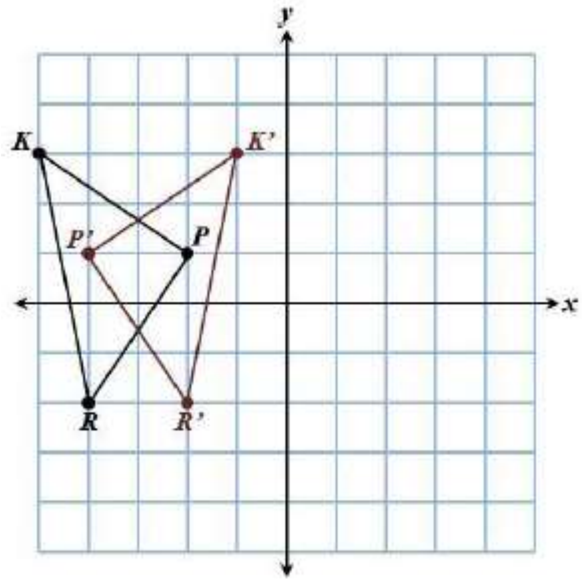
4. Develop a definition of translation in terms of any of the following: angles, circles, perpendicular lines, parallel lines, and line segments. Write your definition so that it is general enough to use for any translation but make it detailed enough that it can be used to perform translations.

MAFS.912.G-CO.1.4 EOC Practice

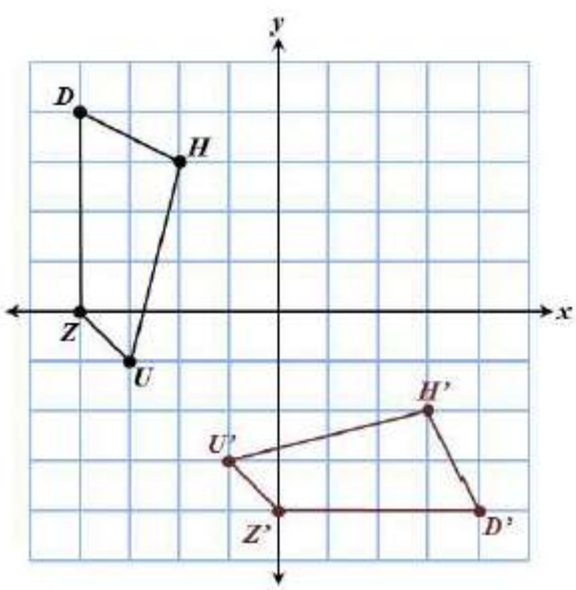
1. The graph of a figure and its image are shown below. Identify the transformation to map the image back onto the figure.



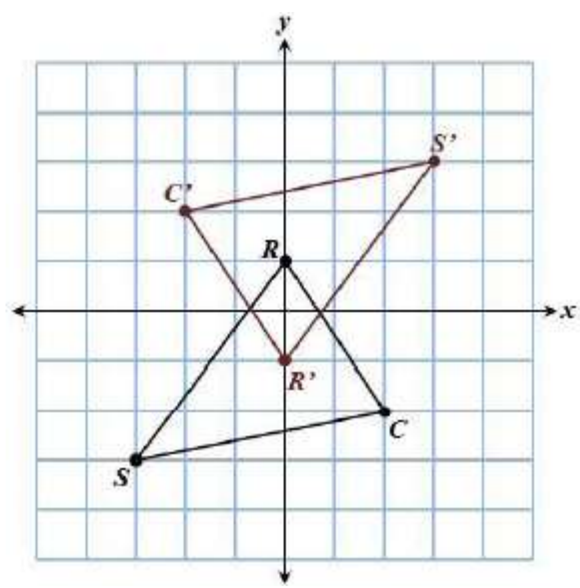
- ○ Reflection
- ○ Rotation
- ○ Translation



- ○ Reflection
- ○ Rotation
- ○ Translation



- ○ Reflection
- ○ Rotation
- ○ Translation

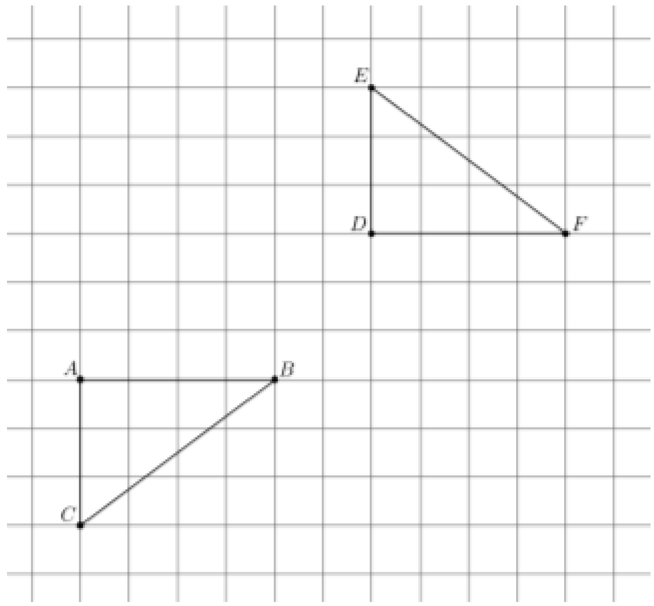


- ○ Reflection
- ○ Rotation
- ○ Translation

MAFS.912.G-CO.1.5

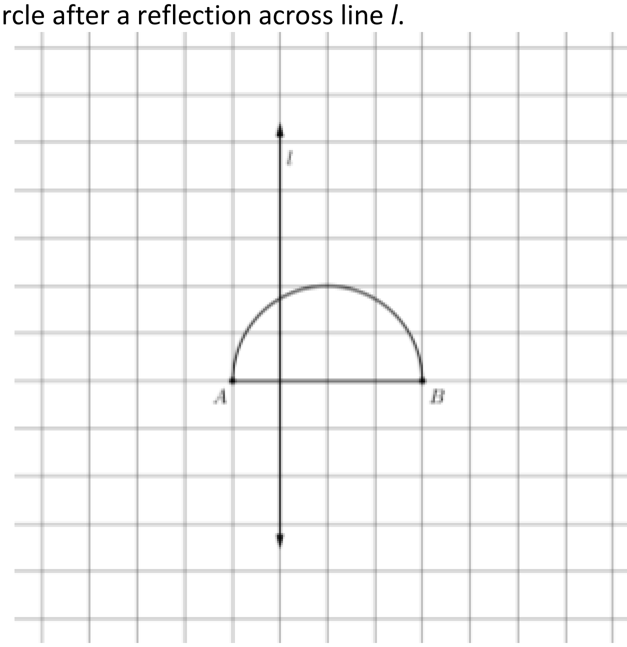
Two Triangles

1. Clearly describe a sequence of transformations that will map ΔABC to ΔDFE. You may assume that all vertices are located at the intersections of grid lines.



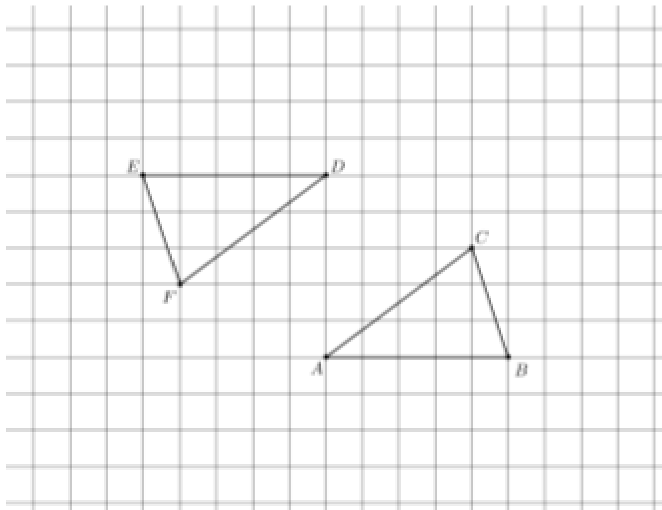
Reflect a Semicircle

1. Draw the image of the semicircle after a reflection across line *l*.



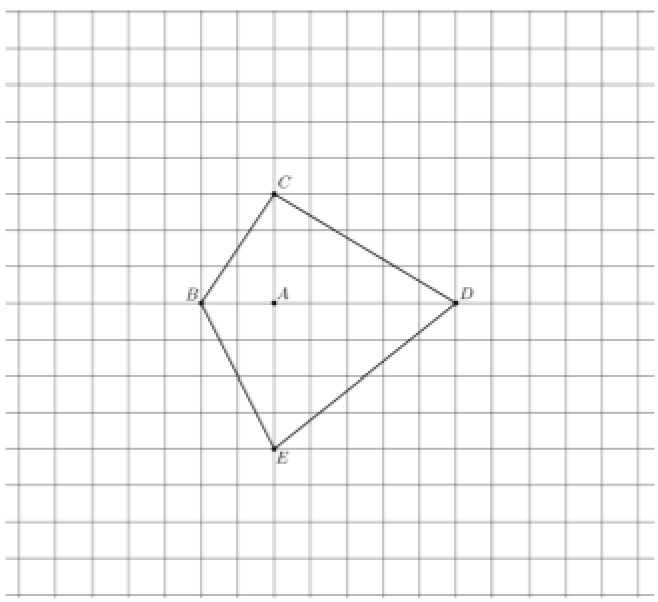
Indicate the Transformations

1. Clearly describe a sequence of transformations that will map Δ*ABC* to Δ*DEF*. You may assume that all vertices are located at the intersections of grid lines.



Rotation of a Quadrilateral

1. Draw the image of quadrilateral *BCDE* after a 90° clockwise rotation about point *A*.

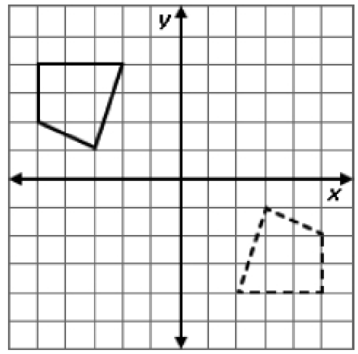


FS Geometry EOC Review

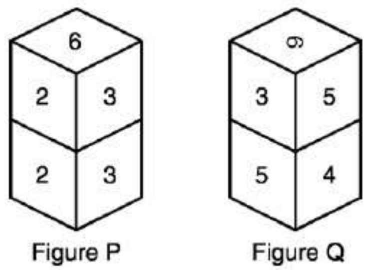
MAFS.912.G-CO.1.5 EOC Practice

1. Which transformation maps the solid figure onto the dashed figure?

   A. rotation 180° about the origin
   B. translation to the right and down
   C. reflection across the x-axis
   D. reflection across the y-axis



2. Ken stacked 2 number cubes. Each cube was numbered so that opposite faces have a sum of 7.



Which transformation did Ken use to reposition the cubes from figure P to figure Q?

   A. Rotate the top cube $180°$, and rotate the bottom cube $180°$.
   B. Rotate the top cube $90°$ clockwise, and rotate the bottom cube $180°$.
   C. Rotate the top cube $90°$ counterclockwise, and rotate the bottom cube$180°$.
   D. Rotate the top cube $90°$ counterclockwise, and rotate the bottom cube $90°$ clockwise.

3. A triangle has vertices at $A(-7,6), B(4,9), C(-2,-3)$. What are the coordinates of each vertex if the triangle is translated 4 units right and 6 units down?

   A. $A'(-11,12), B'(0,15), C'(-6,3)$
   B. $A'(-11,0), B'(0,3), C'(-6,-9)$
   C. $A'(-3,12), B'(8,15), C'(2,3)$
   D. $A'(-3,0), B'(8,3), C'(2,-9)$

4. A triangle has vertices at $A(-3,-1), B(-6,-5), C(-1,-4)$. Which transformation would produce an image with vertices $A'(3,-1), B'(6,-5), C'(1,-4)$?

   A. a reflection over the $x - axis$
   B. a reflection over the $y - axis$
   C. a rotation $90°$ clockwise
   D. a rotation $90°$ counterclockwise

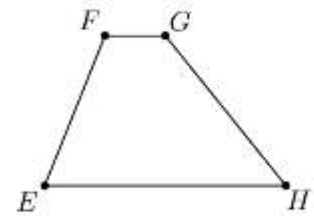
FS Geometry EOC Review

MAFS.912.G-CO.1.3

Transformations of Trapezoids

Use the trapezoid at the right to answer the following questions.

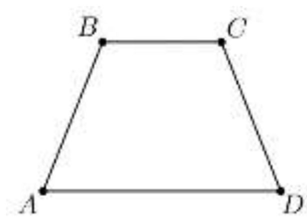
1. Describe the rotation(s) that carry the trapezoid onto itself.



2. Describe the reflection(s) that carry the trapezoid onto itself. Draw any line(s) of reflection on the trapezoid.

Use the isosceles trapezoid at the right to answer the following questions.

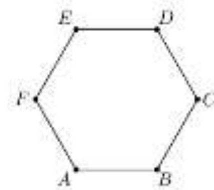
3. Describe the rotation(s) that carry the isosceles trapezoid onto itself.



4. Describe the reflection(s) that carry the isosceles trapezoid onto itself. Draw any line(s) of reflection on the trapezoid.

Transformations of Regular Polygons

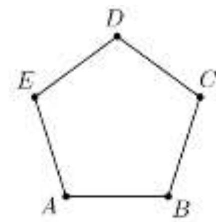
Use the regular hexagon at the right to answer the following questions.



5. Describe the rotation(s) that carry the regular hexagon onto itself.

6. Describe the reflection(s) that carry the regular hexagon onto itself.

Use the regular pentagon at the right to answer the following questions.



7. Describe the rotation(s) that carry the regular pentagon onto itself.

8. Describe the reflection(s) that carry the regular pentagon onto itself.

9. Based on your responses to Questions 1-4, how would you describe the rotations and reflections that carry a regular *n*-gon onto itself?

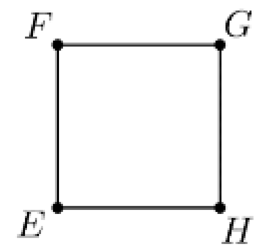
Transformations of Rectangles and Squares

Use the rectangle to answer the following questions.

1. Describe the rotation(s) that carry the rectangle onto itself.

2. Describe the reflection(s) that carry the rectangle onto itself. Draw the line(s) of reflection on the rectangle.

Use the square at the right to answer the following questions.

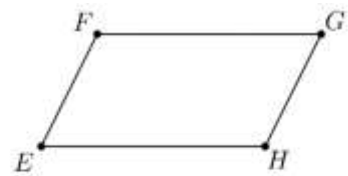


3. Describe the rotation(s) that carry the square onto itself.

4. Describe the reflection(s) that carry the square onto itself. Draw the line(s) of reflection on the square.

Transformations of Parallelograms and Rhombi

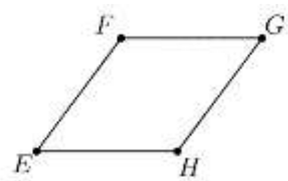
Use the parallelogram to answer the following questions.



1. Describe the rotation(s) that carry the parallelogram onto itself.

2. Describe the reflection(s) that carry the parallelogram onto itself. Draw the line(s) of reflection on the parallelogram.

Use the rhombus at the right to answer the following questions.

