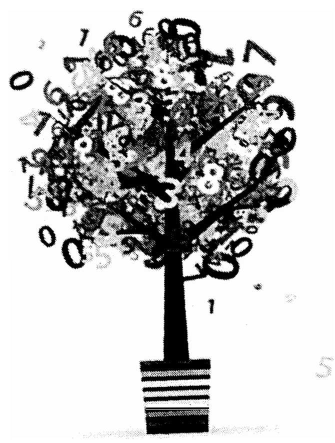
Name:________________

FSA Geometry EOC Practice #1

Congruency, Similarity, Right Triangles, and Trigonometry

46% of the EOC



Geometry EOC FSA Mathematics Reference Sheet

Customary Conversions
1 foot = 12 inches
1 yard = 3 feet
1 mile = 5,280 feet
1 mile = 1,760 yards

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts

1 pound = 16 ounces
1 ton = 2,000 pounds

Metric Conversions
1 meter = 100 centimeters
1 meter = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters

1 gram = 1000 milligrams
1 kilogram = 1000 grams

Time Conversions
1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 year = 365 days
1 year = 52 weeks

Geometry EOC FSA Mathematics Reference Sheet

Formulas

$$\sin A^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos A^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan A^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$V = Bh$$

$$V = \frac{1}{3}Bh$$

$$V = \frac{4}{3}\pi r^3$$

$y = mx + b$, where m = slope and b = y-intercept

$y - y_1 = m(x - x_1)$, where m = slope and (x_1, y_1) is a point on the line

Sample Item G-CO.1.1	Item Type
	Open Response

1

Kyle defines a circle as "the set of all the points equidistant from a given point."

Explain why Kyle's definition is not precise enough.

Type your answer in the space provided.

2

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

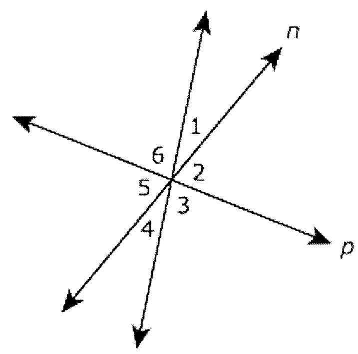
A. $XA = AY$
B. $\angle XAZ$ is acute.
C. $\overleftrightarrow{XY}$ is perpendicular to $\overleftrightarrow{ZW}$
D. X, Y, Z, and W are noncollinear.

3

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.

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

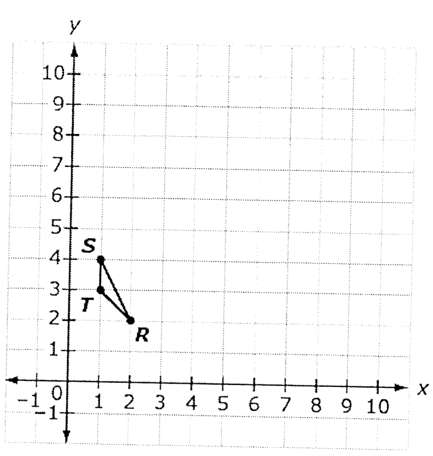


not to scale

4

Sample Item G-CO.1.2	Item Type
	Editing Task Choice

Triangle *SRT* is shown.



There are three highlights in the paragraph that show equations or phrases that are missing. For each highlight, click on the correct equation or phrase. (Write the three answers)

The vertices of $\triangle SRT$ are S (1, 4), R (2, 2), and T (1, 3). A reflection across the line __?__ and then across the line __?__ is the same as a translation of 4 units to the right and 4 units up because the lines are __?__ .

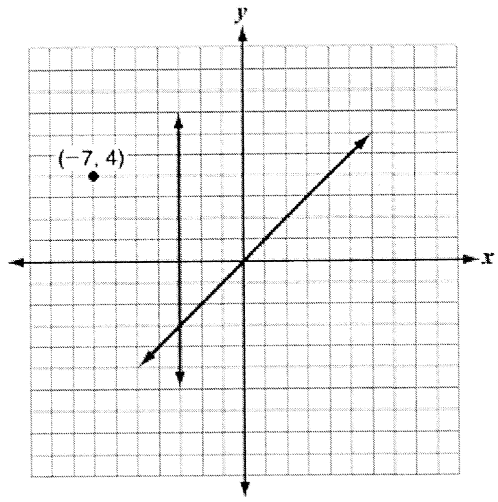
5

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. $(x', y') \rightarrow (x - 2, y - 3)$

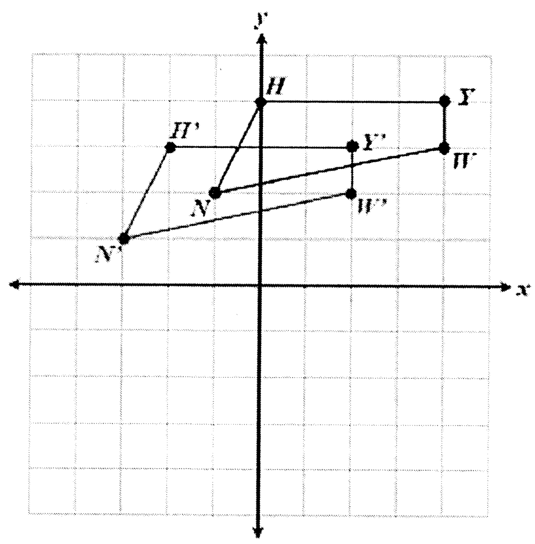
6) The point $(-7,4)$ is reflected over the line $x = -3$. Then, the resulting point is reflected over the line $y = x$. Where is the point located after both reflections?



