



Calculator Neutral
for this Standard

Geometry
Secondary Education
MAFS.912.G-CO.1.1 – Worksheet 1

Name: _____ Date: ____/____/____

- Which student response is the most precise definition of an angle?
 - A line that is bent about a center point.
 - Two different rays that have a common endpoint.
 - Two lines that intersect creating an 'X'.
 - Two non-parallel lines in different planes that never intersect.
- Which of the following is a precise definition of perpendicular lines?
 - Lines q and p are perpendicular if they never meet.
 - Lines q and p are perpendicular if they meet at a single point so that the two lines form a 'T'.
 - Lines q and p are perpendicular if they meet at a single point and if one of the angles at the point of intersection is a right angle.
 - Lines q and p are perpendicular if they intersect at the midpoint of q .
- Which of the following is a precise definition of a circle?
 - The set of all points in a plane that are equidistant from a given center point.
 - A three-dimensional shape whose boundary consists of all points equidistant from a given center point.
 - The set of all points in a two-dimensional plane that create a diameter.
 - The set of all points that are equidistant to the focus and directrix.
- Which student response is the most precise definition of a line segment?
 - A line segment is part of a line, not the whole thing.
 - A line segment is when three points are all on the same line.
 - A line segment has an endpoint and continues forever in one direction.
 - A line segment is part of a line connecting two endpoints.
- Which student response is the most precise definition of two parallel lines?
 - Two lines are parallel if they are distinct and one can be translated on top of the other.
 - Two lines are parallel if they are close together but do not intersect.
 - Two lines are parallel as long as they are not perpendicular.
 - Two lines are parallel if they do not intersect and are in different planes.

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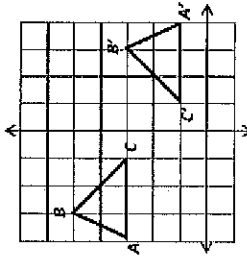


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MAFS.912.G-CO.1.2 – Worksheet 1

Name: _____ Date: ____/____/____

- Which two transformations map the image in the figure below?



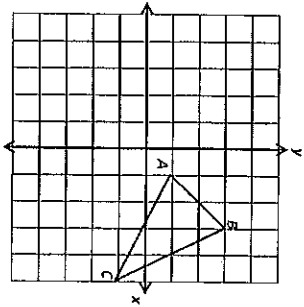
- Rotation 90 degrees counterclockwise around the origin and a translation.
 - Dilation and a reflection over $y = x$.
 - Rotation 180 degrees clockwise around the origin and a reflection over the y -axis.
 - Reflection over the y -axis and a translation.
- Which of the following is NOT a rigid motion transformation?
 - Translation
 - Rotation
 - Dilation
 - Reflection
 - A city parks and recreation department needs to relocate a swing set so that it is farther away from a new jungle gym that is being installed. The swing set will be reset 48 feet north and 16 feet east of its original position. Assuming the positive y -axis on a coordinate plane is north, which function represents the translation coordinates of the swing set?
 - $(x, y) \rightarrow (x - 16, y - 48)$
 - $(x, y) \rightarrow (x + 48, y + 16)$
 - $(x, y) \rightarrow (x + 16, y + 48)$
 - $(x, y) \rightarrow (x - 48, y - 16)$

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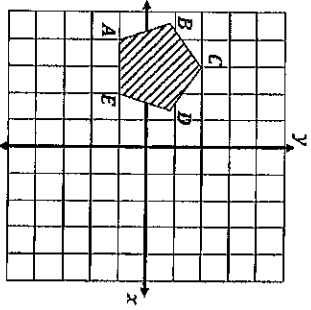


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4. Draw the image in the graph below for triangle ABC for a translation $(x, y) \rightarrow (x - 5, y + 1)$, followed by a reflection over the x-axis.



5. Pentagon ABCDE is reflected over the line $x = -1$, followed by a reflection over the line $x = 2$. Complete the statement below to show the translation of $A'B'C'D'E'$.