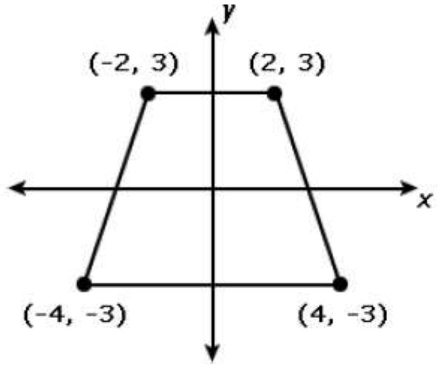


3. Describe the rotation(s) that carry the rhombus onto itself.

4. Describe the reflection(s) that carry the rhombus onto itself. Draw the line(s) of reflection on the rhombus.

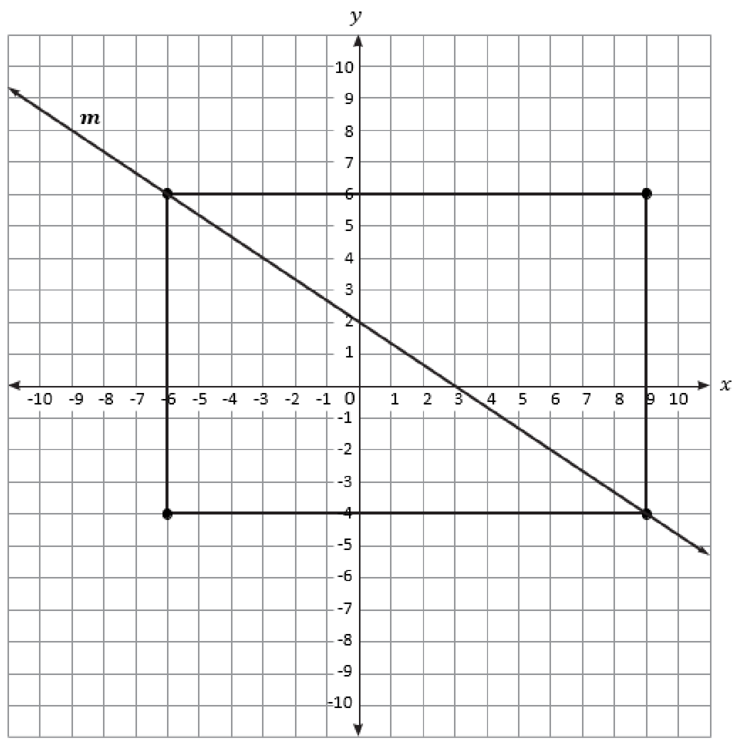
MAFS.912.G-CO.1.3 EOC Practice

1. Which transformation will place the trapezoid onto itself?



A. counterclockwise rotation about the origin by 90°
B. rotation about the origin by 180°
C. reflection across the x-axis
D. reflection across the y-axis

2. Which transformation will carry the rectangle shown below onto itself?

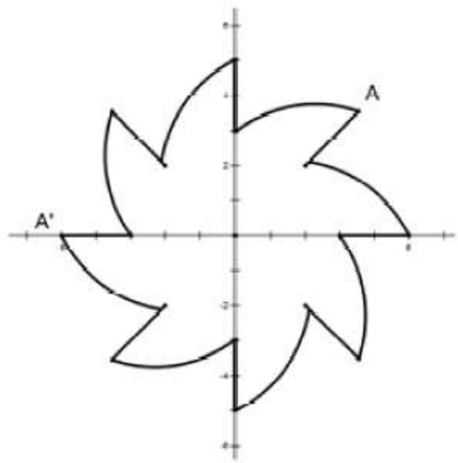


A. a reflection over line m
B. a reflection over the line $y = 1$
C. a rotation 90° counterclockwise about the origin
D. a rotation 270° counterclockwise about the origin

3. Which figure has $90°$ rotational symmetry?

    A. Square
    B. regular hexagon
    C. regular pentagon
    D. equilateral triang

4. Determine the angle of rotation for A to map onto A'.

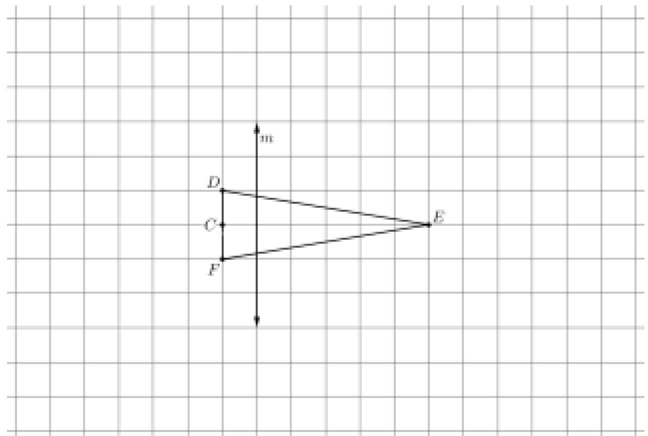


    A. $45°$
    B. $90°$
    C. $135°$
    D. $180°$

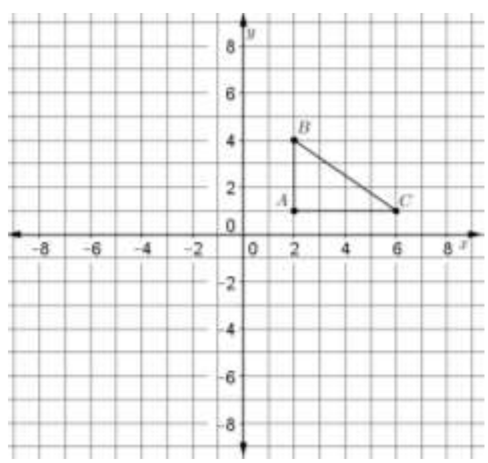
MAFS.912.G-CO.2.6

Repeated Reflections and Rotations

1. Describe what happens to ΔDEF after it is reflected across line *m* two times in succession, then rotated 90° around point *C* four times in succession. Explain.



Transform this

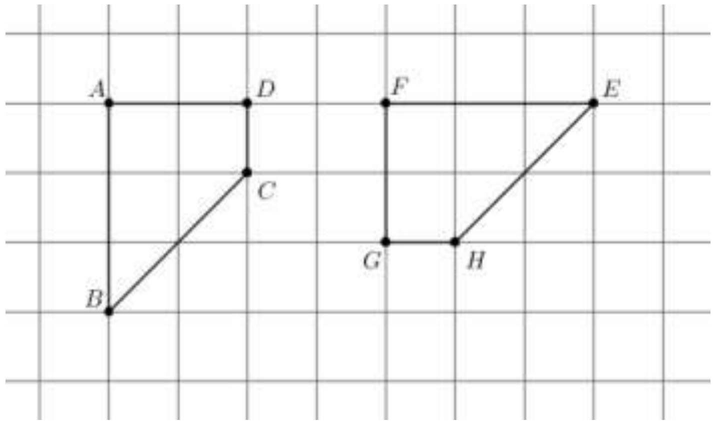


1. Sketch the triangle formed when ΔABC is translated using the rule, $(x, y) \rightarrow (x - 6, y + 2)$. Name the image ΔDEF. Is $\Delta ABC \cong \Delta DEF$? Explain.

2. Sketch the image of ΔABC after a 90° clockwise rotation around the origin. Name the image ΔGHI. Is $\Delta ABC \cong \Delta GHI$? Explain.

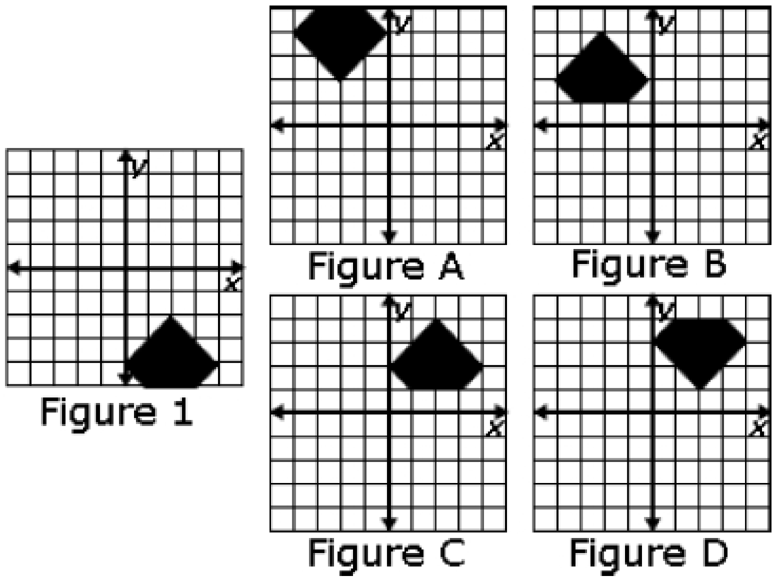
Congruent Trapezoids

Use the definition of congruence in terms of rigid motion to determine whether or not the two trapezoids are congruent. Clearly justify your decision.



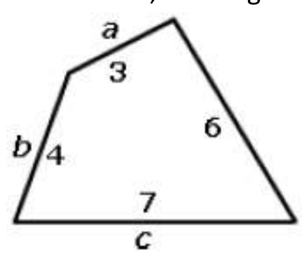
MAFS.912.G-CO.2.6 EOC Practice

1. Figure 1 is reflected about the x-axis and then translated four units left. Which figure results?



   A. Figure A
   B. Figure B
   C. Figure C
   D. Figure D

2. It is known that a series of rotations, translations, and reflections superimposes sides a, b, and c of Quadrilateral X onto three sides of Quadrilateral Y. Which is true about z, the length of the fourth side of Quadrilateral Y?



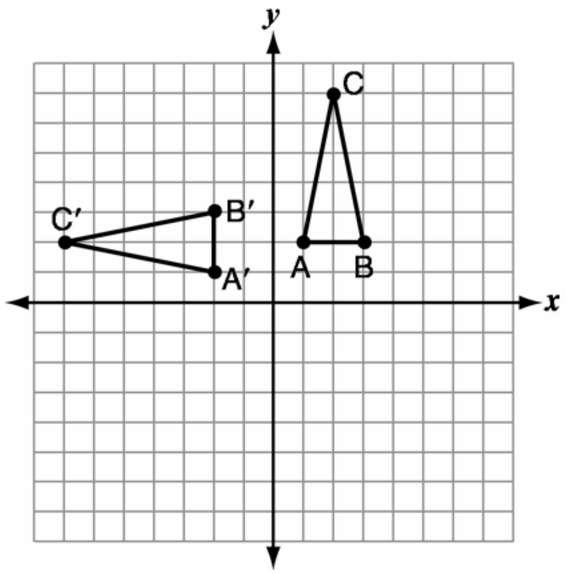
   A. It must be equal to 6
   B. It can be any number in the range $5 \le z \le 7$
   C. It can be any number in the range $3 \le z \le 8$
   D. It can be any number in the range $0 < z < 14$

3. Which transformation will always produce a congruent figure?

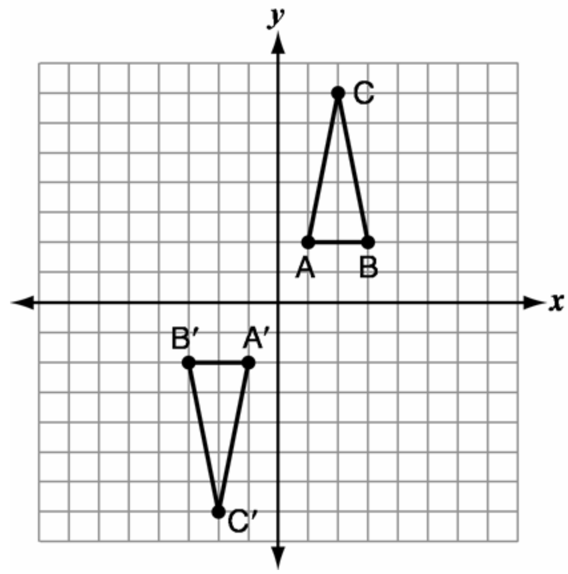
   E. $(x', y') \to (x + 4, y - 3)$
   F. $(x', y') \to (2x, y)$
   G. $(x', y') \to (x + 2, 2y)$
   H. $(x', y') \to (2x, 2y)$

4. Triangle ABC is rotated 90 degrees clockwise about the origin onto triangle A'B'C'Type equation here.. Which illustration represents the correct position of triangle $A'B'C'$?

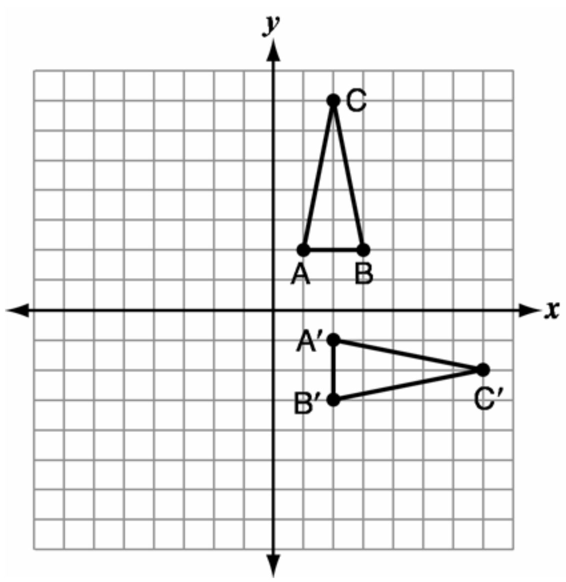
A.



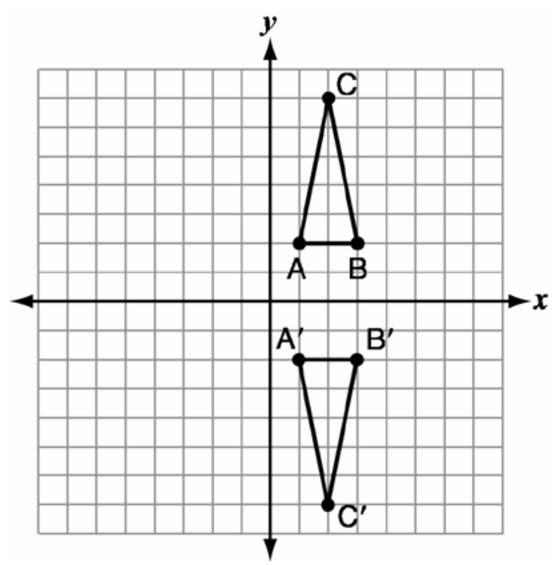
B.



C.

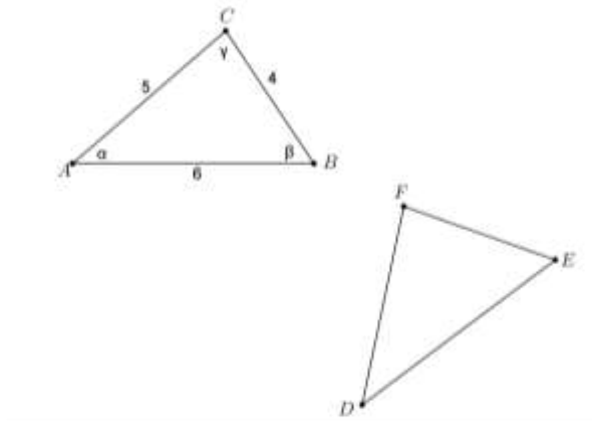


D.



MAFS.912.G-CO.2.7

Congruence Implies Congruent Corresponding Parts
$\Delta ABC \cong \Delta DEF$. The lengths of the sides and the measures of the angles of ΔABC are shown in the diagram.

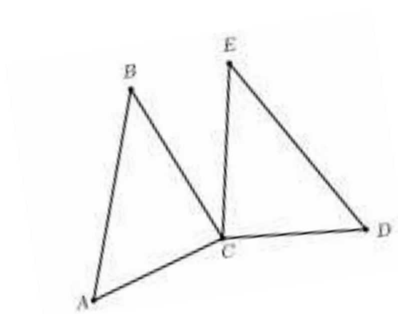


1. Determine the lengths of the sides and the measures of the angles of ΔDEF.

2. Use the definition of congruence in terms of rigid motion to justify your reasoning.

3. Explain clearly how this reasoning can be applied to any two congruent triangles.

Showing Congruence Using Corresponding Parts – 1
Given: $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DC}$, $\overline{BC} \cong \overline{EC}$, $\angle A \cong \angle D$, $\angle B \cong \angle E$, and $\angle ACB \cong \angle DCE$.

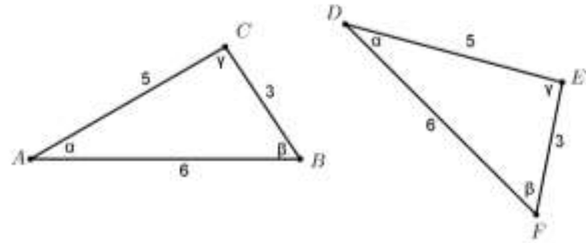


1. Use the definition of congruence in terms of rigid motion to show that $\Delta ABC \cong \Delta DEC$.

Showing Congruence Using Corresponding Parts – 2

The lengths of the sides and the measures of the angles of ΔABC and ΔDEF are indicated below.

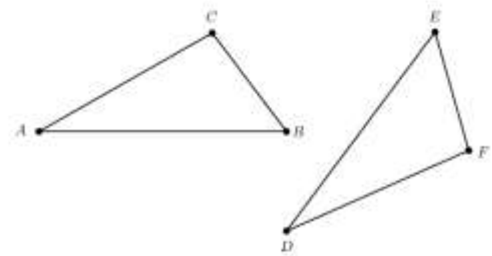
1. Use the definition of congruence in terms of rigid motion to show that $\Delta ABC \cong \Delta DEF$.



Proving Congruence Using Corresponding Parts

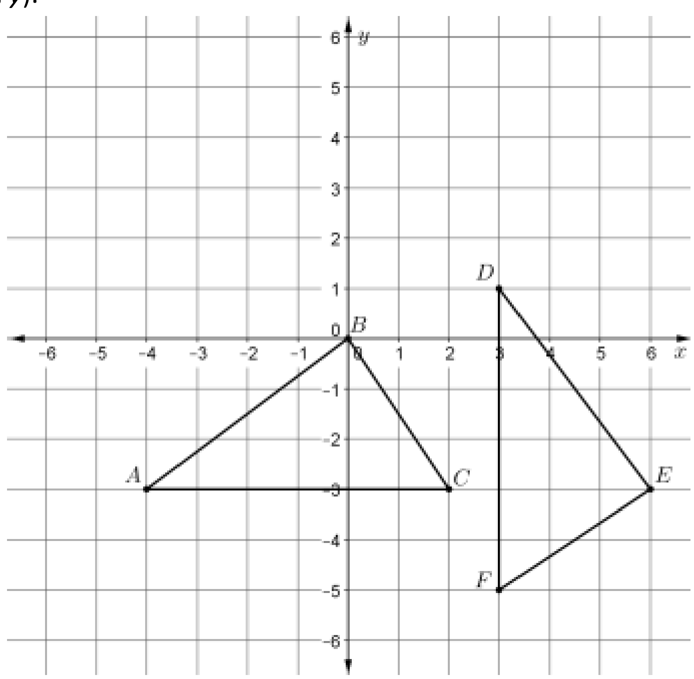
Given: ΔABC and ΔDEF in which $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DF}$, $\overline{BC} \cong \overline{EF}$, $\angle A \cong \angle D$, $\angle B \cong \angle E$, and $\angle C \cong \angle F$.