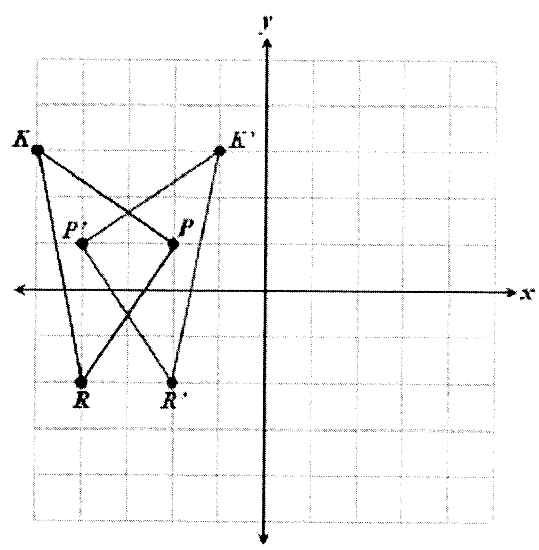
A. $(-10,-7)$
B. $(1,4)$
C. $(4,-7)$
D. $(4,1)$

MAFS.912.G-CO.1.4 EOC Practice

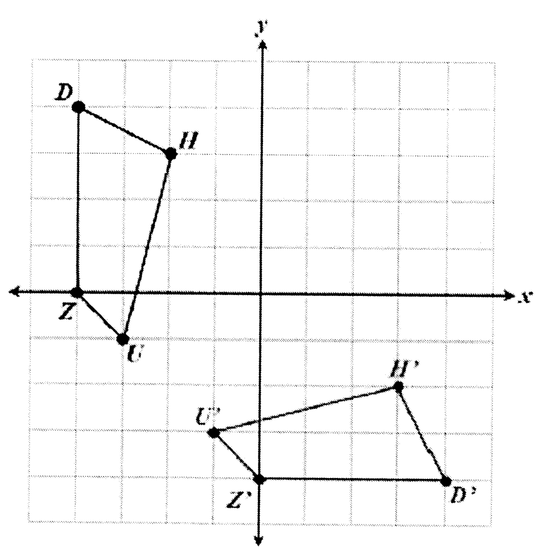
7) The graph of a figure and its image are shown below. Identify the transformation to map the image back onto the figure. Bubble in the correct answer.



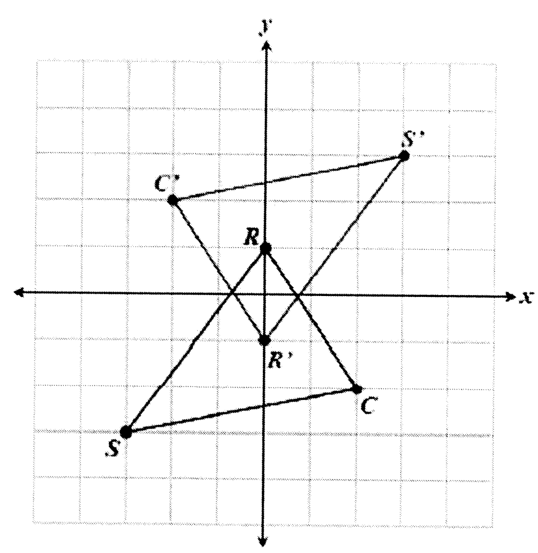
O Reflection
O Rotation
O Translation



O Reflection
O Rotation
O Translation



O Reflection
O Rotation
O Translation

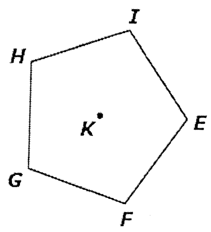


O Reflection
O Rotation
O Translation

8)

Sample Item GCO.1.5	Item Type
	Multiselect

Regular pentagon *EFGHI* with center *K* is shown.



Select all the transformations that carry pentagon *EFGHI* onto itself.

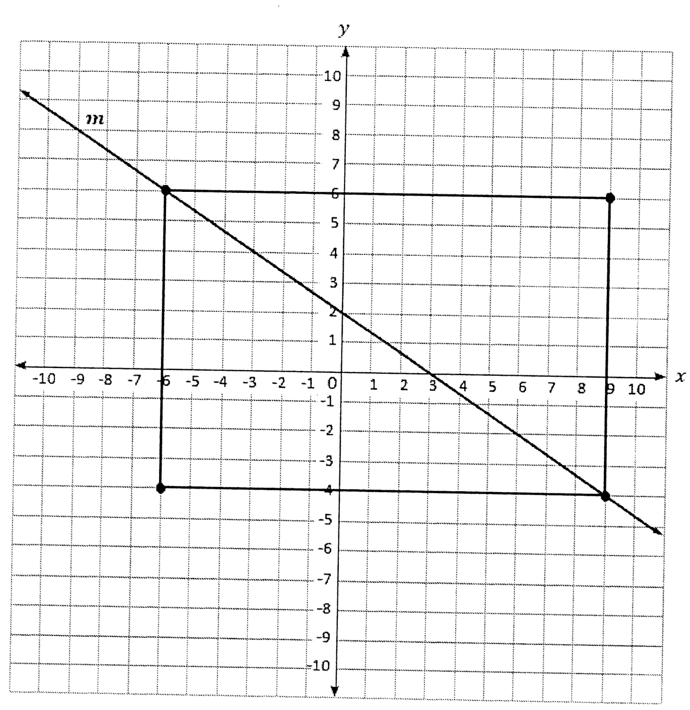
- ☐ a reflection across line *EK*, a 180° counterclockwise rotation about point *K*, and a reflection across a vertical line through point *K*
- ☐ a 90° counterclockwise rotation about point *E*, a reflection across line *FG*, and a vertical translation
- ☐ a reflection across line *FI*, a reflection across line *GH*, and a 180° clockwise rotation about point *K*
- ☐ a reflection across a vertical line through point *K*, a 180° clockwise rotation about point *K*, and a reflection across line *EK*
- ☐ a 180° clockwise rotation about point *E*, a reflection across a vertical line through point *E*, and a reflection across a horizontal line through point *E*

9) 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. $A'(-3,0), B'(8,3), C'(2,-9)$

MAFS.912.G-CO.1.3 EOC Practice

10) Which transformation will carry the rectangle shown below onto itself?