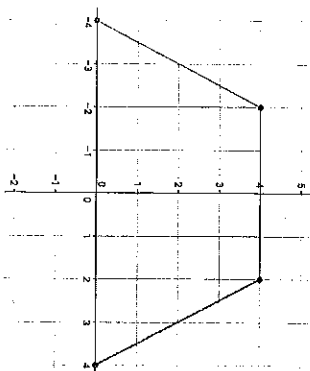
+
-
x
÷
0
2
4
6
8

$(X, Y) \rightarrow (X \square, Y \square)$



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1. Name: Describe the composition of transformations that will carry the isosceles trapezoid below onto itself.



- A. reflection over the x-axis followed by a 180° rotation about the origin
 B. reflection over the y-axis followed by a 180° rotation about the origin
 C. translation according to the rule $(x, y) \rightarrow (x - 2, y + 4)$ followed by a reflection over the y-axis
 D. rotation of 90° about the origin followed by a reflection over the y-axis
2. A regular hexagon is rotated on a coordinate plane. Which of the following rotations result in a hexagon with the same appearance as the original?
- A. 60° clockwise rotation about the center of the hexagon
 B. 90° clockwise rotation about the center of the hexagon
 C. 120° clockwise rotation about the center of the hexagon
 D. 150° clockwise rotation about the center of the hexagon
 E. 180° clockwise rotation about the center of the hexagon
 F. 240° clockwise rotation about the center of the hexagon
 G. 360° clockwise rotation about the center of the hexagon



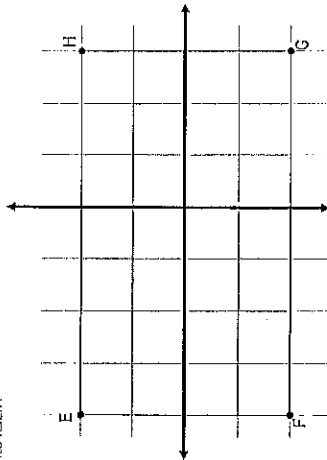
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3. A regular polygon has a sides. Which algebraic expression represents the number of degrees of rotation about the polygon's center that would carry the polygon onto itself?

- A. $\frac{180^\circ}{a}$
- B. $\frac{360^\circ}{a}$
- C. $\frac{360^\circ}{2a}$
- D. $180^\circ(a)$

4. Rectangle EFGH is shown on the coordinate plane below. Which sequence of reflections will map EFGH onto itself?



- A. A reflection over the x-axis followed by a reflection over the y-axis
- B. A reflection over the y-axis followed by a reflection over the y-axis
- C. A reflection over the x-axis followed by a reflection over the line $y = 0.5$
- D. A reflection over the y-axis followed by a reflection over the line $y = -0.5$

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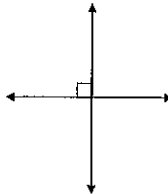
1. A rectangle is translated by the rule $(x, y) \rightarrow (x - 3, y + 6)$. What will be the measure of each interior angle of the new rectangle?

2. What is the minimum number of degrees that the figure shown below can be rotated so that it maps itself?



- A. 30°
- B. 45°
- C. 60°
- D. 360°

3. If the image shown below is rotated n degrees, will the image be congruent to the preimage?

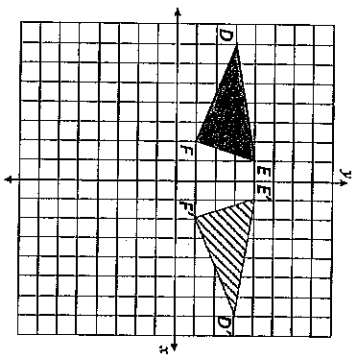


- A. No, parallel lines will result if rotated either 90° or 180° .
- B. No, they will become intersecting lines less than 90° .
- C. Yes, the rigid motion holds its properties.
- D. Yes, but only if rotation either 90° or 180° .

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4. In the diagram below, $\triangle DEF$ is reflected across the y -axis to create $\triangle D'E'F'$.