1. Use the definition of congruence in terms of rigid motion to prove $\Delta ABC \cong \Delta DEF$.



Showing Triangles Congruent Using Rigid Motion

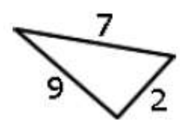
1. Given ΔABC with vertices $A\ (-4,-3)$, $B\ (0,0)$, $C\ (2,-3)$ and ΔDEF with vertices $D\ (3,1)$, $E\ (6,-3)$, $F\ (3,-5)$, use the definition of congruence in terms of rigid motion to show that $\Delta ABC \cong \Delta DEF$. Describe each rigid motion in terms of coordinates (*x*, *y*).



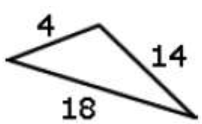
MAFS.912.G-CO.2.7 EOC Practice

1. The triangle below can be subject to reflections, rotations, or translations. With which of the triangles can it coincide after a series of these transformations?

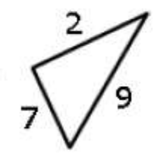
Figures are not necessarily drawn to scale.



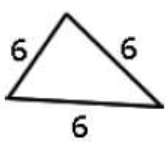
A.



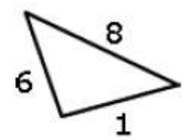
B.



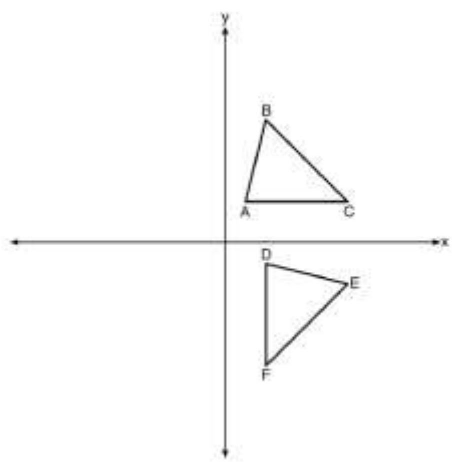
C.



D.



2. The image of ΔABC after a rotation of 90° clockwise about the origin is ΔDEF, as shown below.



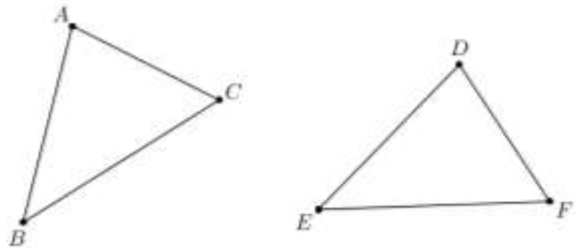
Which statement is true?

A. $\overline{BC} \cong \overline{DE}$
B. $\overline{AB} \cong \overline{DF}$
C. $\angle C \cong \angle E$
D. $\angle A \cong \angle D$

MAFS.912.G-CO.2.8

Justifying SSS Congruence

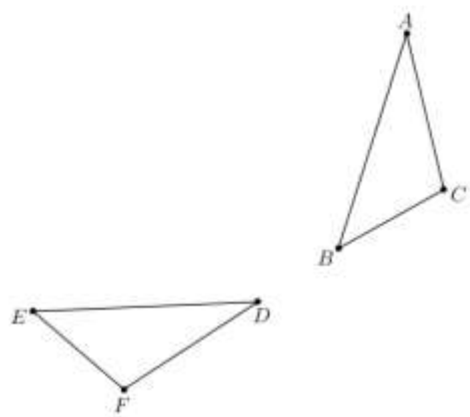
In the diagram, $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DF}$ and $\overline{BC} \cong \overline{EF}$.



1. Using rigid motion, explain in detail, why triangle *ABC* must be congruent to triangle *DEF*.

Justifying SAS Congruence

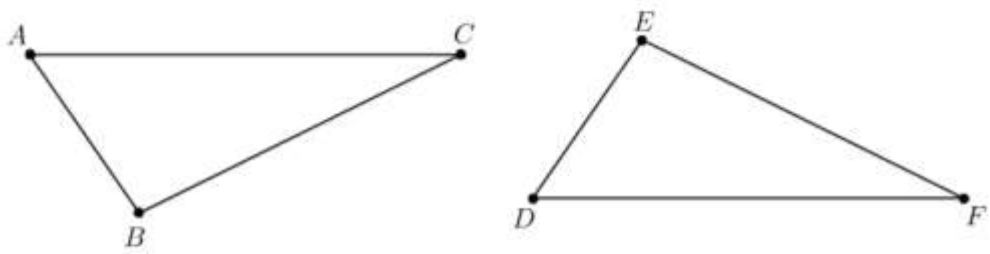
In the diagram, $\overline{AB} \cong \overline{DE}$, $\angle B \cong \angle E$ and $\overline{BC} \cong \overline{EF}$.



1. Using rigid motion, explain in detail, why triangle *ABC* must be congruent to triangle *DEF*.

Justifying ASA Congruence

In the diagram, $\angle A \cong \angle D$, $\overline{AB} \cong \overline{DE}$ and $\angle B \cong \angle E$.



1. Using rigid motion, explain in detail, why triangle *ABC* must be congruent to triangle *DEF*.

MAFS.912.G-CO.2.8 EOC Practice

1. Given the information regarding triangles ABC and DEF, which statement is true?

$\angle A \cong \angle D$

$\angle B \cong \angle E$

$\overline{BC} \cong \overline{EF}$

   A. The given information matches the SAS criterion; the triangles are congruent.
   B. The given information matches the ASA criterion; the triangles are congruent.
   C. Angles C and F are also congruent; this must be shown before using the ASA criterion.
   D. It cannot be shown that the triangles are necessarily congruent.

2. Zhan cut a drinking straw into three pieces (shown below) to investigate a triangle postulate. He moves the straw pieces to make triangles that have been translated, rotated, and reflected from an original position. The end of one piece is always touching the end of another piece. Which postulate could Zhan be investigating using only these straw pieces and no other tools?

(Note: Not to scale.)

   A. The sum of the measures of the interior angles of all triangles is 180°.
   B. If three sides of one triangle are congruent to three sides of a second triangle then, the triangles are congruent.
   C. The sum of the squares of the lengths of the two shorter sides of a triangle is equal to the square of the length of the longest side of a triangle.
   D. If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the triangles are congruent.

3. Consider ΔABC that has been transformed through rigid motions and its image is compared to ΔXYZ. Determine if the given information is sufficient to draw the provided conclusion. Explain your answers.

Given	Conclusion
$\angle A \cong \angle X$ $\angle B \cong \angle Y$ $\angle C \cong \angle Z$	$\Delta ABC \cong \Delta XYZ$

○ TRUE ○ FALSE

Given	Conclusion
$\angle A \cong \angle X$ $\angle B \cong \angle Y$ $\overline{BC} \cong \overline{YZ}$	$\Delta ABC \cong \Delta XYZ$

○ TRUE ○ FALSE

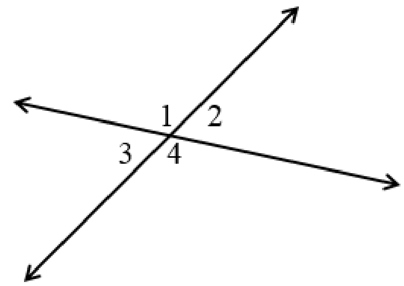
Given	Conclusion
$\angle A \cong \angle X$ $\overline{AB} \cong \overline{XY}$ $\overline{BC} \cong \overline{YZ}$	$\Delta ABC \cong \Delta XYZ$

○ TRUE ○ FALSE

MAFS.912.G-CO.3.9

Proving the Vertical Angles Theorem

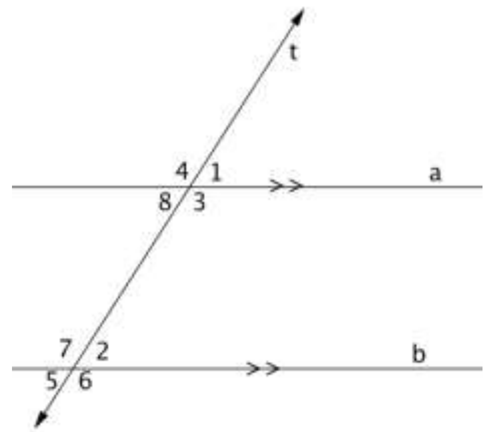
1. Identify a pair of vertical angles.



2. Prove the vertical angles you identified are congruent.

Proving Alternate Interior Angles Congruent

Transversal *t* intersects parallel lines *a* and *b*.

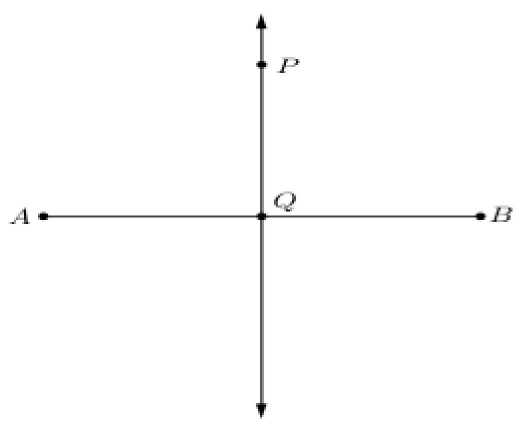


1. Identify a pair of alternate interior angles.

2. Prove that these alternate interior angles are congruent.

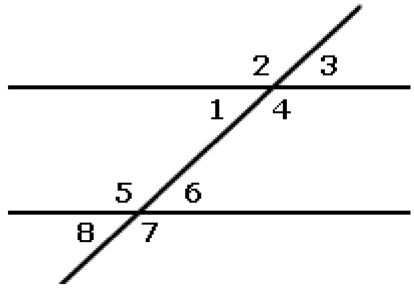
Equidistant Points

$\overleftrightarrow{PQ}$ is the perpendicular bisector of $\overline{AB}$. Prove that point *P* is equidistant from the endpoints of $\overline{AB}$.



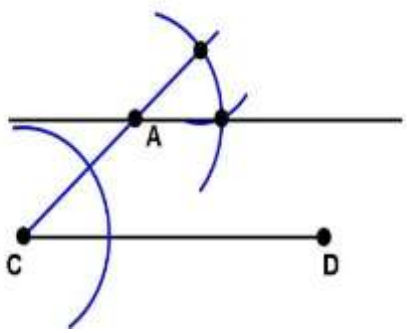
MAFS.912.G-CO.3.9 EOC Practice

1. Which statements should be used to prove that the measures of angles 1 and 5 sum to 180°?



A. Angles 1 and 8 are congruent as corresponding angles; angles 5 and 8 form a linear pair.
B. Angles 1 and 2 form a linear pair; angles 3 and 4 form a linear pair.
C. Angles 5 and 7 are congruent as vertical angles; angles 6 and 8 are congruent as vertical angles.
D. Angles 1 and 3 are congruent as vertical angles; angles 7 and 8 form a linear pair.

2. Which statement justifies why the constructed line passing through the given point A is parallel to $\overline{CD}$?



A. When two lines are each perpendicular to a third line, the lines are parallel.
B. When two lines are each parallel to a third line, the lines are parallel.
C. When two lines are intersected by a transversal and alternate interior angles are congruent, the lines are parallel.
D. When two lines are intersected by a transversal and corresponding angles are congruent, the lines are parallel.

MAFS.912.G-CO.3.10

Isosceles Triangle Proof

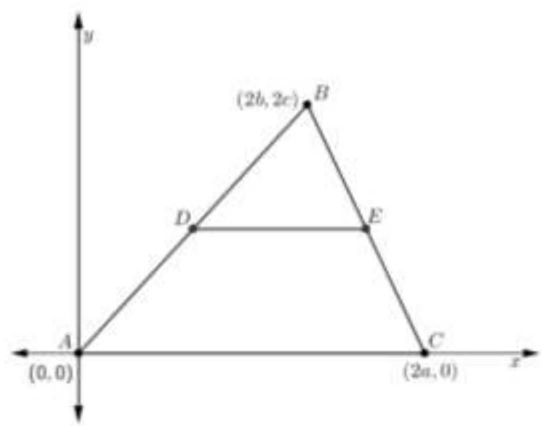
The diagram below shows isosceles ΔABC with $\overline{AB} \cong \overline{BC}$.

1. In the space below prove that $\angle A \cong \angle C$.

Triangle Midsegment Proof

The diagram below shows ΔABC. Point *D* is the midpoint of $\overline{AB}$ and point *E* is the midpoint of $\overline{BC}$.

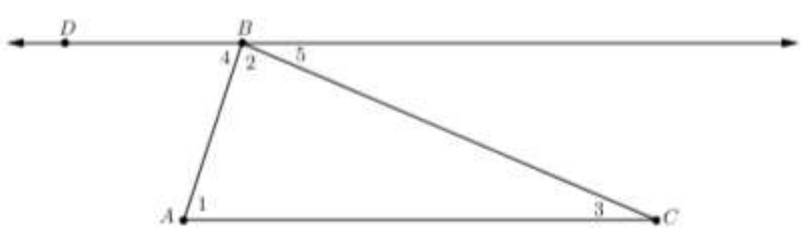
1. In the space below prove that $\overline{DE}$ is parallel to $\overline{AC}$ and $DE = \frac{1}{2}AC$.



Triangle Sum Proof

The diagram below shows ΔABC in which $\overline{AC}$ is parallel to line $\overleftrightarrow{BD}$.

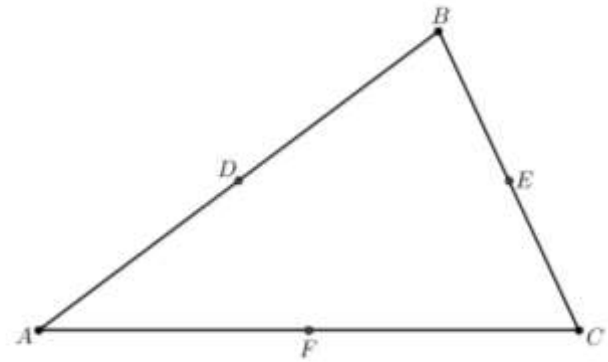
1. In the space below prove that the sum of the interior angles of ΔABC is 180°, that is, prove that $m\angle 1 + m\angle 2 + m\angle 3 = 180°$.



Median Concurrence Proof

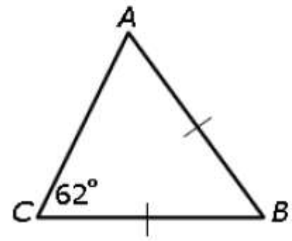
Given: ΔABC, in which points *D*, *E* and *F* are the midpoints of sides $\overline{AB}$, $\overline{CB}$, and $\overline{AC}$, respectively.

1. Draw the three medians of ΔABC and prove that they intersect in a single point. Label this point of intersection, point *G*.



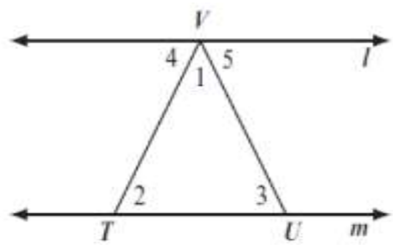
MAFS.912.G-CO.3.10 EOC Practice

1. What is the measure of $\angle B$ in the figure below?



   A. 62°
   B. 58°
   C. 59°
   D. 56°

2. In this figure, $\boldsymbol{l} || \boldsymbol{m}$. Jessie listed the first two steps in a proof that $\angle\mathbf{1} + \angle\mathbf{2} + \angle\mathbf{3} = \mathbf{180}°$.



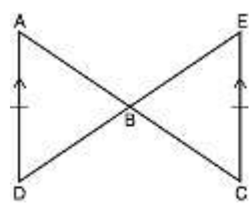
	Step	Justification
1	$\angle 2 \cong \angle 4$	?
2	$\angle 3 \cong \angle 5$	?

   Which justification can Jessie give for Steps 1 and 2?

   A. Alternate interior angles are congruent.
   B. Corresponding angles are congruent.
   C. Vertical angles are congruent.
   D. Alternate exterior angles are congruent.

3. Given: $\overline{AD} \parallel \overline{EC}$, $\overline{AD} \cong \overline{EC}$

   Prove: $\overline{AB} \cong \overline{CB}$



Shown below are the statements and reasons for the proof. They are not in the correct order.