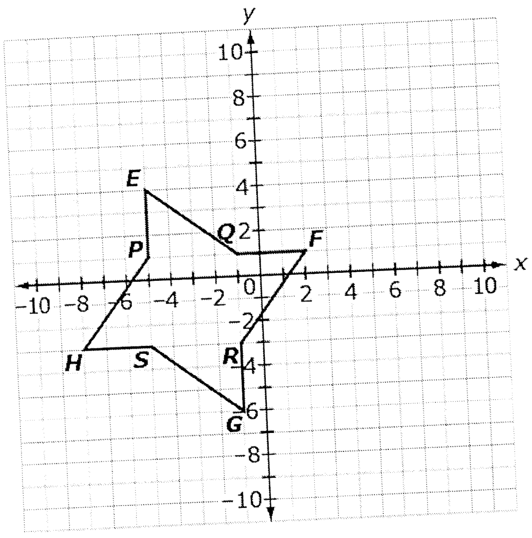


A. a reflection over line m
B. a reflection over the line $y = 1$
C. a rotation 90° counterclockwise about the origin
D. a rotation 270° counterclockwise about the origin

Sample Item G-CO.2.6	Item Type Multiple Choice

11

Evelyn is designing a pattern for a quilt using polygon *EQFRGSHP* shown.



Evelyn transforms *EQFRGSHP* so that the image of *E* is at (2,0) and the image of *R* is at (6, – 7).

Which transformation could Evelyn have used to show *EQFRGSHP* and its image are congruent?

Ⓐ *EQFRGSHP* was reflected over the line $y = x + 2$.

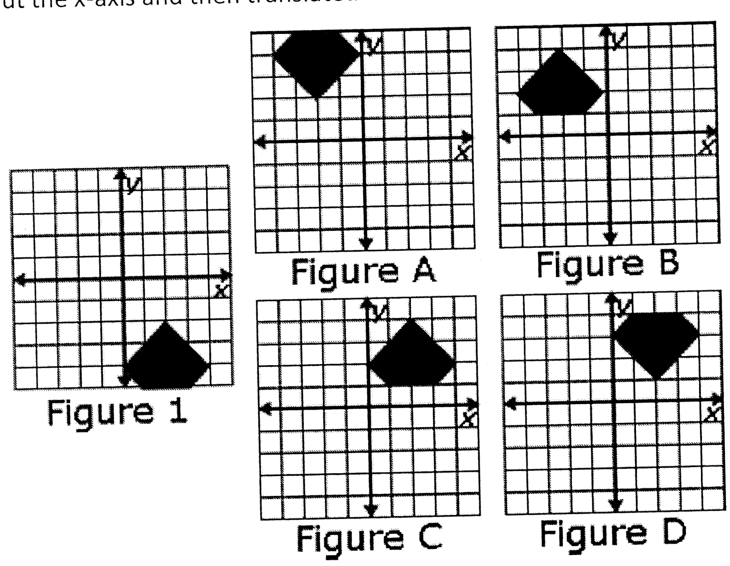
Ⓑ *EQFRGSHP* was translated right 7 units and down 4 units.

Ⓒ *EQFRGSHP* was rotated 135 degrees clockwise about the point *Q*.

Ⓓ *EQFRGSHP* was rotated 90 degrees clockwise about the point (−3, – 1).

12

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

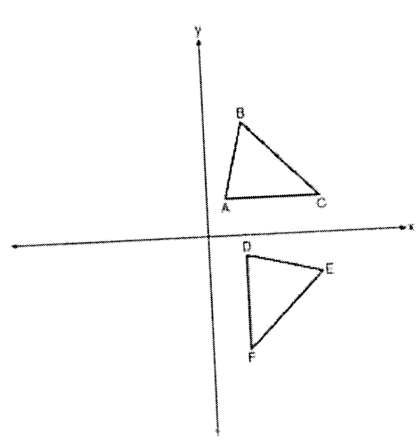
MAFS.912.G-CO.2.7 EOC Practice

13

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. $\angle A \cong \angle D$



(14)

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. Which triangle congruency proves it!

Bubble yes or No!

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

O TRUE O FALSE

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

O TRUE O FALSE

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

O TRUE O FALSE

(15)

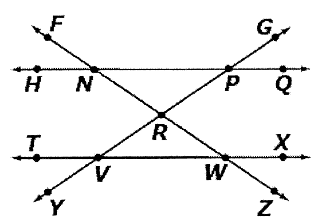
Sample Item CO.3.9	Item Type Hot Text – Drag and Drop (on EOC!)

Mrs. Henry gave her students an incomplete proof as shown.

Given: $\overleftrightarrow{HQ} \parallel \overleftrightarrow{TX}$

$\angle FNH \cong \angle NPR$

Prove: $\angle RVW \cong \angle XWZ$



Statement	Reason
1. $\overleftrightarrow{HQ} \parallel \overleftrightarrow{TX}$	1. Given
2. $\angle FNH \cong \angle NPR$	2. Given
3. $\angle FNH \cong \angle RWV$	3.
4. $\angle RWV \cong \angle XWZ$	4. Vertical angles are congruent.
5. $\angle FNH \cong \angle XWZ$	5. Transitive property
6. $\angle NPR \cong \angle RVW$	6.
7. $\angle RVW \cong \angle XWZ$	7. Transitive property

Reason 3

- Vertical angles are congruent.
- If two parallel lines are cut by a transversal, the alternate exterior angles are congruent.
- If two parallel lines are cut by a transversal, the alternate interior angles are congruent.
- If two parallel lines are cut by a transversal, the corresponding angles are congruent.