- Which of the following is true?
- A. $\overline{DE} \parallel \overline{D'E'}$
 - B. $\overline{EF} \parallel \overline{E'F'}$
 - C. $\overline{EF} \perp \overline{E'F'}$
 - D. $\overline{DE} \perp \overline{D'E'}$

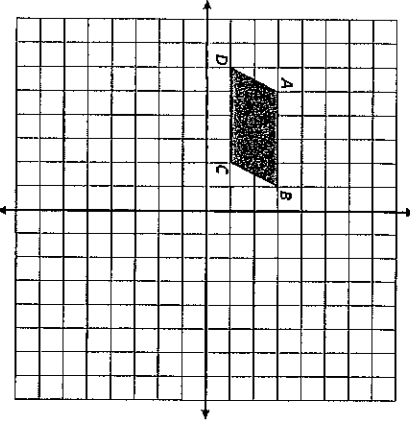
5. Which of the following figures maps onto itself as the result of any rigid transformation?

- A. Square
- B. Circle
- C. Triangle
- D. Pentagon

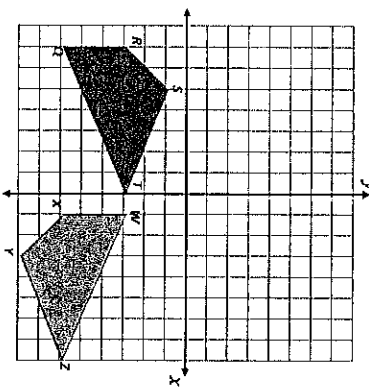


Name: _____ Date: ____/____/____

1. Given parallelogram $ABCD$ as shown below, translate $ABCD$ $(x, y) \rightarrow (x + 2, y - 6)$ and then rotate $ABCD$ 90° counterclockwise about the origin.



2. Select the combination of transformations that result in the image $WXYZ$ from the pre-image $QRST$.



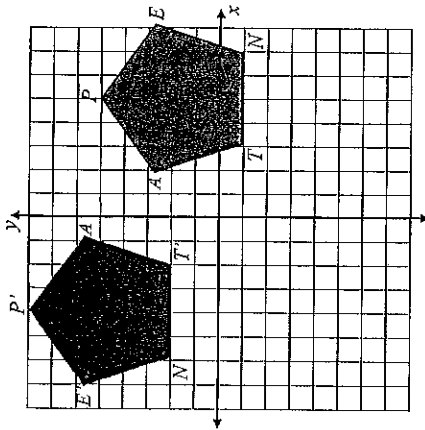
- Translation
- Reflection over the x -axis
- Reflection over the y -axis
- Dilation
- Rotation 90° counterclockwise
- Rotation 180°



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3. Pentagon $PENTA$ was transformed to create the image $P'E'N'T'A'$. Which of the following describes the transformation shown below?



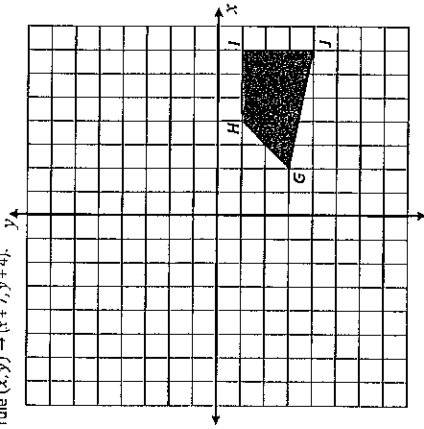
- Reflection over the x -axis; rotation 180° clockwise about the origin
- Reflection over the y -axis; rotation 180° counterclockwise about the origin
- Reflection over $y = x$; translation $(x, y) \rightarrow (x + 0, y - 4)$
- Translation $(x, y) \rightarrow (x - 1, y + 3)$; reflection over the y -axis