Statement	Reason
I. $\triangle ABD \cong \triangle CBE$	I. AAS
II. $\angle ABD \cong \angle EBC$	II. Vertical angles are congruent.
III. $\overline{AD} \parallel \overline{EC}$, $\overline{AD} \cong \overline{EC}$	III. Given
IV. $\overline{AB} \cong \overline{CB}$	IV. Corresponding parts of congruent triangles are congruent.
V. $\angle DAB \cong \angle ECB$	V. If two parallel lines are cut by a transversal, the alternate interior angles are congruent.

Which of these is the most logical order for the statements and reasons?

   A. I, II, III, IV, V
   B. III, II, V, I, IV
   C. III, II, V, IV, I
   D. II, V, III, IV, I

MAFS.912.G-CO.3.11

Proving Parallelogram Side Congruence

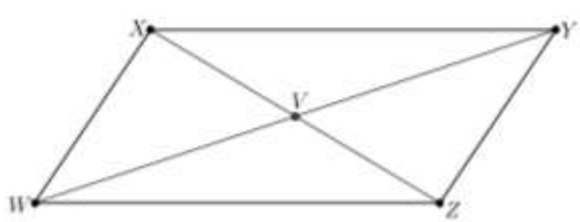
1. Prove that the opposite sides of parallelogram WXYZ are congruent.

Proving Parallelogram Angle Congruence

1. Prove that opposite angles of parallelogram WXYZ are congruent.

Proving Parallelogram Diagonals Bisect

1. Prove that the diagonals of parallelogram *WXYZ* bisect each other.



Proving a Rectangle Is a Parallelogram

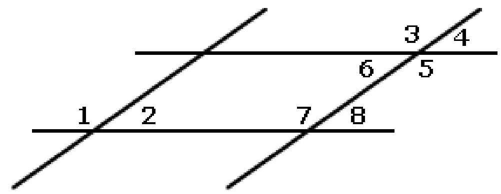
1. Prove that rectangle WXYZ is a parallelogram.

Proving Congruent Diagonals

1. Draw the diagonals of rectangle *WXYZ* and prove that they are congruent.

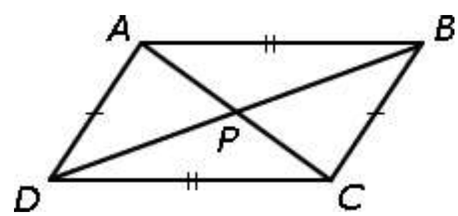
MAFS.912.G-CO.3.11 EOC Practice

1. Two pairs of parallel line form a parallelogram. Becki proved that angles 2 and 6 are congruent. She is first used corresponding angles created by a transversal and then alternate interior angles. Which pairs of angles could she use?



   A. 1 and 2 then 5 and 6
   B. 4 and 2 then 4 and 6
   C. 7 and 2 then 7 and 6
   D. 8 and 2 then 8 and 6

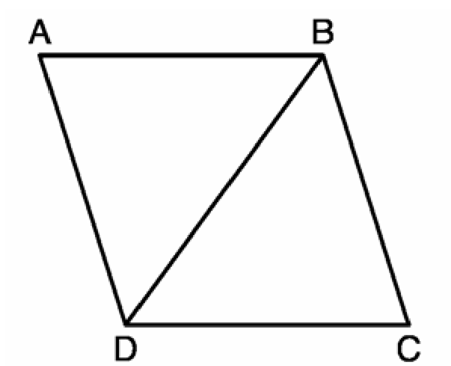
2. To prove that diagonals of a parallelogram bisect each other, Xavier first wants to establish that triangles APD and CPB are congruent. Which criterion and elements can he use?



   A. SAS: sides AP & PD and CP & PB with the angles in between
   B. SAS: sides AD & AP and CB & CP with the angles in between
   C. ASA: sides DP and PB with adjacent angles
   D. ASA: sides AD and BC with adjacent angles

3. Ms. Davis gave her students all the steps of the proof below. One step is not needed.
   Given: $ABCD\ is\ a\ parallelogram$

   Prove: $\Delta ABD \cong \Delta CDB$

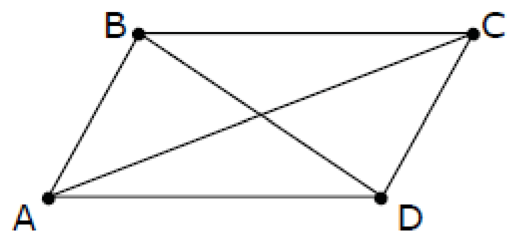


Statements	Reasons
1. ▱ABCD is a parallelogram.	1. Given
2. $\overline{AB} \cong \overline{DC}$ $\overline{AD} \cong \overline{BC}$	2. Opposite sides of a parallelogram are ≅.
3. $\angle A \cong \angle C$	3. Opposite angles of a parallelogram are ≅.
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive property of congruence
5. $\triangle ABD \cong \triangle CDB$	5. SSS

Which step is not necessary to complete this proof?

   A. Step 1
   B. Step 2
   C. Step 3
   D. Step 4

4. Missy is proving the theorem that states that opposite sides of a parallelogram are congruent.



Missy is proving the theorem that states that opposite sides of a parallelogram are congruent.

Given: Quadrilateral ABCD is a parallelogram. Prove: $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$

Missy's incomplete proof is shown.

Statement		Reason	
1.	Quadrilateral ABCD is a parallelogram.	1.	given
2.	$\overline{AB} \parallel \overline{CD}$; $\overline{BC} \parallel \overline{DA}$	2.	definition of parallelogram
3.	?	3.	?
4.	$\overline{AC} \cong \overline{AC}$	4.	reflexive property
5.	$\Delta ABC \cong \Delta CDA$	5.	angle-side-angle congruence postulate
6.	$\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$	6.	Corresponding parts of congruent triangles are congruent (CPCTC).

Which statement and reason should Missy insert into the chart as step 3 to complete the proof?

A. $\overline{BD} \cong \overline{BD}$; reflexive property
B. $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$; reflexive property
C. $\angle ABD \cong \angle CDB$ and $\angle ADB \cong \angle CBD$; When parallel lines are cut by a transversal, alternate interior angles are congruent.
D. $\angle BAC \cong \angle DCA$ and $\angle BCA \cong \angle DAC$; When parallel lines are cut by a transversal, alternate interior angles are congruent.

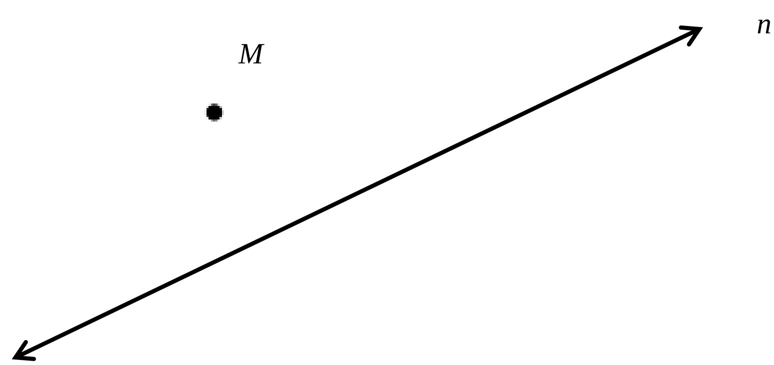
MAFS.912.G-CO.4.12

Constructing a Congruent Segment

1. Using a compass and straight edge, construct $\overline{PQ}$ so that $\overline{PQ} \cong \overline{AB}$. Explain the steps of your construction.

Constructions for Parallel Lines

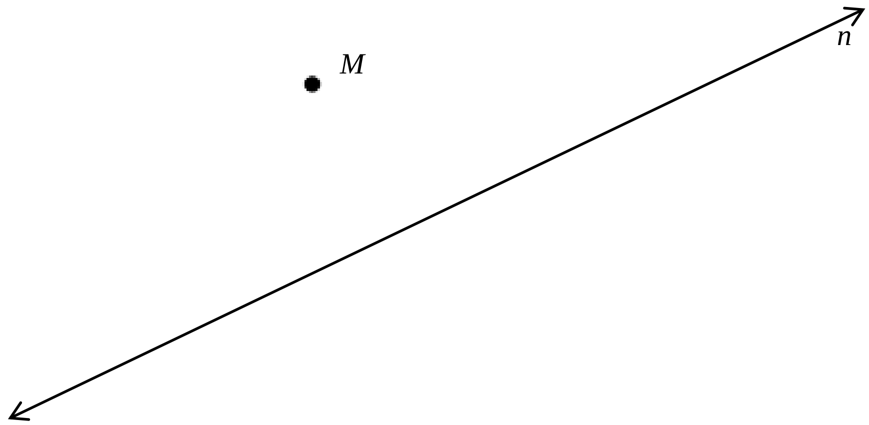
1. Use a compass and a straightedge to construct line *p* so that line *p* contains point *M* and is parallel to line *n*.



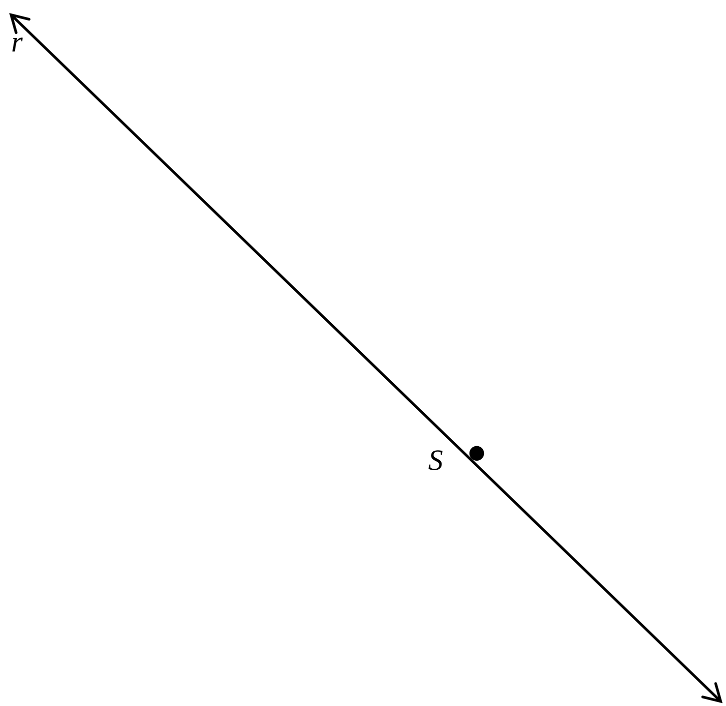
2. Which definition, postulate, or theorem justifies your construction method and ensures that the line you constructed is parallel to line *n*? Explain.

Constructions for Perpendicular Lines

1. Use a compass and a straightedge to construct line *p* so that line *p* contains point *M* and is perpendicular to line *n*.

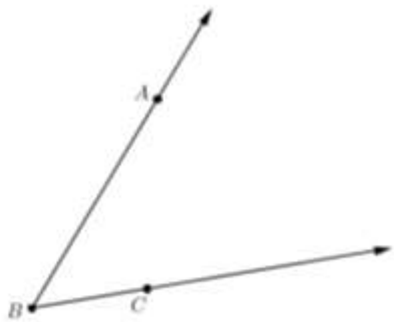


2. Use a compass and a straightedge to construct line *q* so that line *q* is perpendicular to line *r* at point S.



Constructing a Congruent Angle

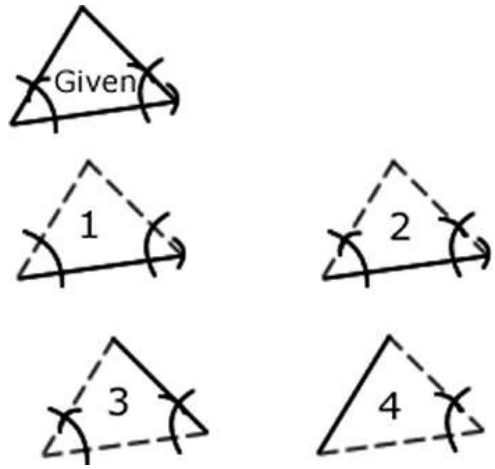
Using a compass and straight edge, construct $\angle DEF$ so that $\angle DEF \cong \angle ABC$.
Explain the steps of your construction.



FS Geometry EOC Review

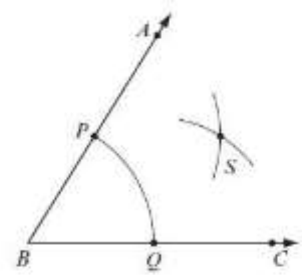
MAFS.912.G-CO.4.12 EOC Practice

1. Which triangle was constructed congruent to the given triangle?



   A. Triangle 1
   B. Triangle 2
   C. Triangle 3
   D. Triangle 4

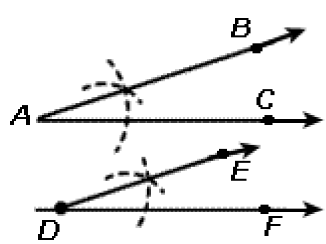
2. A student used a compass and a straightedge to bisect ∠ABC in this figure.



   Which statement BEST describes point S?

   A. Point S is located such that SC = PQ.
   B. Point S is located such that SA = PQ.
   C. Point S is located such that PS = BQ.
   D. Point S is located such that QS = PS.

3. What is the first step in constructing congruent angles?

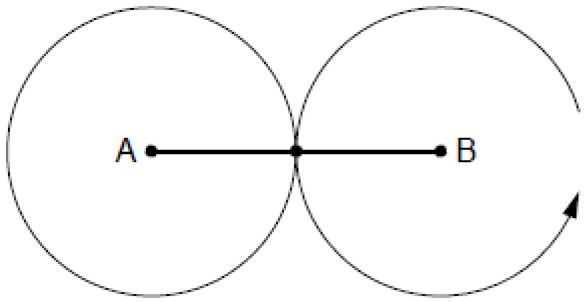


   A. Draw ray DF.
   B. From point A, draw an arc that intersects the sides of the angle at point B and C.
   C. From point D, draw an arc that intersects the sides of the angle at point E and F.
   D. From points A and D, draw equal arcs that intersects the rays AC and DF.

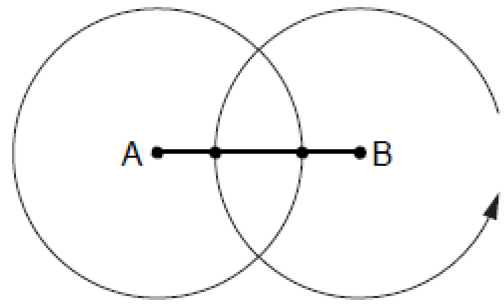
4. Melanie wants to construct the perpendicular bisector of line segment AB using a compass and straightedge.

Which diagram shows the first step(s) of the construction?

A.



B.



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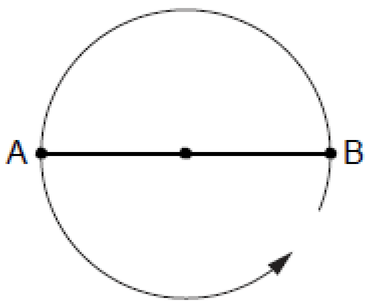

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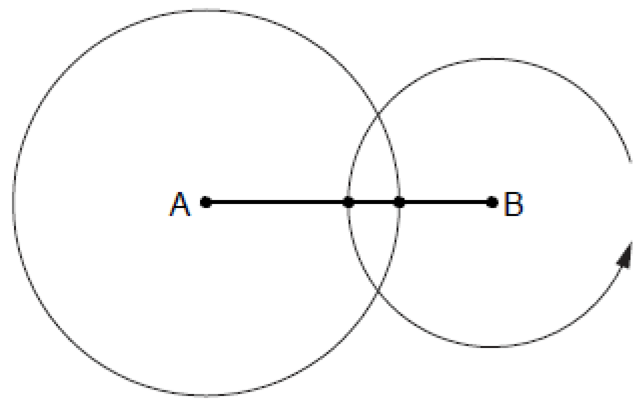
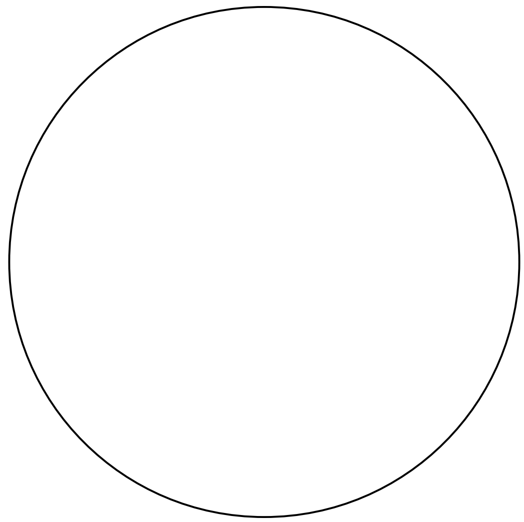


MAFS.912.G-CO.4.13

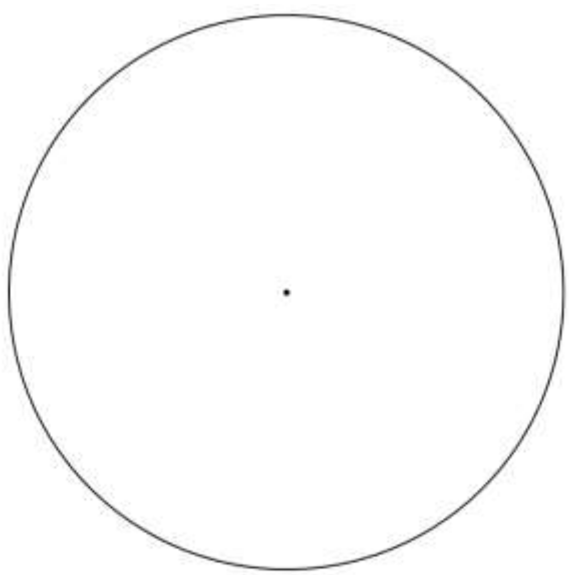
Construct the Center of a Circle

1. Using a compass and straightedge, construct the center of the circle. Leave all necessary construction marks as justification of your process.