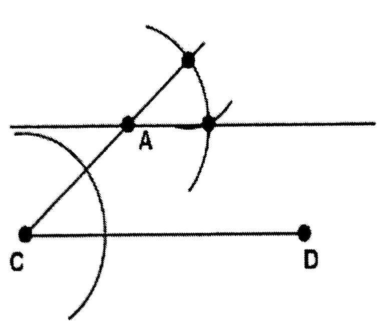
Reason 6

- Vertical angles are congruent.
- If two parallel lines are cut by a transversal, the alternate exterior angles are congruent.
- If two parallel lines are cut by a transversal, the alternate interior angles are congruent.
- If two parallel lines are cut by a transversal, the corresponding angles are congruent.

Complete the proof by writing ~~dragging~~ the correct reasons to the table for lines 3 and 6.

see choices

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

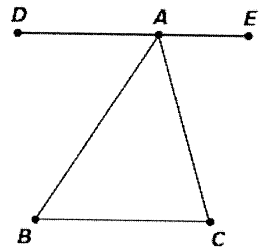


A. When two lines are each perpendicular to a third line, the lines are parallel.
B. When two lines are each parallel to a third line, the lines are parallel.
C. When two lines are intersected by a transversal and alternate interior angles are congruent, the lines are parallel.
D. When two lines are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

(17)

Sample Item CO 3.10	Item Type
	Hot Text – Drag and Drop (on EOC!)

A figure is shown, where $\overline{DE}$ is parallel to $\overline{BC}$.



Given: $\overline{DE} \parallel \overline{BC}$
Prove: $\angle ABC + \angle BCA + \angle CAB = 180°$

~~Drag~~ write statements from the statements column and reasons from the reasons column to their correct location to complete the proof.

Statement	Reason
1. $\overline{DE} \parallel \overline{BC}$	1. Given
2.	2.
3.	3.
4. $\angle DAE = 180°$	4.
5.	5. Angle addition
6.	6.
7. $\angle ABC + \angle BCA + \angle CAB = 180°$	7. Substitution

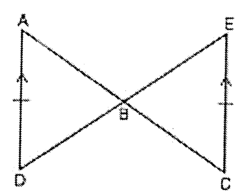
Statements
$\angle DAB + \angle CAB + \angle EAC = \angle DAE$
$\angle DAB \cong \angle ABC$
$\angle EAC = \angle ACB$
$\angle DAB + \angle CAB + \angle EAC = 180°$

Reasons
Supplementary angles
Substitution
If two parallel lines are cut by a transversal, then the alternate interior angles are congruent.
If two parallel lines are cut by a transversal, the alternate interior angles are congruent.

use these choices

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

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



(18)

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

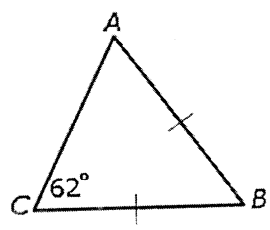
Statement	Reason
I. $\triangle ABD \cong \triangle CBE$	I. AAS
II. $\angle ABD \cong \angle EBC$	II. Vertical angles are congruent.
III. $\overline{AD} \parallel \overline{EC}$, $\overline{AD} \cong \overline{EC}$	III. Given
IV. $\overline{AB} \cong \overline{CB}$	IV. Corresponding parts of congruent 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

(19)

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



20

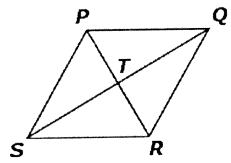
Sample Item CO.3.11	Item Type Hot Text – Drag and Drop

(on Soc!)

A proof with some missing statements and reasons is shown.

Given: *PQRS* is a parallelogram.
$\overline{PQ} \cong \overline{QR}$

Prove: *PQRS* is a rhombus.



Statement	Reason
1.	1. Given
2.	2. Given
3.	3.
4.	4.
5. $\overline{PQ} \cong \overline{QR} \cong \overline{RS} \cong \overline{SP}$	5.
6. *PQRS* is a rhombus.	6.

write ~~Drag~~ the correct statement from the statements column and the correct reason from the reasons column to the table to complete line 3 of the proof.

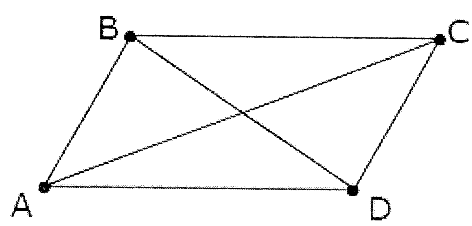
Statements
$\overline{PQ} \cong \overline{SR}$ and $\overline{PS} \cong \overline{QR}$
$\overline{PT} \cong \overline{TR}$ and $\overline{ST} \cong \overline{TQ}$
$\triangle PTQ \cong \triangle QTR$
$\angle SPQ \cong \angle QRS$

Reasons
Diagonals of a parallelogram bisect each other.
Opposite angles of a parallelogram are congruent.
Opposite sides of a parallelogram are congruent.
Side-Side-Side

use these choices

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

21



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.	$\triangle ABC \cong \triangle CDA$	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?

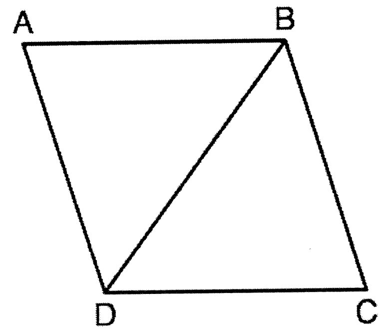
A. $\overline{BD} \cong \overline{BD}$; reflexive property
B. $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$; reflexive property
C. $\angle ABD \cong \angle CDB$ and $\angle ADB \cong \angle CBD$; When parallel lines are cut by a transversal, alternate interior angles are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

Ms. Davis gave her students all the steps of the proof below. One step is not needed.