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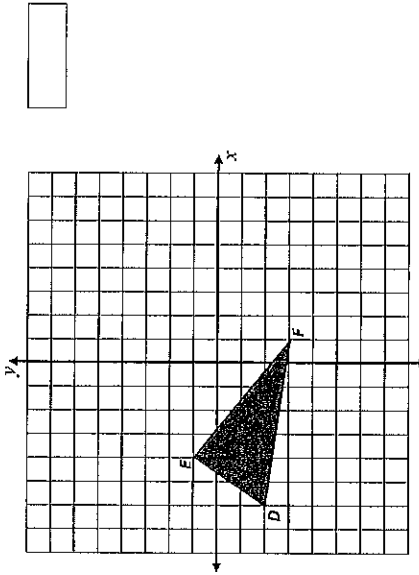


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4. Given quadrilateral $GHJI$, reflect the figure across the y -axis and then translate according to the rule $(x, y) \rightarrow (x + 7, y + 4)$.



5. Triangle DEF is reflected over the x -axis and then rotated 90° degrees counterclockwise about the origin. What is the x -coordinate of E' ?



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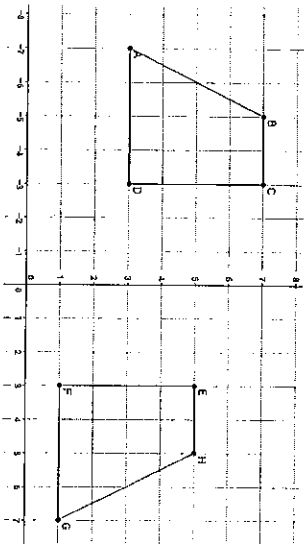


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Name: _____

Date: _____

1. Trapezoid ABCD was transformed to create trapezoid GHEF. Which composition of transformations can be used to show that the trapezoids are congruent?



- A. A rotation of 90° followed by a translation according to the rule $(x, y) \rightarrow (x - 2, y)$
 B. A translation according to the rule $(x, y) \rightarrow (x, y - 2)$ followed by a reflection over the y -axis
 C. A reflection over the x -axis followed by a translation according to the rule $(x, y) \rightarrow (x, y - 2)$
 D. A translation according to the rule $(x, y) \rightarrow (x - 2, y)$ followed by a rotation of 180°
2. ACDE is located in quadrant I on a coordinate plane. If ACDE is reflected across the x -axis to obtain AC'D'E', which statement is true?
- A. AC'D'E' lies in quadrant II and is congruent to ACDE
 B. AC'D'E' lies in quadrant II and is not congruent to ACDE
 C. AC'D'E' lies in quadrant IV and is congruent to ACDE
 D. AC'D'E' lies in quadrant IV and is not congruent to ACDE



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3. ΔWXY has vertices $W(-5, 7)$, $X(-5, 3)$, and $Y(-2, 3)$. ΔBCD has vertices $B(-5, -6)$, $C(-5, -1)$, and $D(-2, -1)$. Select the statement that is true.

- A. The triangles are congruent because ΔWXY can be reflected over the line $y = 1$ to obtain ΔBCD .
 B. The triangles are congruent because ΔWXY can be reflected over the line $x = 1$ to obtain ΔBCD .
 C. The triangles are congruent because ΔWXY can be translated according to the rule $(x, y) \rightarrow (x, y - 4)$ to obtain ΔBCD .
 D. The triangles are not congruent, so ΔWXY cannot be mapped onto ΔBCD .
4. Blair draws a triangle on a coordinate plane and performs a series of transformations on it. Select all transformations that will result in an image that is congruent to Blair's original figure.
- A translation according to the rule $(x, y) \rightarrow (x + 3, y + 6)$ followed by a dilation with scale factor 5
 A translation according to the rule $(x, y) \rightarrow (x + 3, y + 6)$ followed by a translation according to the rule $(x, y) \rightarrow (x - 8, y + 9)$
 A reflection over the x -axis followed by a reflection over the y -axis
 A translation according to the rule $(x, y) \rightarrow (x + 1, y)$ followed by a reflection over the line $y = x$
 A dilation with scale factor 0.3 followed by a rotation of 135°

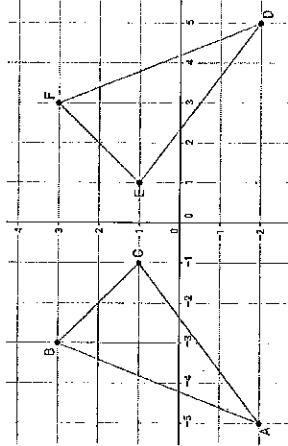


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1. Scalene triangle EFG is reflected to form $\triangle MNP$. Which statement is true?