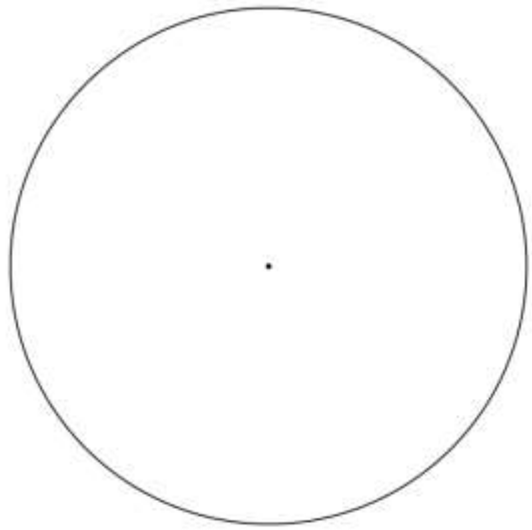
Regular Hexagon in a Circle

1. Using a compass and straightedge, construct a regular hexagon inscribed in the circle. Leave all necessary construction marks as justification of your process.



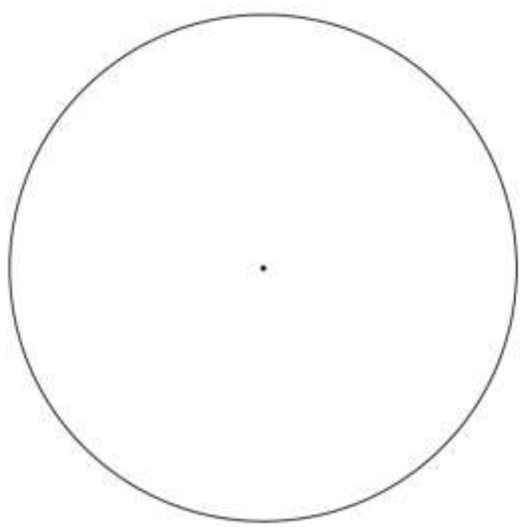
Equilateral Triangle in a Circle

Using a compass and straightedge, construct an equilateral triangle inscribed in the circle. Leave all necessary construction marks as justification of your process.



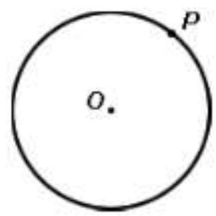
Square in a Circle

Using a compass and straightedge, construct a square inscribed in the circle. Leave all necessary construction marks as justification of your process.



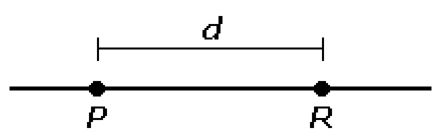
MAFS.912.G-CO.4.13 EOC Practice

1. The radius of circle O is r. A circle with the same radius drawn around P intersects circle O at point R. What is the measure of angle ROP?



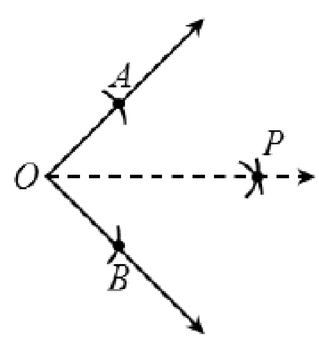
   A. 30°
   B. 60°
   C. 90°
   D. 120°

2. Carol is constructing an equilateral triangle with P and R being two of the vertices. She is going to use a compass to draw circles around P and R. What should the radius of the circles be?



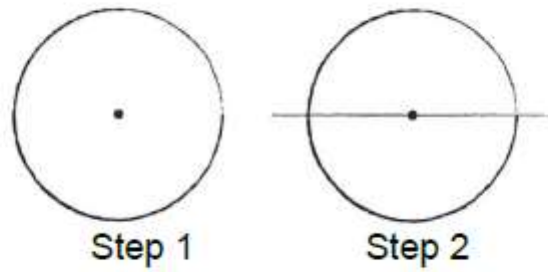
   A. d
   B. $2d$
   C. $\frac{d}{2}$
   D. d^2

3. The figure below shows the construction of the angle bisector of $\angle AOB$ using a compass. Which of the following statements must always be true in the construction of the angle bisector? Select **Yes** or **No** for each statement.



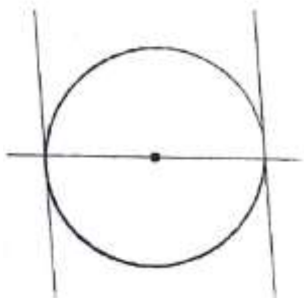
$OA = OB$	○ YES	○ NO
$AP = BP$	○ YES	○ NO
$AB = BP$	○ YES	○ NO
$OB = BP$	○ YES	○ NO

4. Daya is drawing a square inscribed in a circle using a compass and a straightedge. Her first two steps are shown.

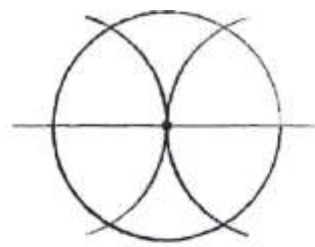


Which is the best step for Daya to do next?

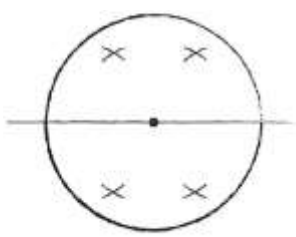
A.



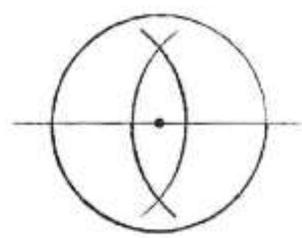
B.



C.



D.

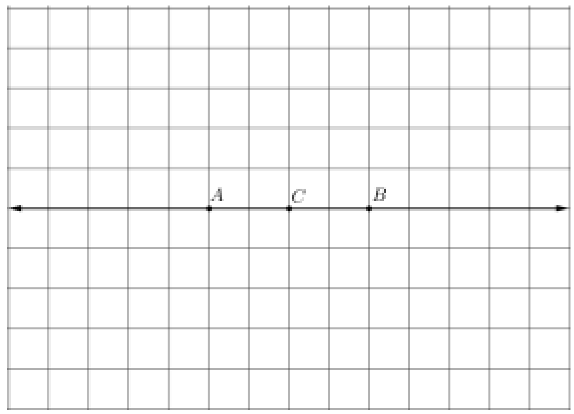


MAFS.912.G-SRT.1.1

Dilation of a Line: Center on the Line

In the figure, points *A*, *B*, and *C* are collinear.

1. Graph the images of points *A*, *B*, and *C* as a result of dilation with center at point *C* and scale factor of 1.5. Label the images of *A*, *B*, and *C* as A', B', and C', respectively.

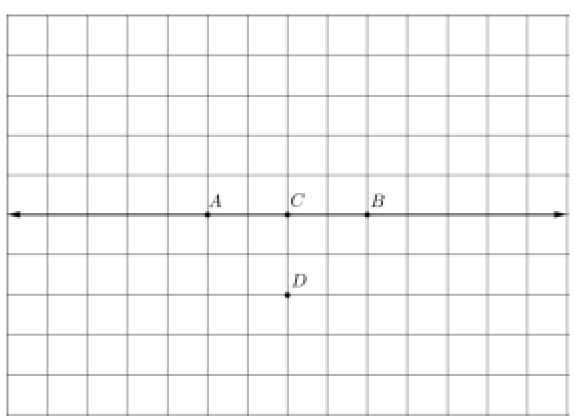


2. Describe the image of $\overleftrightarrow{AB}$ as a result of this dilation. In general, what is the relationship between a line and its image after dilating about a center on the line?

Dilation of a Line: Factor of Two.

In the figure, the points *A*, *B*, and *C* are collinear.

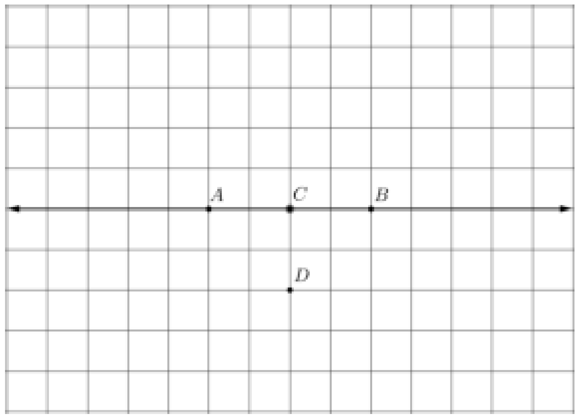
1. Graph the images of points *A*, *B*, and *C* as a result of dilation with center at point *D* and scale factor equal to 2. Label the images of *A*, *B*, and *C* as A', B', and C', respectively.



2. Describe the image of $\overleftrightarrow{AB}$ as a result of the same dilation. In general, what is the relationship between a line and its image after dilating about a center not on the line?

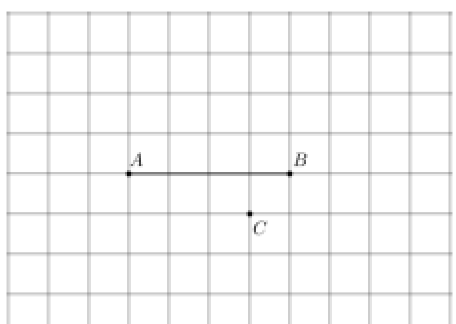
Dilation of a Line: Factor of One Half
In the figure, the points *A*, *B*, *C* are collinear.

1. Graph the images of points *A*, *B*, *C* as a result of a dilation with center at point *D* and scale factor equal to 0.5. Label the images of *A*, *B*, and *C* as A', B', and C', respectively.



2. Describe the image of $\overleftrightarrow{AB}$ as a result of the same dilation. In general, what is the relationship between a line and its image after dilating about a center not on the line?

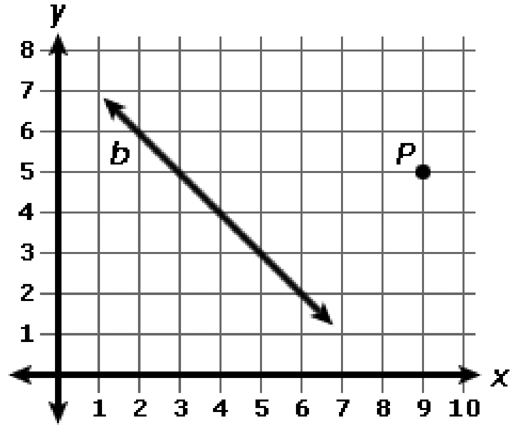
Dilation of a Line Segment
1. Given $\overline{AB}$, draw the image of $\overline{AB}$ as a result of the dilation with center at point *C* and scale factor equal to 2.



2. Describe the relationship between $\overline{AB}$ and its image.

MAFS.912.G-SRT.1.1 EOC Practice

1. Line b is defined by the equation y = 8 - x. If line b undergoes a dilation with a scale factor of 0.5 and center P, which equation will define the image of the line?



   A. $y = 4 - x$
   B. $y = 5 - x$
   C. $y = 8 - x$
   D. $y = 11 - x$

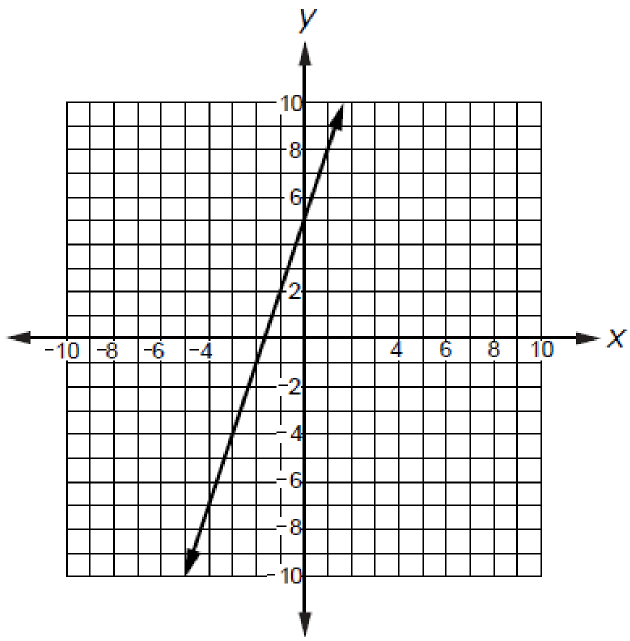
2. GH = 1. A dilation with center H and a scale factor of 0.5 is applied. What will be the length of the image of the segment GH?

   A. 0
   B. 0.5
   C. 1
   D. 2

3. The vertices of square $ABCD$ are $A(3,1), B(3,-1), C(5,-1)$, and $D(5,1)$. This square is dilated so that A' is at $(3,1)$ and C' is at $(8,-4)$. What are the coordinates of D'?

   A. $(6,-4)$
   B. $(6,-4)$
   C. $(8,1)$
   D. $(8,4)$

4. Rosa graphs the line $y = 3x + 5$. Then she dilates the line by a factor of $\frac{1}{5}$ with (0, 7) as the center of dilation.



Which statement best describes the result of the dilation?

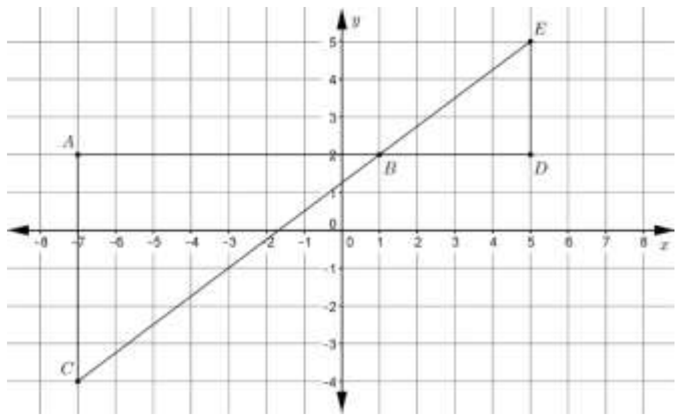
A. The result is a different line $\frac{1}{5}$ the size of the original line.
B. The result is a different line with a slope of 3.
C. The result is a different line with a slope of $-\frac{1}{3}$.
D. The result is the same line.

FS Geometry EOC Review

MAFS.912.G-SRT.1.2

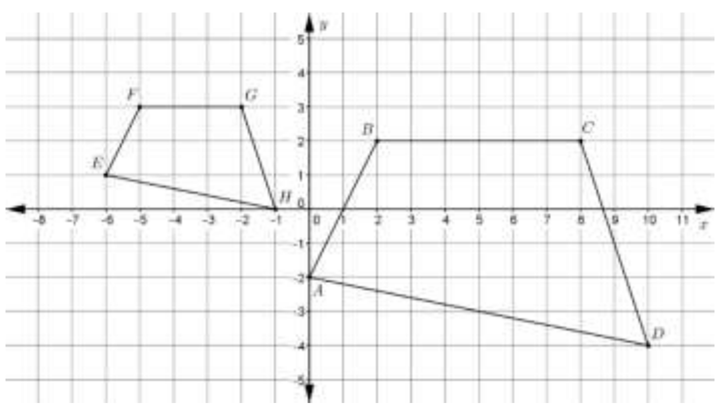
To Be or Not To Be Similar

Use the definition of similarity in terms of similiarity transformations to determine whether or not $\Delta ABC \sim \Delta DBE$. Justify your answer by describing the sequence of similiarity transformations you used.



Showing Similarity

Use the definition of similarity in terms of transformations to show that quadrilateral *ABCD* is similar to quadrilateral *EFGH*. Justify your answer by describing the sequence of similiarity transformations you used. Be sure to indicate the coordinates of the images of the vertices after each step of your transformation.