22

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 $\cong$.
3. $\angle A \cong \angle C$	3. Opposite angles of a parallelogram are $\cong$.
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive property of congruence
5. $\Delta ABD \cong \Delta CDB$	5. SSS

Which step is not necessary to complete this proof?

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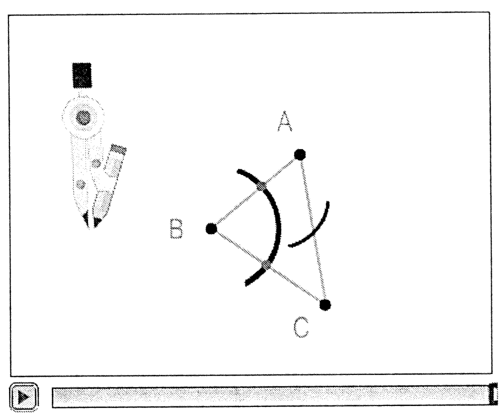
Sample Item CO.4.12	Item Type
	Multiple Choice

Ruben carries out a construction using $\triangle ABC$. Click the play button to see a part of his construction.



What will be the result of Reuben's construction?

Ⓐ Ruben constructs a segment perpendicular to $\overline{AC}$.

Ⓑ Ruben constructs the bisector of $\overline{AC}$.

Ⓒ Ruben constructs an angle congruent to $\angle B$.

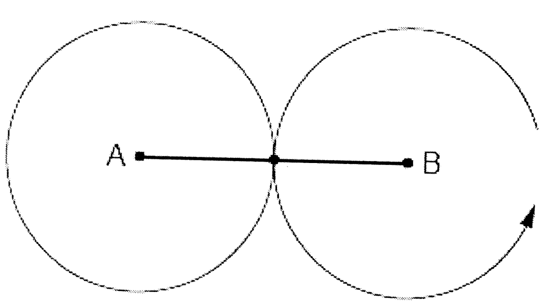
Ⓓ Ruben constructs the bisector of $\angle B$.

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

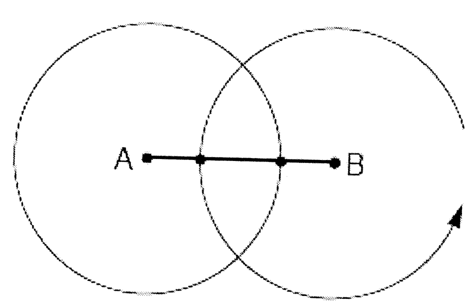
24

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

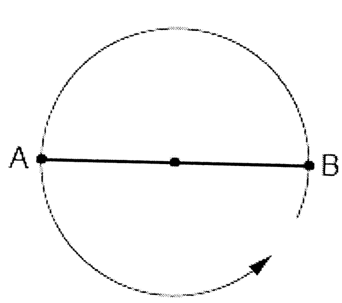
A.



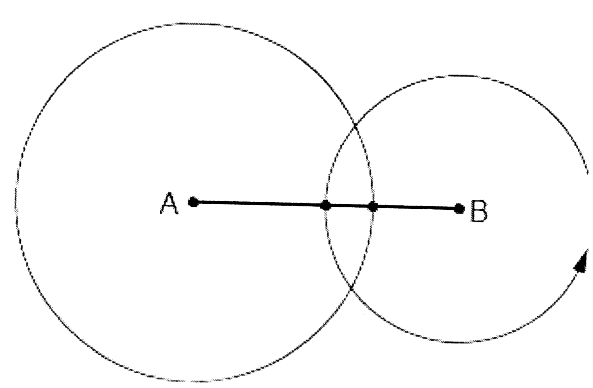
B.



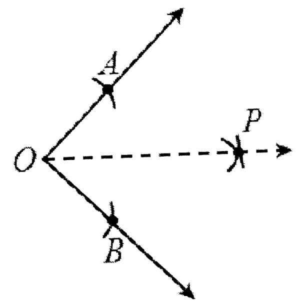
C.



D.



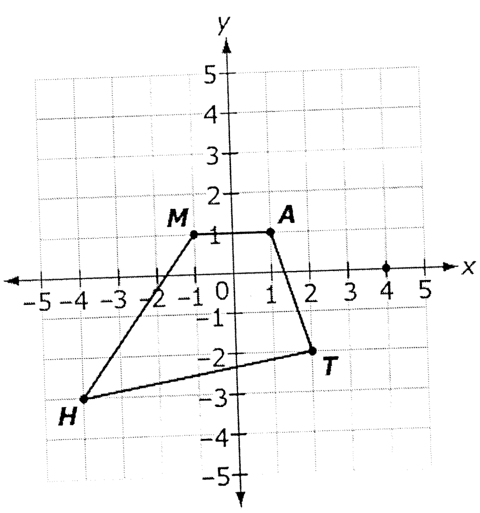
25) The figure below shows the construction of the angle bisector of $\angle AOB$ using a compass. Which of the following statements must always be true in the construction of the angle bisector? Select **Yes** or **No** for each statement.
(Bubble in)



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

Sample Item SRT1.1	Item Type Multiselect

26) Quadrilateral *MATH* is shown.



Quadrilateral *MATH* is dilated by a scale factor of 2.5 centered at (1, 1) to create quadrilateral *M'A'T'H'*.

Select all the statements that are true about the dilation.

- [ ] $\overline{MA} \cong \overline{M'A'}$
- [ ] $\overline{A'T'}$ will overlap $\overline{AT}$.
- [ ] $\overline{M'A'}$ will overlap $\overline{MA}$.
- [ ] The slope of $\overline{HT}$ is equal to the slope of $\overline{H'T'}$.
- [ ] The area of *M'A'T'H'* is equal to 2.5 times the area of *MATH*.