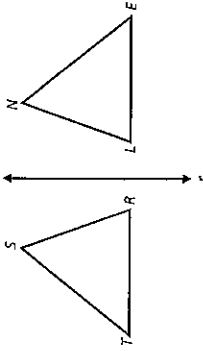
- A. $\overline{EF} \cong \overline{NP}$
- B. $\overline{FG} \cong \overline{MP}$
- C. $\angle EFG \cong \angle NMP$
- D. $\angle FGE \cong \angle NMP$

2. The figure below shows $\triangle ABC$ and its reflected image $\triangle DEF$. Describe all of the corresponding parts of the image and pre image that must be congruent.



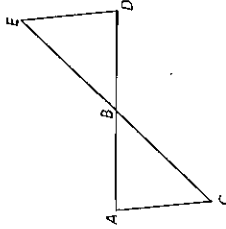


3. Guillermo drew $\triangle RST$ and then reflected it over line r to create $\triangle NLE$. Guillermo concluded that the triangles are congruent. Which is a correct justification for his conclusion?



- A. When the triangle was reflected, the angle measures were preserved.
- B. When the triangle was reflected, the height of the triangle was preserved.
- C. When the triangle was reflected, the perimeters of the triangle was preserved.
- D. When the triangle was reflected, the side lengths and angle measures of the triangle were preserved.

4. Triangle ABC has been rotated 180 degrees about the origin to form triangle DBE as shown below.



Which of the following statements is NOT true.

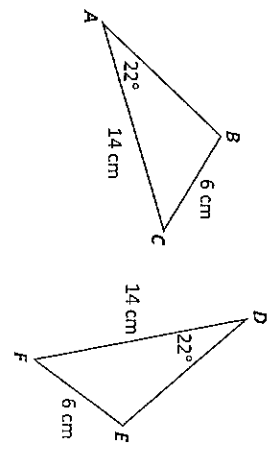
- A. $\overline{AB} \cong \overline{BD}$
- B. $\angle BAC \cong \angle BDE$
- C. $\overline{AC} \cong \overline{BC}$
- D. $\angle ABC \cong \angle DBE$



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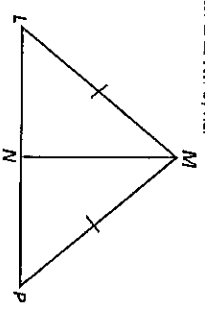
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1. In the figure below, $\triangle ABC$ was rotated to form $\triangle DEF$. Given the information below, can we prove $\triangle ABC \cong \triangle DEF$? If yes, which postulate or theorem can be used?



- A. Yes we can prove the triangles congruent by ASA
- B. Yes we can prove the triangles congruent by SSS
- C. Yes we can prove the triangles congruent by SAS
- D. No, the information is not sufficient to prove the triangles congruent

2. $\triangle LMN$ was reflected over \overline{MN} , resulting in $\triangle PMN$. What additional information is necessary to prove $\triangle LMN \cong \triangle PMN$ by HL?