The Consequences of Similarity

The definition of similarity in terms of similarity transformations states that two figures are similar if and only if there is a compositon of rigid motion and dilation that maps one figure to the other. Suppose $\Delta ABC \sim \Delta DEF$. Explain how this definiton ensures:

1. The equality of all corresponding pairs of angles.

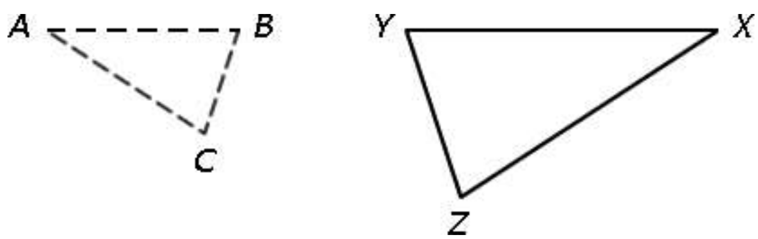
2. The proportionality of all corresponding pairs of sides.

MAFS.912.G-SRT.1.2 EOC Practice

1. When two triangles are considered similar but not congruent?

   A. The distance between corresponding vertices are equal.
   B. The distance between corresponding vertices are proportionate.
   C. The vertices are reflected across the x-axis.
   D. Each of the vertices are shifted up by the same amount.

2. Triangle ABC was reflected and dilated so that it coincides with triangle XYZ. How did this transformation affect the sides and angles of triangle ABC?



   A. The side lengths and angle measure were multiplied by $\frac{XY}{AB}$
   B. The side lengths were multiplied by $\frac{XY}{AB}$, while the angle measures were preserved
   C. The angle measures were multiplied by $\frac{XY}{AB}$, while the side lengths were preserved
   D. The angle measures and side lengths were preserved

3. Kelly dilates triangle ABC using point P as the center of dilation and creates triangle $A'B'C'$.
   By comparing the slopes of AC and CB and $A'C'$ and $C'B'$, Kelly found that $\angle ACB$ and $\angle A'C'B'$ are right angles.

   Which set of calculations could Kelly use to prove ΔABC is similar to $\Delta A'B'C'$?

A.

$$\text{slope } AB = \frac{7-(-7)}{2-(-5)} = \frac{14}{7} = 2$$

$$\text{slope } A'B' = \frac{7-3}{-3-(-5)} = \frac{4}{2} = 2$$

B.

$$AB^2 = 7^2 + 14^2$$

$$A'B'^2 = 2^2 + 4^2$$

C.

$$\tan\angle ABC = \frac{AC}{BC} = \frac{7}{14}$$

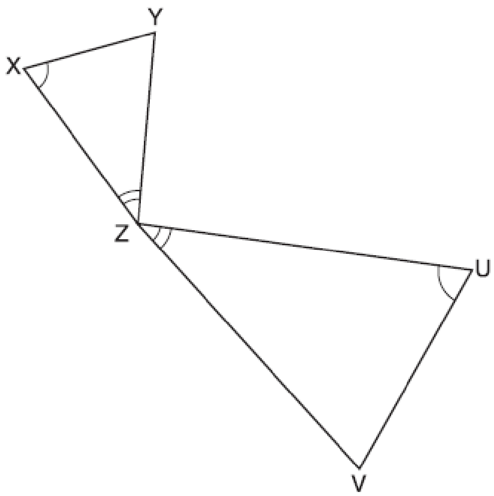
$$\tan\angle A'B'C' = \frac{A'C'}{B'C'} = \frac{2}{4}$$

D.

$$\angle ABC + \angle BCA + \angle CAB = 180^\circ$$

$$\angle A'B'C' + \angle B'C'A' + \angle C'A'B' = 180^\circ$$

4. In the diagram below, triangles XYZ and UVZ are drawn such that $\angle X \cong \angle U$ and $\angle XZY \cong \angle UZV$.



Describe a sequence of similarity transformations that shows ΔXYZ is similar to ΔUVZ.

MAFS.912.G-SRT.1.3

Describe the AA Similarity Theorem

Describe the AA Similarity Theorem. Include:

1. A statement of the theorem

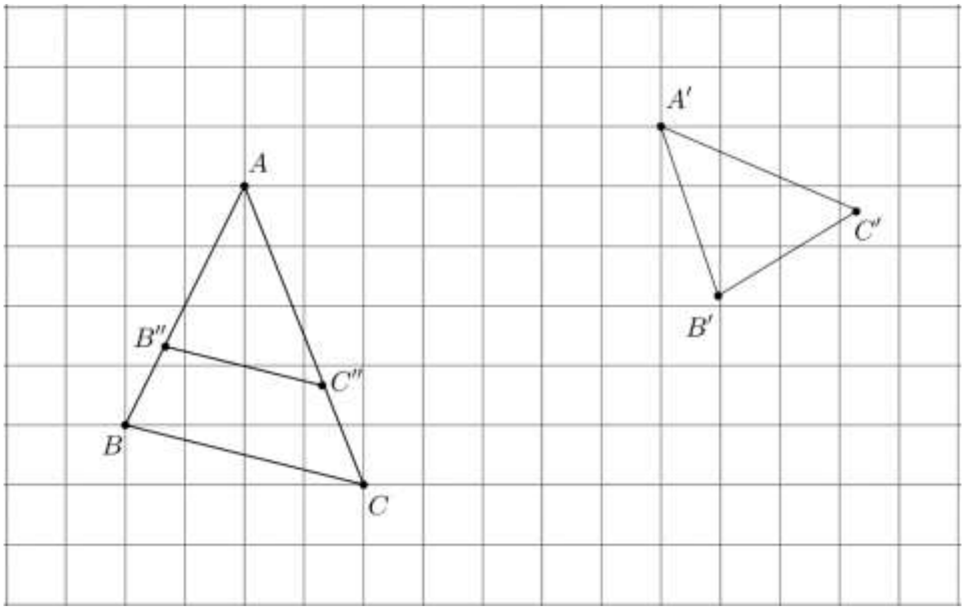
2. The assumptions along with a diagram that illustrates the assumptions.

3. The conclusion.

4. The definition of similarity in terms of similarity transformations.

Justifying a Proof of the AA Similarity Theorem

Assume that $\angle A \cong \angle A'$ and $\angle CBA \cong \angle C'B'A'$.



The following illustrates the statements of a proof of the AA Similarity Theorem (i.e., a proof of the statement that ΔABC is similar to $\Delta A'B'C'$). Explain and justify each numbered statement.

Let B'' be the point on $\overline{AB}$ so that $AB'' = A'B'$. Denote the dilation with center *A* and scale factor *r* = $\frac{A'B'}{AB}$ (which is also equal to $\frac{AB''}{AB}$) by *D*, and let C'' be the point on $\overline{AC}$ such that *D*(*C*) = C''. Explain why:

1. $\overline{B"C"}$ is parallel to $\overline{BC}$.

2. $\angle AB''C'' \cong \angle ABC$.

3. $\Delta A'B'C' \cong \Delta AB''C''$ by congruence *G.*

4. $\Delta ABC \sim \Delta AB''C''$.

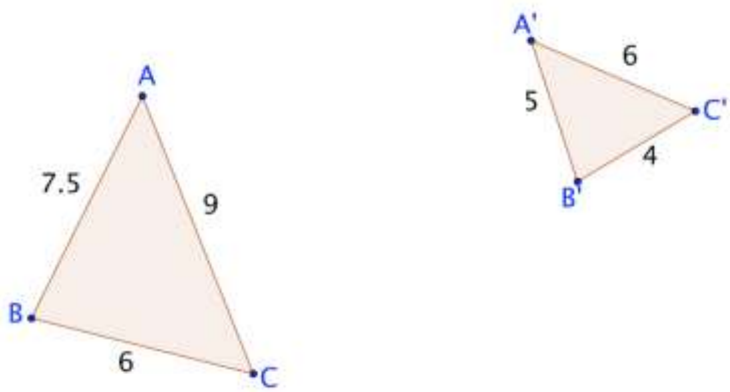
5. $\Delta ABC \sim \Delta A'B'C'$.

Prove the AA Similarity Theorem

The lengths of the sides of ΔABC and $\Delta A'B'C'$ are given in the figure.

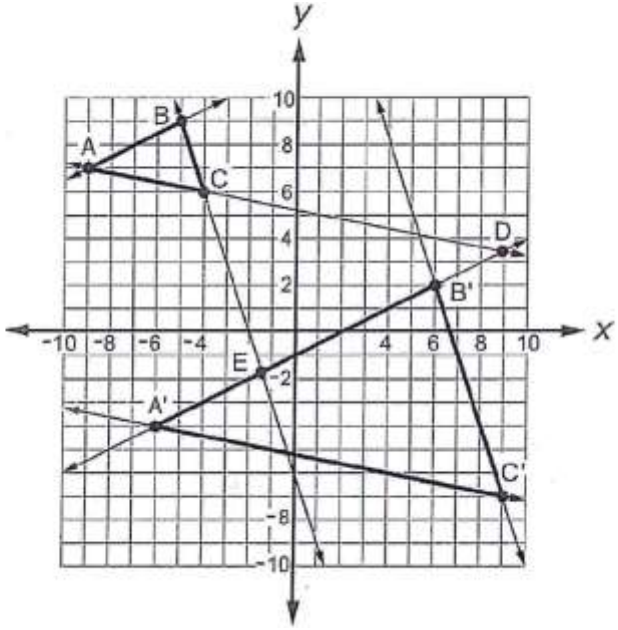
1. Describe the relationship between the lengths of the sides of the two triangles.

2. Prove that this relationship guarantees that the triangles are similar.

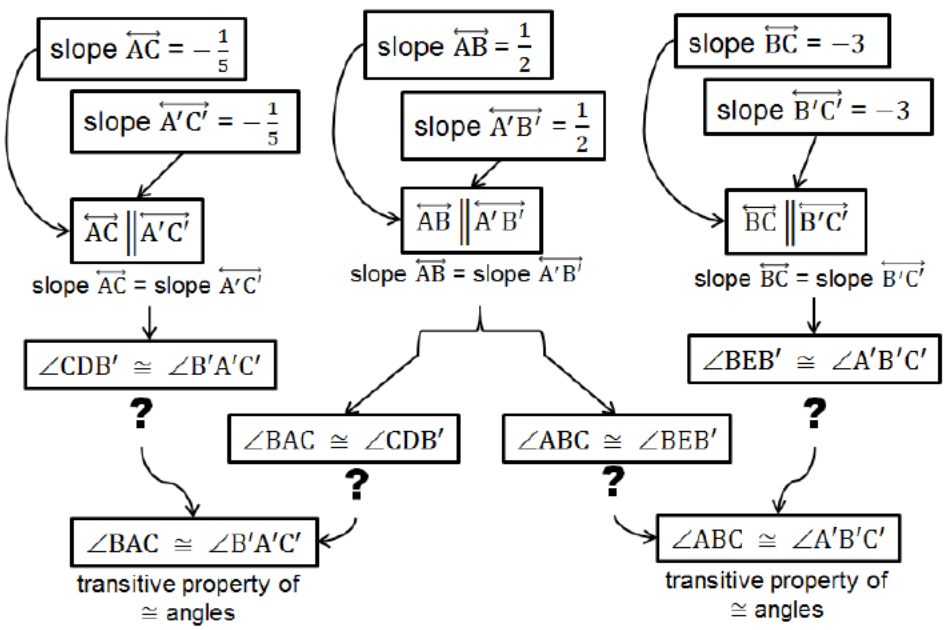


MAFS.912.G-SRT.1.3 EOC Practice

1. Kamal dilates triangle ABC to get triangle A'B'C'. He knows that the triangles are similar because of the definition of similarity transformations. He wants to demonstrate the angle-angle similarity postulate by proving ∠BAC ≅∠B'A'C' and ∠ ABC ≅ ∠A'B'C'.



Kamal makes this incomplete flow chart proof.

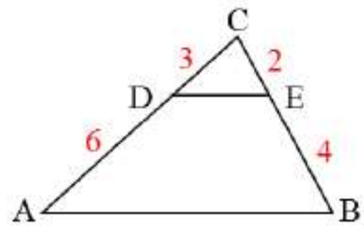


What reason should Kamal add at all of the question marks in order to complete the proof?

A. Two non-vertical lines have the same slope if and only if they are parallel.
B. Angles supplementary to the same angle or to congruent angles are congruent.
C. If two parallel lines are cut by a transversal, then each pair of corresponding angles is congruent.
D. If two parallel lines are cut by a transversal, then each pair of alternate interior angles is congruent.

2. Given: $AD = 6;\ DC = 3;\ BE = 4;\ and\ EC = 2$

Prove: $\Delta CDE \sim \Delta CAB$

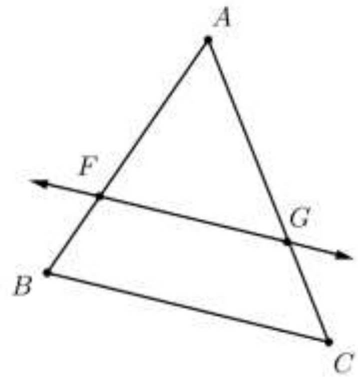


	Statements	Reasons
1.		Given
2.	$CA = CD + DA$ $CB = CE + EB$	
3.	$\frac{CA}{CD} = \frac{9}{3} = 3\ ; \frac{CB}{CE} = \frac{6}{2} = 3$	
4.		Transitive Property
5.		
6.	$\Delta CDE \sim \Delta CAB$	

MAFS.912.G-SRT.2.4

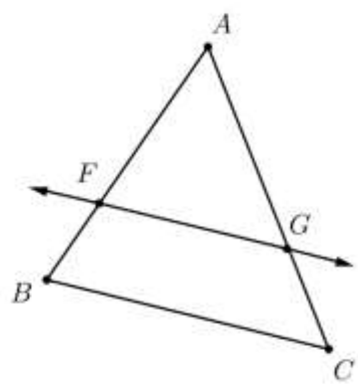
Triangle Proportionality Theorem

Prove the Triangle Proportionality Theorem, that is, given ΔABC and $\overleftrightarrow{FG}$ (as shown) such that $\overleftrightarrow{FG} \parallel \overleftrightarrow{BC}$, prove that $\frac{AF}{FB} = \frac{AG}{GC}$.



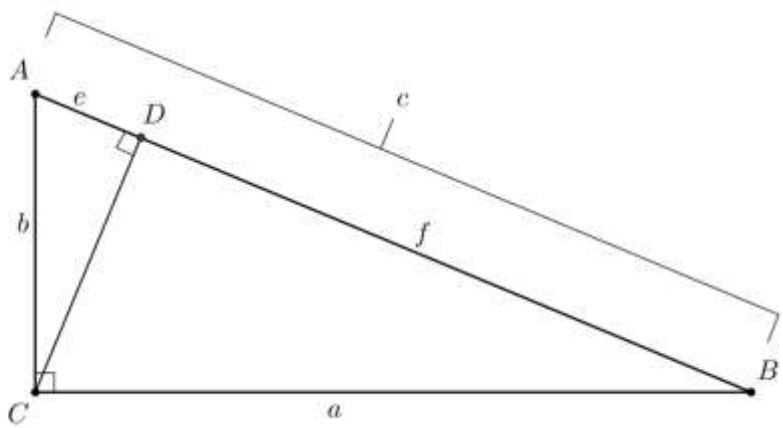
Converse of the Triangle Proportionality Theorem

In ΔABC, suppose $\frac{AF}{FB} = \frac{AG}{GC}$. Prove that $\overleftrightarrow{FG} \parallel \overleftrightarrow{BC}$.

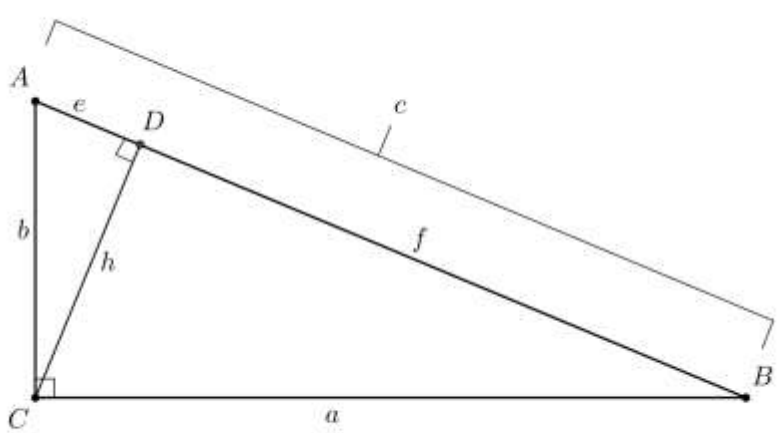


Pythagorean Theorem Proof

1. Show that $\Delta ABC \sim \Delta CBD$ and $\Delta ABC \sim \Delta ACD$. Then use these similarities to prove the Pythagorean Theorem ($a^2 + b^2 = c^2$).