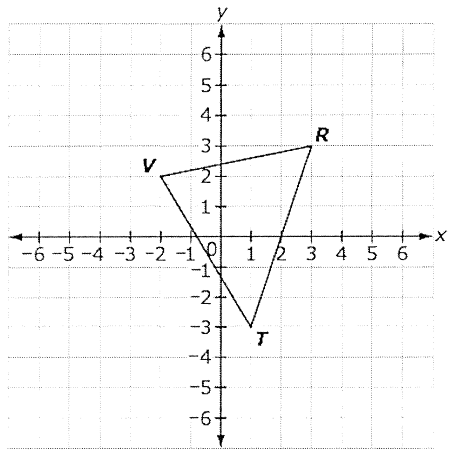
27) The vertices of square $ABCD$ are $A(3,1), B(3,-1), C(5,-1)$, and $D(5,1)$. This square is dilated so that A' is at $(3,1)$ and C' is at $(8,-4)$. What are the coordinates of D'?

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

28

Sample Item SRT 1.2	Item Type
	Multiselect

Triangle RTV is shown on the graph.



Triangle $R'T'V'$ is formed using the transformation $(0.2x, 0.2y)$ centered at $(0, 0)$.

Select the three equations that show the correct relationship between the two triangles based on the transformation.

- ☐ $RV = 5R'V'$
- ☐ $\frac{R'V'}{RV} = \frac{\sqrt{26}}{0.2\sqrt{26}}$
- ☐ $0.04\sqrt{10}RT = \sqrt{10}R'T'$
- ☐ $RT = 0.2R'T'$
- ☐ $0.2T'V' = TV$
- ☐ $\frac{TV}{T'V'} = \frac{\sqrt{34}}{0.2\sqrt{34}}$

29

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.

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

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

30

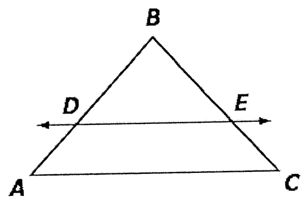
When two triangles are considered similar but not congruent?

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.

Sample Item SRT 1.3 | Item Type Multiple Choice

(31)

Katherine uses $\triangle ABC$, where $\overline{DE} \parallel \overline{AC}$ to prove that a line parallel to one side of a triangle divides the other two sides proportionally. A part of her proof is shown.



Statements	Reasons
1. $\overline{DE} \parallel \overline{AC}$	1. Given
2. $\angle BDE \cong \angle BAC$ and $\angle BED \cong \angle BCA$	2.
3. $\triangle BAC \sim \triangle BDE$	3.
4. $\frac{BA}{BD} = \frac{BC}{BE}$	4.
5. $BA = BD + DA; BC = BE + EC$	5. Segment addition postulate
6.	6.
7.	7.
8.	8. Subtraction property of equality

(Part A)

Which statement completes step 8 of the proof?

Also complete the ENTIRE Proof!! First!! (PART B)

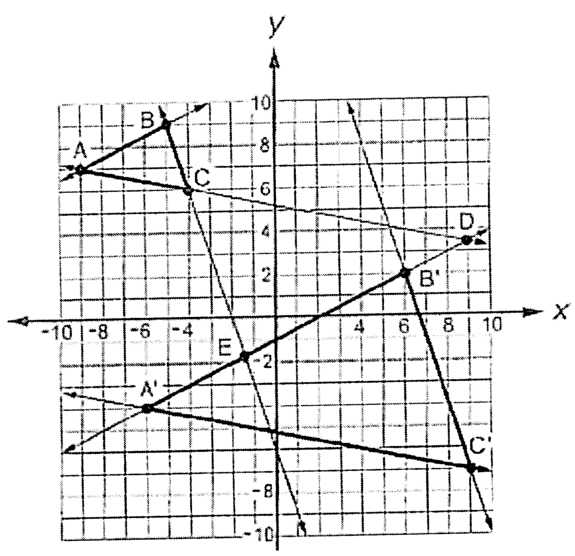
Ⓐ $BA - BD = DA$ and $BC - BE = EC$

Ⓑ $AD = BD$ and $CE = BE$

Ⓒ $\frac{BA}{BC} = \frac{DA}{EC}$

Ⓓ $\frac{DA}{BD} = \frac{EC}{BE}$

32) 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 $\angle BAC \cong \angle B'A'C'$ and $\angle ABC \cong \angle A'B'C'$.



Kamal makes this incomplete flow chart proof.

slope $\overleftrightarrow{AC} = -\frac{1}{5}$ | slope $\overleftrightarrow{A'C'} = -\frac{1}{5}$ → $\overleftrightarrow{AC} \parallel \overleftrightarrow{A'C'}$, slope $\overleftrightarrow{AC}$ = slope $\overleftrightarrow{A'C'}$ → $\angle CDB' \cong \angle B'A'C'$ → ? → $\angle BAC \cong \angle B'A'C'$, transitive property of $\cong$ angles

slope $\overleftrightarrow{AB} = \frac{1}{2}$ | slope $\overleftrightarrow{A'B'} = \frac{1}{2}$ → $\overleftrightarrow{AB} \parallel \overleftrightarrow{A'B'}$, slope $\overleftrightarrow{AB}$ = slope $\overleftrightarrow{A'B'}$ → $\angle BAC \cong \angle CDB'$? and $\angle ABC \cong \angle BEB'$?

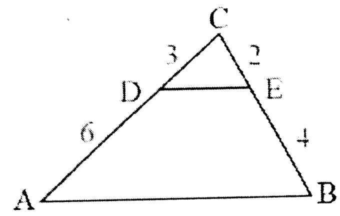
slope $\overleftrightarrow{BC} = -3$ | slope $\overleftrightarrow{B'C'} = -3$ → $\overleftrightarrow{BC} \parallel \overleftrightarrow{B'C'}$, slope $\overleftrightarrow{BC}$ = slope $\overleftrightarrow{B'C'}$ → $\angle BEB' \cong \angle A'B'C'$ → ? → $\angle ABC \cong \angle A'B'C'$, transitive property of $\cong$ angles

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.