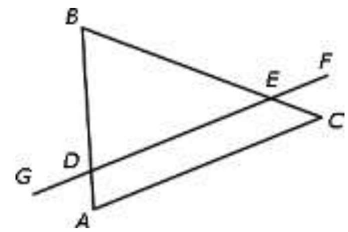
Geometric Mean Proof



1. Explain why $\Delta ACD \sim \Delta CBD$.

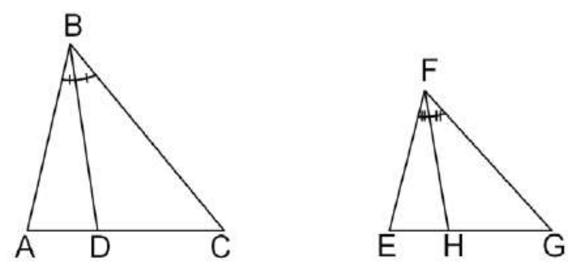
MAFS.912.G-SRT.2.4 EOC Practice

1. Lines AC and FG are parallel. Which statement should be used to prove that triangles ABC and DBE are similar?



   A. Angles BDE and BCA are congruent as alternate interior angles.
   B. Angles BAC and BEF are congruent as corresponding angles.
   C. Angles BED and BCA are congruent as corresponding angles.
   D. Angles BDG and BEF are congruent as alternate exterior angles.

2. Ethan is proving the theorem that states that if two triangles are similar, then the measures of the corresponding angle bisectors are proportional to the measures of the corresponding sides.

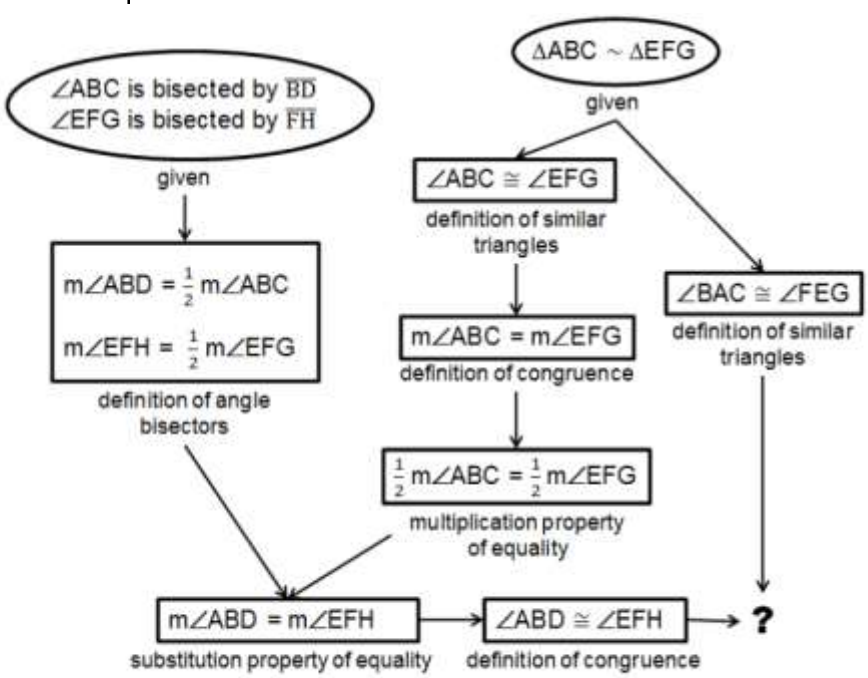


   Given: $\Delta ABC \sim \Delta EFG$.

   $\overline{BD}$ bisects $\angle ABC$, and $\overline{FH}$ bisects $\angle EFG$.

   Prove: $\frac{AB}{EF} = \frac{BD}{FH}$

   Ethan's incomplete flow chart proof is shown.

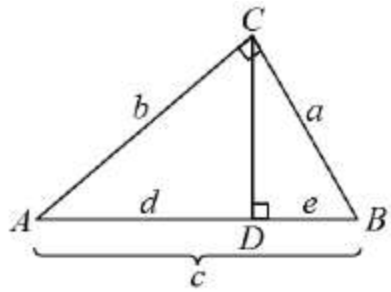


   Which statement and reason should Ethan add at the question mark to best continue the proof?

   A. $\Delta ABD \sim \Delta EFH$; AA similarity
   B. $\angle BCA \cong \angle FGE$; definition of similar triangles
   C. $\frac{AB}{BC} = \frac{EF}{GH}$; definition of similar triangles
   D. $m\angle ADB + m\angle ABD + m\angle BAD = 180°$; $m\angle EFH + m\angle EHF + m\angle FEH = 180°$; Angle Sum Theorem

3. In the diagram, ΔABC is a right triangle with right angle , and $\overline{CD}$ is an altitude of ΔABC.

   Use the fact that $\Delta ABC \sim \Delta ACD \sim \Delta CBD$ to prove $a^2 + b^2 = c^2$



Statements	Reasons

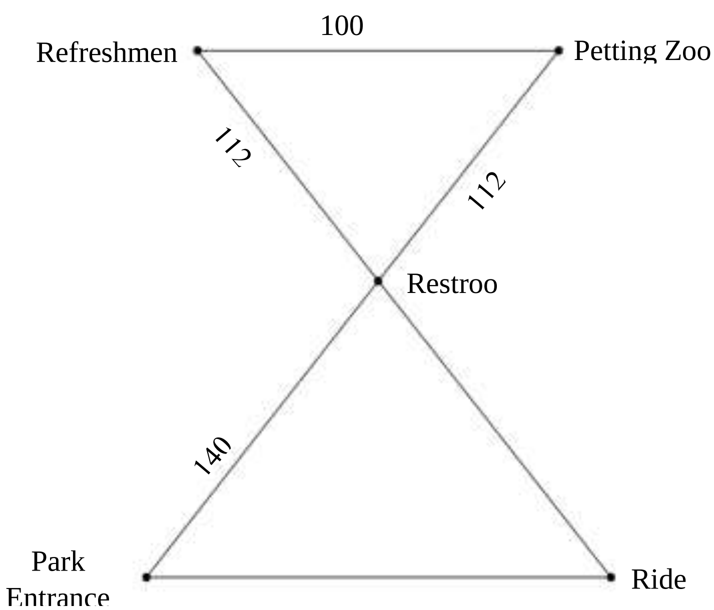
MAFS.912.G-SRT.2.5

Basketball Goal

The basketball coach is refurbishing the outdoor courts at his school and is wondering if the goals are at the regulation height. The regulation height is 10 feet, measured from the ground to the rim. One afternoon the gym teacher, who is 6 feet tall, measured his own shadow at 5 feet long. He measured the shadow of the basketball goal (to the rim) as 8 feet long. Use this information to determine if the basketball goal is at the regulation height. Show all of your work and explain your answer.

County Fair

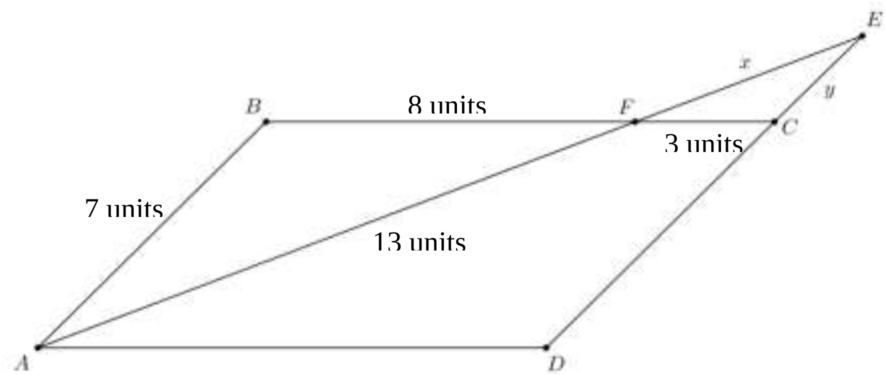
The diagram below models the layout at the county fair. Suppose the two triangles in the diagram are similar.



1. How far is the park entrance from the rides? Show/explain your work to justify your solution process.

Similar Triangles 1

In the figure below, ABCD is a parallelogram.



1. Identify a pair of similar triangles in the diagram.

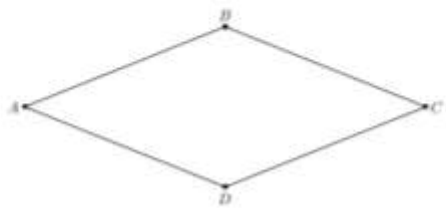
2. Explain why the triangles you named are similar.

3. Find the values of x and y. Show all of your work and leave your answers exact.

FS Geometry EOC Review

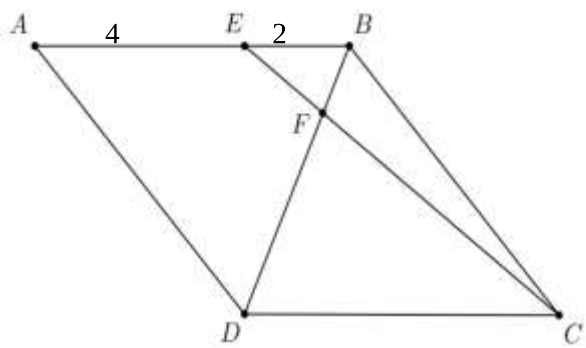
Prove Rhombus Diagonals Bisect Angles

Quadrilateral *ABCD* is a rhombus. Prove that both $\angle A$ and $\angle C$ are bisected by diagonal $\overline{AC}$.



Similar Triangles 2

Quadrilateral *ABCD* is a parallelogram. The length of $\overline{EC}$ is 5 units.



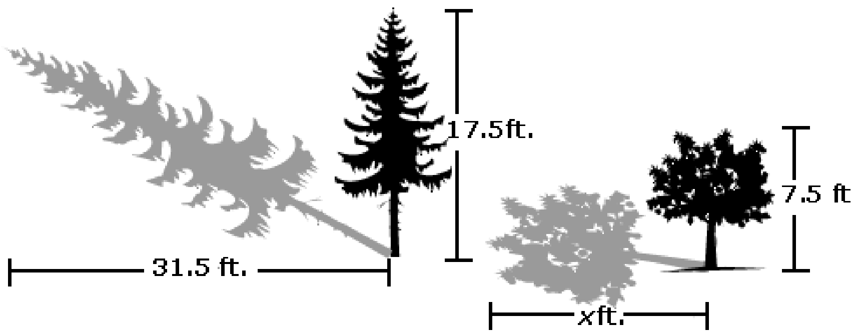
1. Identify a pair of similar triangles in the diagram.

2. Explain why the triangles you named are similar.

3. Find the length of $\overline{FC}$. Show all of your work.

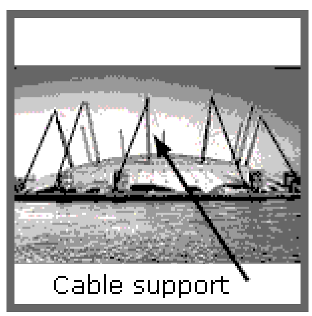
MAFS.912.G-SRT.2.5 EOC Practice

1. Given the diagram below, what is the value of x?



A. 13.5
B. 14.6
C. 15.5
D. 16.6

2. A scale model of the Millennium Dome in Greenwich, England, was constructed on a scale of 100 meters to 1 foot. The cable supports are 50 meters high and form a triangle with the cables. How high are the cable supports on the scale model that was built?

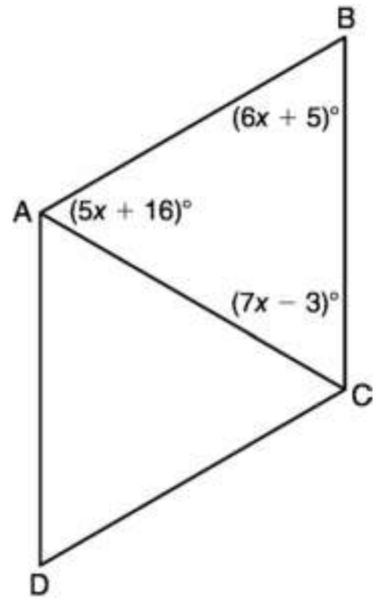


A. 0.5 foot
B. 1 foot
C. 1.5 feet
D. 2 feet

3. Hector knows two angles in triangle A are congruent to two angles in triangle B. What else does Hector need to know to prove that triangles A and B are similar?

A. Hector does not need to know anything else about triangles A and B.
B. Hector needs to know the length of any corresponding side in both triangles.
C. Hector needs to know all three angles in triangle A are congruent to the corresponding angles in triangle B.
D. Hector needs to know the length of the side between the corresponding angles on each triangle.

4. ABCD is a parallelogram.

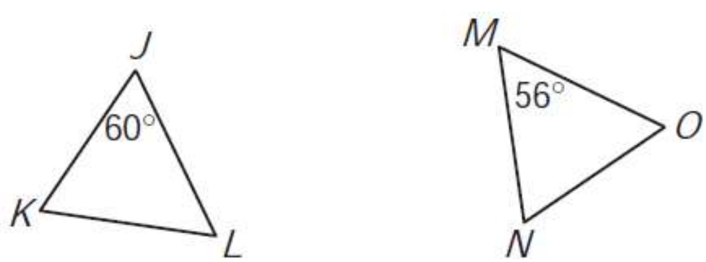


(Not drawn to scale)

What is the measure of $\angle ACD$?

A. 59°
B. 60°
C. 61°
D. 71°

5. In the diagram below, $\Delta JKL \cong \Delta ONM$.



Based on the angle measures in the diagram, what is the measure, in degrees, of $\angle N$? Enter your answer in the box.

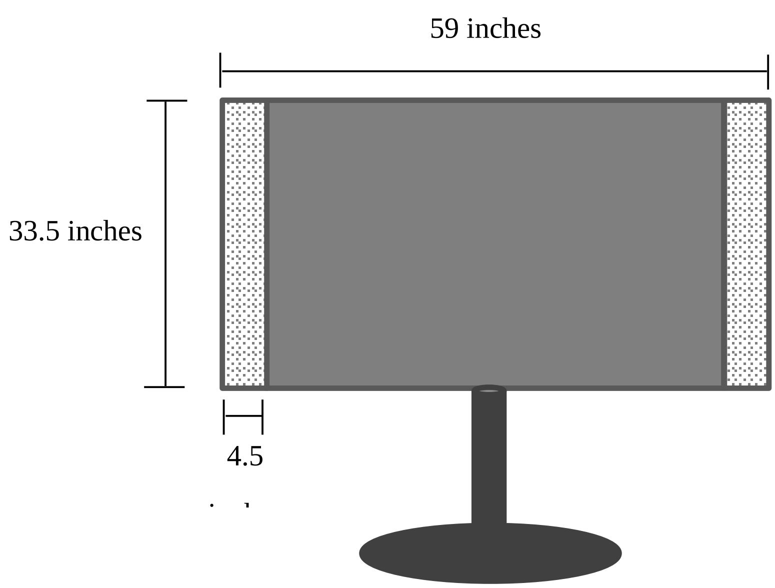
MAFS.912.G-SRT.3.8

Will It Fit?

1. Jan is moving into her new house. She has a circular tabletop that is 7.5 feet in diameter. The door to her house is 7 feet high by 3 feet wide. If she angles the tabletop diagonally, will it fit through the doorway? Why or why not? Show all of your work.

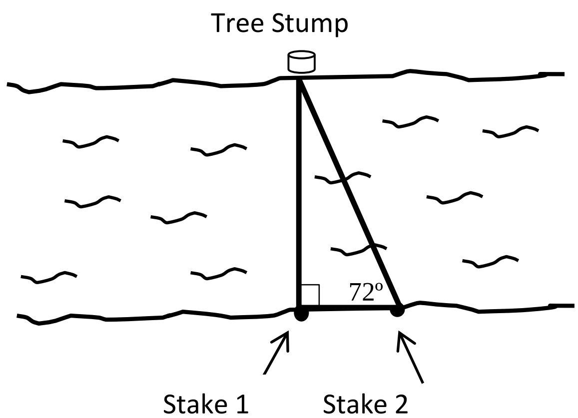
TV Size

1. Joey won a new flat screen TV with integrated speakers in a school raffle. The outside dimensions are 33.5 inches high and 59 inches wide. Each speaker, located on the sides of the screen, measures 4.5 inches in width. TV sizes are determined by the length of the diagonal of the screen. Find the size of the TV showing all supporting work. Round your answer to the nearest inch.



River Width

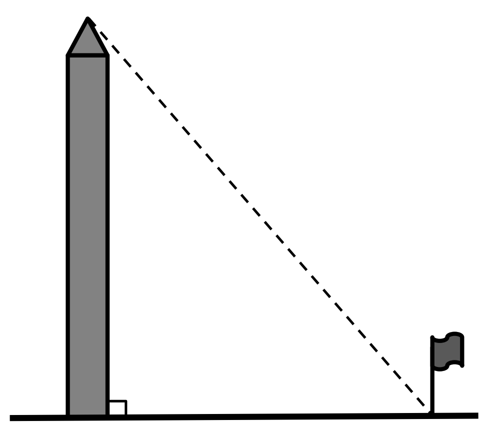
1. A farmer needs to find the width of a river that flows through his pasture. He places a stake (Stake 1) on one side of the river across from a tree stump. He then places a second stake 50 yards to the right of the first (Stake 2). The angle formed by the line from Stake 1 to Stake 2 and the line from Stake 2 to the tree stump is 72º. Find the width of the river to the nearest yard. Show your work and/or explain how you got your answer.



Washington Monument

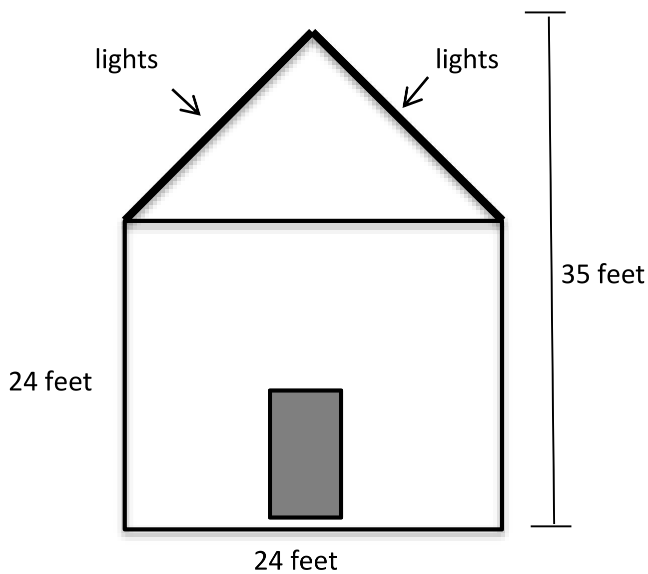
1. The Washington Monument in Washington, D.C. is surrounded by a circle of 50 American flags that are each 100 feet from the base of the monument. The distance from the base of a flag pole to the top of the monument is 564 feet. What is the angle of elevation from the base of a flag pole to the top of the monument?

   Label the diagram with the lengths given in the problem, showing all of your work and calculations, and round your answer to the nearest degree.



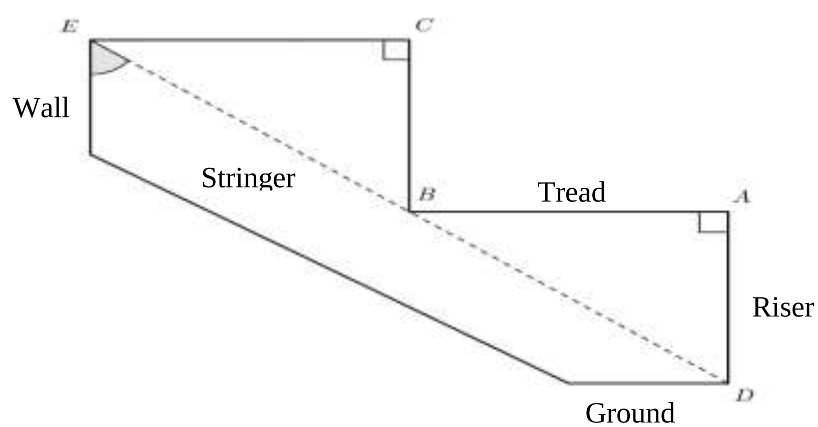
Holiday Lights

1. Mr. Peabody wants to hang holiday lights from the roof on the front of his house. His house is 24 feet wide and 35 feet tall at the highest point. The lowest point of his roof is 24 feet off the ground. What is the total length of lights he will need to purchase? Show all of your calculations and round your answer to the nearest foot.



Step Up

The diagram below shows stairs leading up to a building. The stringer is the board upon which the stairs are built and is represented by segment *ED* in the diagram. In the diagram, each riser is 7½ inches and each tread is 9 inches.



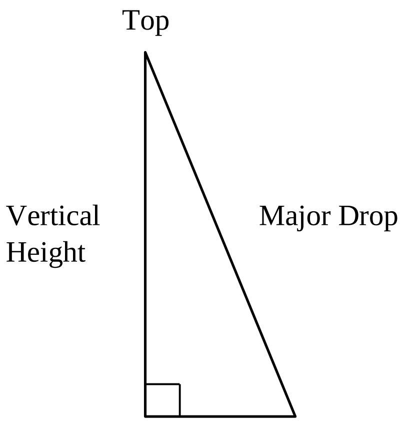
1. Assume that the tread, $\overline{EC}$, meets the wall at a right angle. Explain how the angle at which the stringer meets the wall (see shaded angle) relates to the acute angles of ΔBCE.

2. Find the angle at which the stringer meets the wall (the shaded angle), to the nearest degree. Show all of your calculations.

Perilous Plunge

1. Perilous Plunge water ride in California ranks as one of the highest and steepest water rides in the country! The vertical height of the ride is 115 feet. The angle of elevation from the bottom of the drop to the top is 75°. What is the distance a rider would travel on the major drop of the flume ride?

2. Label the diagram, show all of your work and calculations, and round your answer to the nearest tenth of a foot.



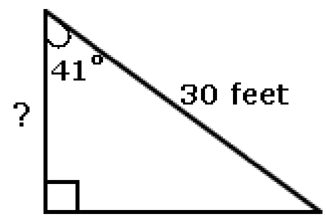
Lighthouse Keeper

From the top of a 210-foot tall lighthouse, a keeper sights two boats coming into the harbor, one behind the other. The angle of depression to the more distant boat is 25° and the angle of depression to the closer boat is 36°. Draw and label a diagram that models this situation. Then determine the distance between the two boats showing all of your work and calculations. Round your answer to the nearest foot.

FS Geometry EOC Review

MAFS.912.G-SRT.3.8 EOC Practice

1. A 30-foot long escalator forms a 41° angle at the second floor. Which is the closest height of the first floor?



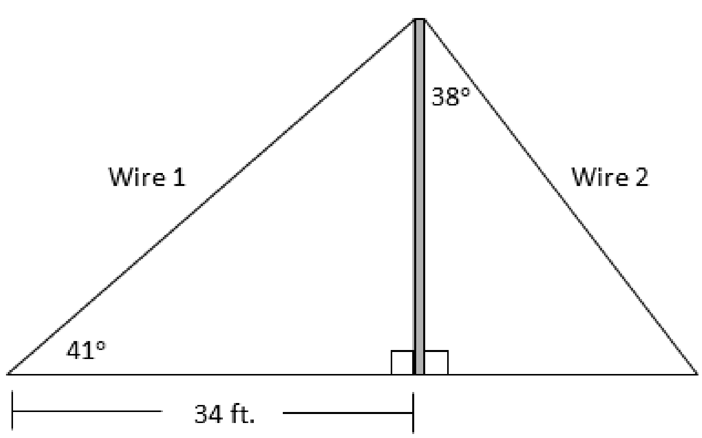
   A. 20 feet
   B. 22.5 feet
   C. 24.5 feet
   D. 26 feet

2. Jane and Mark each build ramps to jump their remote-controlled cars.
   Both ramps are right triangles when viewed from the side. The incline of Jane's ramp makes a 30-degree angle with the ground, and the length of the inclined ramp is 14 inches. The incline of Mark's ramp makes a 45-degree angle with the ground, and the length of the inclined ramp is 10 inches.

   Part A
   What is the horizontal length of the base of Jane's ramp and the base of Mark's ramp? Enter your answer in the box.

   Part B
   Which car is launched from the highest point? Enter your answer in the box.

3. In the figure below, a pole has two wires attached to it, one on each side, forming two right triangles.

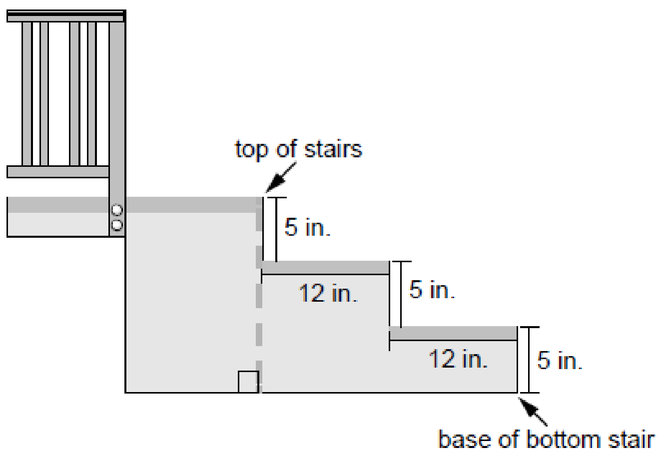


Based on the given information, answer the questions below.
How tall is the pole? Enter your answer in the box.

How far from the base of the pole does Wire 2 attach to the ground? Enter your answer in the box.

How long is Wire 1? Enter your answer in the box.

4. Leah needs to add a wheelchair ramp over her stairs. The ramp will start at the top of the stairs. Each stair makes a right angle with each riser.



Note: Not to scale

Part A

The ramp must have a maximum slope of $\frac{1}{12}$. To the nearest hundredth of a foot, what is the shortest length of ramp that Leah can build and not exceed the maximum slope? Enter your answer in the box.

Part B

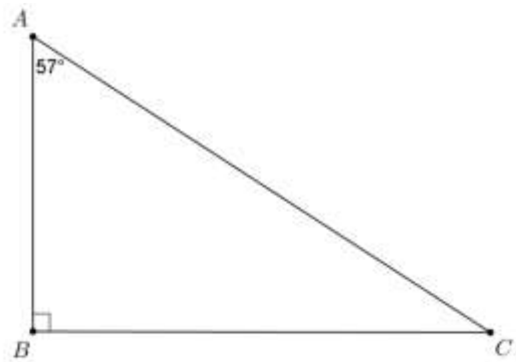
Leah decides to build a ramp that starts at the top of the stairs and ends 18 feet from the base of the bottom stair. To the nearest hundredth of a foot, what is the length of the ramp? Enter your answer in the box.

Part C

To the nearest tenth of a degree, what is the measure of the angle created by the ground and the ramp that Leah builds in part B? Enter your answer in the box.

MAFS.912.G-SRT.3.6

The Sine of 57



In right triangle ABC, $m\angle A = 57°$.

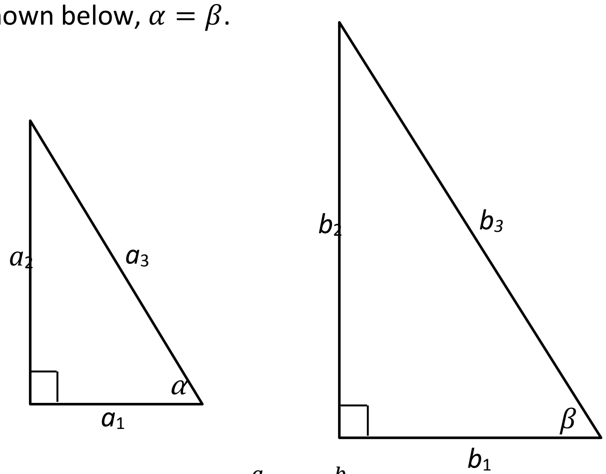
Sophia finds the sin 57° using her calculator and determines it to be approximately 0.8387.

1. Explain what the sin 57° = 0.8387 indicates about ΔABC

2. Does the sine of every 57° angle have the same value in every right triangle that contains an acute angle of 57°? Why or why not?

The Cosine Ratio

In the right triangles shown below, $\alpha = \beta$.



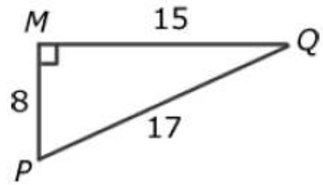
1. Use >, <, or = to compare the ratios $\frac{a_1}{a_3}$ and $\frac{b_1}{b_3}$. Explain and justify your answer.

2. How is the relationship between these ratios related to the cosine of α and the cosine of β? Explain.

3. Suppose ΔDEF is a right triangle and ∠E is one of its acute angles. Also, ΔPQR is a right triangle and ∠Q is one of its acute angles. If cos (*E*) = cos (*Q*), what must be true of ΔDEF and ΔPQR? Explain.

MAFS.912.G-SRT.3.6 EOC Practice

1. What is the sine ratio of $\angle P$ in the given triangle?



A. $\frac{8}{17}$
B. $\frac{8}{15}$
C. $\frac{15}{17}$
D. $\frac{15}{8}$

2. Kendall drew a right triangle. The tangent value for one angle in her triangle is 1.8750. Which set of side lengths could belong to a right triangle similar to the triangle Kendall drew?

A. 16 cm, 30 cm, 35 cm
B. 8 cm, 15 cm, 17 cm
C. 6 cm, 8 cm, 10 cm
D. 1.875 cm, 8 cm, 8.2 cm

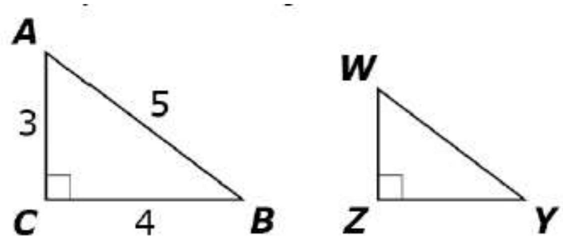
3. Angles F and G are complementary angles.

- As the measure of angle F varies from a value of x to a value of y, $sin(F)$ increases by 0.2.

How does $cos(G)$ change as F varies from x to y?

A. It increases by a greater amount.
B. It increases by the same amount.
C. It increases by a lesser amount.
D. It does not change.

4. Select all angles whose tangent equals $\frac{3}{4}$.

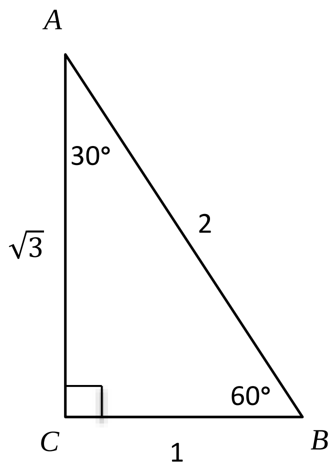


- [ ] ∠A
- [ ] ∠B
- [ ] ∠C
- [ ] ∠W
- [ ] ∠Y
- [ ] ∠Z

MAFS.912.G-SRT.3.7

Patterns in the 30-60-90 Table

Use the given triangle to complete the table below. Do not use a calculator. Leave your answers in simplest radical form.



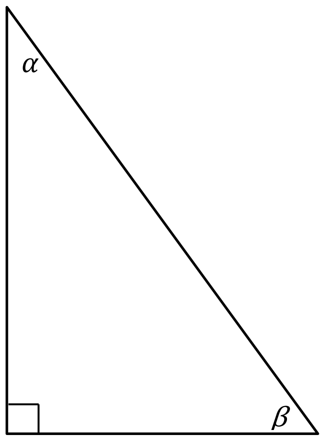
sin 30°		cos 30°	
sin 60°		cos 60°	

1. Describe the relationship between sin 30° and cos 60°.

2. Describe the relationship between sin 60° and cos 30°.

3. Why do you think this relationship occurs? Explain clearly and concisely.

Finding Sine



1. If cos $\beta = \frac{3}{5}$, what is sin α? Explain your reasoning.

2. If cos β = sin α, what must be true about α and β? Explain your reasoning.

Right Triangle Relationships

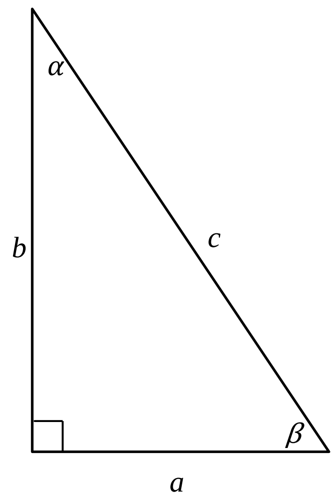
1. Suppose that sin $\alpha = 0.32$. What is the value of cos $(90 - \alpha)$? Explain.

2. Suppose that cos $\beta = 0.68$. What is the value of sin $(90 - \beta)$? Explain.

3. Suppose that sin $A = 0.41$ and cos $B = 0.41$. What is the relationship between $\angle A$ and $\angle B$? Explain.

Sine and Cosine

1. Use the triangle to explain why sin α = cos β.



FS Geometry EOC Review

MAFS.912.G-SRT.3.7 EOC Practice

1. Explain why $cos(x) = sin(90 - x)$ for x such that $0 < x < 90$

2. Which is equal to $sin\ 30°$?

   A. cos 30°
   B. cos 60°
   C. sin 60°
   D. sin 70°

3. Adnan states if $cos30° \approx 0.866$, then $sin30° \approx 0.866$. Which justification correctly explains whether or not Adnan is correct?

   A. Adnan is correct because $cosx°$ and $sinx°$ are always equivalent in any right triangle.
   B. Adnan is correct because $cosx°$ and $sinx°$ are only equivalent in a $30° - 60° - 90°$ triangle.
   C. Adnan is incorrect because $cosx°$ and $sin(90 - x)°$ are always equivalent in any right triangle.
   D. Adnan is incorrect because only $cosx°$ and $cos(90 - x)°$ are equivalent in a 30°-60°-90° triangle.

4. In right triangle ABC with the right angle at C, $sin\ A = 2x + 0.1$ and $cos\ B = 4x - 0.7$.

   Determine and state the value of x. Enter your answer in the box.