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

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

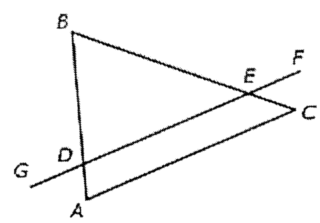


	Statements	Reasons
1.		Given
2.	$CA = CD + DA$ $CB = CE + EB$	
3.	$\frac{CA}{CD} = \frac{9}{3} = 3\ ; \frac{CB}{CE} = \frac{6}{2} = 3$	
4.		Transitive Property
5.		
6.	$\Delta CDE \sim \Delta CAB$	

Complete the Proof!!

MAFS.912.G-SRT.2.4 EOC Practice

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



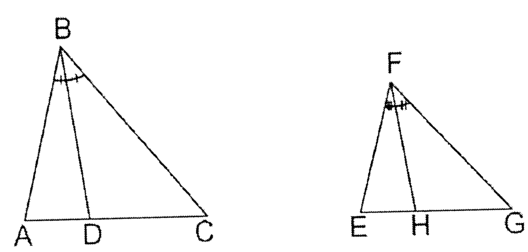
A. Angles BDE and BCA are congruent as alternate interior angles.
B. Angles BAC and BEF are congruent as corresponding angles.
C. Angles BED and BCA are congruent as corresponding angles.
D. Angles BDG and BEF are congruent as alternate exterior angles.

35) 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.

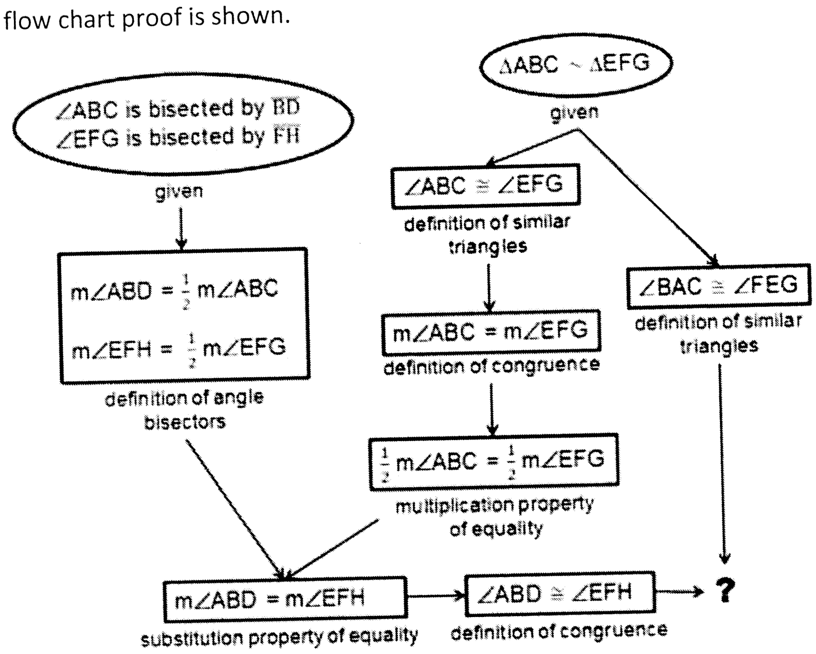
Given: $\Delta ABC \sim \Delta EFG.$

$\overline{BD}$ 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

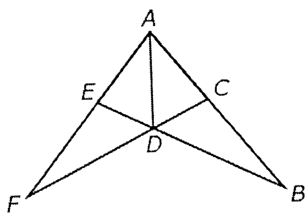
Sample Item SRT2.5	Item Type Editing Task Choice

36)

Gabriel wrote a partial narrative proof to prove $\overline{FD} \cong \overline{BD}$.

Given: $\overline{AD}$ bisects $\angle EAC$
$\angle FDA \cong \angle BDA$

Prove: $\overline{FD} \cong \overline{BD}$

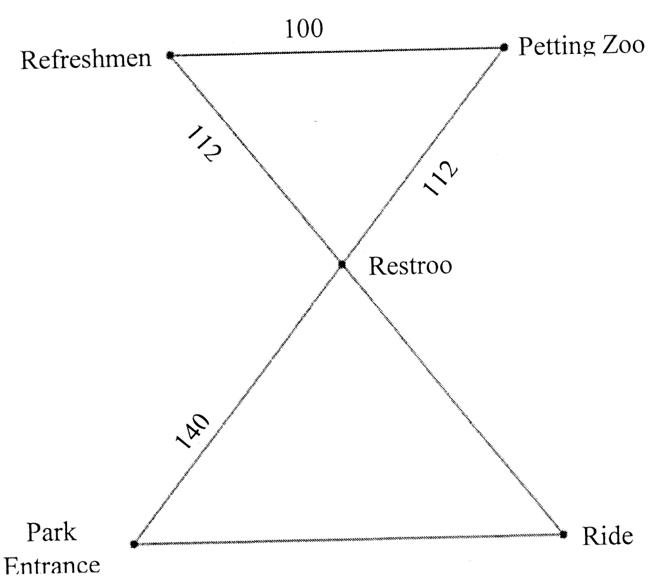


There are three highlights in the paragraph to show blanks in the proof. For each highlight, click on the word or phrase to fill in the blank. (Write the answers for the 3 Blanks)

It is given that $\overline{AD}$ bisects $\angle EAC$, and $\angle FDA \cong \angle BDA$. Since $\overline{AD}$ bisects $\angle EAC$, then $\angle DAE \cong \angle DAC$ from the definition of angle bisector. $\overline{AD} \cong \overline{AD}$ by the reflexive property. $\triangle$_?_ $\cong \triangle$_?_ because of _?_. Therefore, $\overline{FD} \cong \overline{BD}$ because corresponding parts of congruent triangles are congruent.

County Fair

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



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

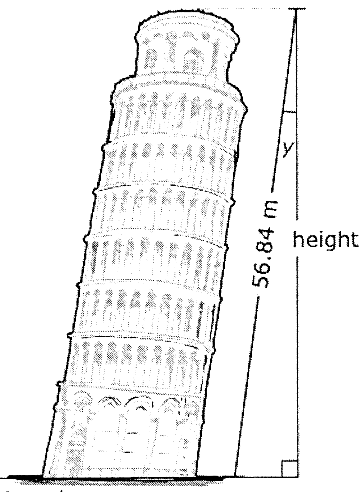
Basketball Goal

38) 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.

Sample Item SRT 3.8	Item Type Equation Editor

39

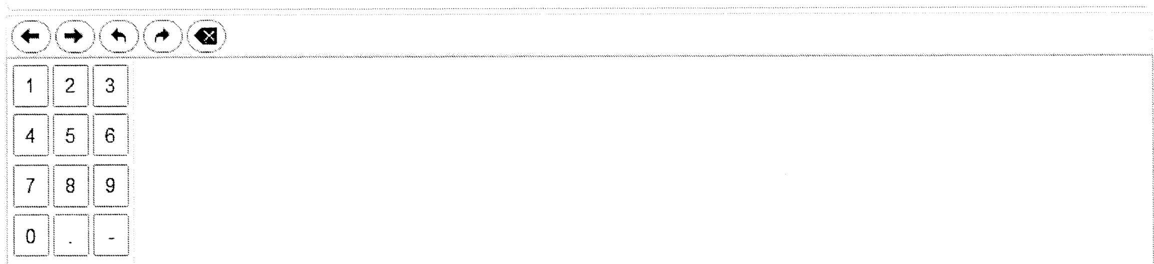
The Leaning Tower of Pisa is 56.84 meters (m) long.



not to scale

In the 1990s, engineers restored the building so that angle *y* changed from 5.5° to 3.99°.

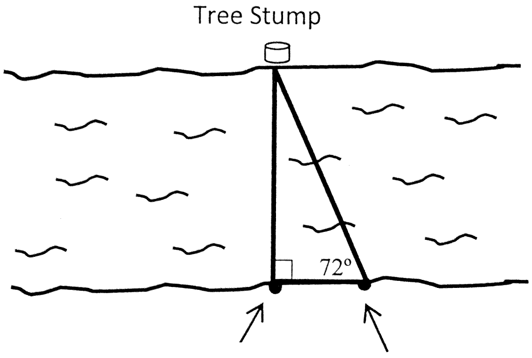
To the nearest hundredth of a meter, how much did the restoration change the height of the Leaning Tower of Pisa?



River Width

40

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.

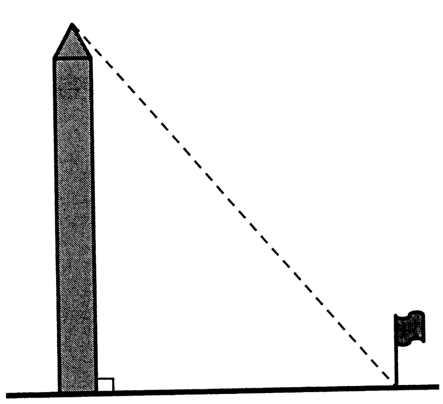


Washington Monument

41

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.



42

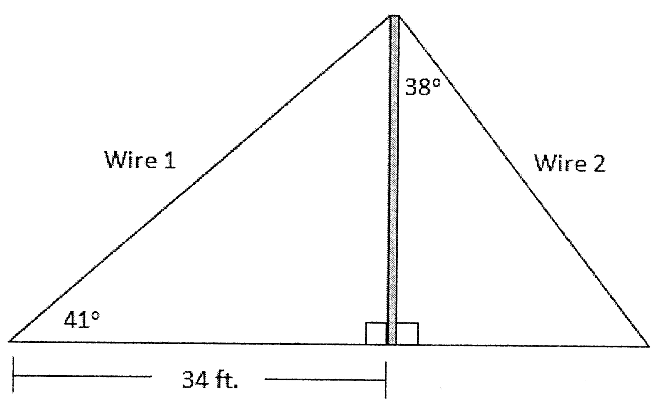
Jane and Mark each build ramps to jump their remote-controlled cars.
Both ramps are right triangles when viewed from the side. The incline of Jane's ramp makes a 30-degree angle with the ground, and the length of the inclined ramp is 14 inches. The incline of Mark's ramp makes a 45-degree angle with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

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

43



Part A

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

Part B

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

Part C

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

MAFS.912.G-SRT.3.6 EOC Practice

44

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?

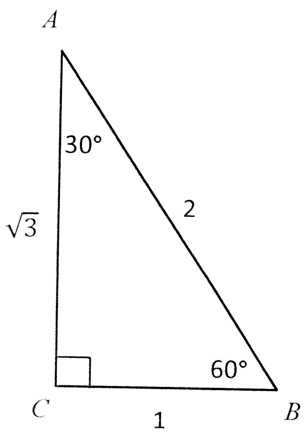
A. 16 cm, 30 cm, 35 cm
B. 8 cm, 15 cm, 17 cm
C. 6 cm, 8 cm, 10 cm
D. 1.875 cm, 8 cm, 8.2 cm

MAFS.912.G-SRT.3.7

15)

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.



Part A

sin 30°		cos 30°	
sin 60°		cos 60°	

Pt B Describe the relationship between sin 30° and cos 60°.

Pt C Describe the relationship between sin 60° and cos 30°.

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

46) 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.