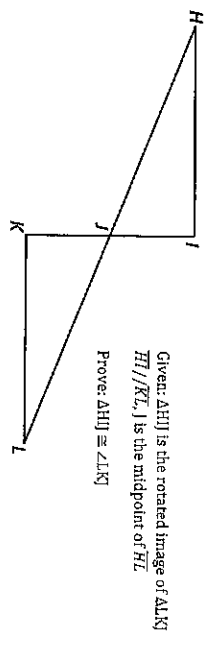


- A. $\overline{LN} \cong \overline{NP}$
- B. $\angle LMN \cong \angle PMN$
- C. $\angle MLN \cong \angle MPN$
- D. $\overline{MN} \perp \overline{LP}$



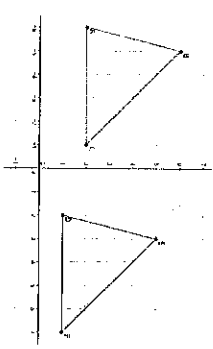
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3. Complete the proof below.



Statements	Reasons
1. $\overline{HI} / \overline{KI}, J$ is the midpoint of \overline{HI}	1. Given
2. $\angle HIJ \cong \angle LKJ$	2.
3. $\angle IJH \cong \angle KJL$	3.
4. $\overline{HJ} \cong \overline{KJ}$	4.
5. $\triangle HIJ \cong \triangle LKJ$	5.

4. $\triangle ABC$ and its translated image $\triangle DEF$ are shown below.



What relationship CANNOT be used to prove that $\triangle ABC$ is congruent to $\triangle DEF$?

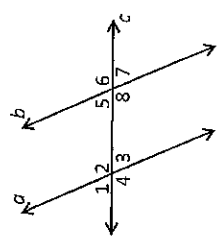
- A. Side-Angle-Side
- B. Angle-Side-Angle
- C. Side-Side-Side
- D. Angle-Angle-Angle



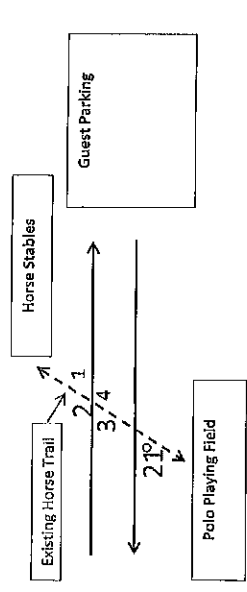
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1. Savannah is trying to justify to her geometry class that the 2 lines she drew, line a and line b , are parallel. Select all of the reasons that prove Savannah's lines parallel.

- $\angle 1 \cong \angle 3$ by the Vertical Angles Theorem
- $\angle 2 \cong \angle 8$ by the Converse of the Alternate Interior Angles Theorem
- $\angle 1 \cong \angle 5$ by the Converse of the Corresponding Angles Postulate
- $\angle 2 \cong \angle 5$ by the Converse of the Consecutive Interior Angles Theorem
- $\angle 4 \cong \angle 6$ by the Converse of the Alternate Exterior Angles Theorem



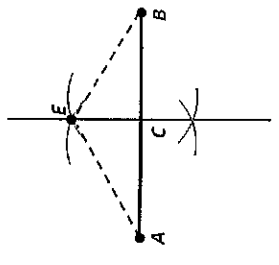
2. Wellington city engineers are designing two parallel roads by the International Polo Club to help with traffic flow during tournaments.



The engineers determined that the existing horse trail from the stables to the playing field is 21° south of west to the new road construction as shown in the diagram.
Find $m\angle 4$.



3. During geometry class, Mr. Jones constructed the perpendicular bisector of segment AB as shown below.



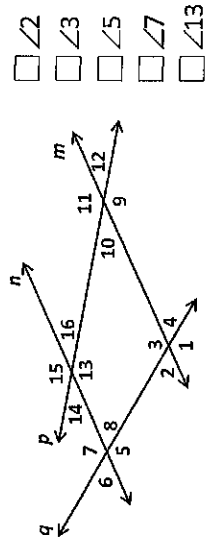
If $AC = 4x + 12$ and $BC = 2x + 18$, find AB .

- A. 3
- B. 6
- C. 24
- D. 48

4. Which of the following postulates or theorems allows Ms. Snider to prove that two lines are parallel?

- A. Linear Pair Postulate
- B. Vertical Angles Theorem
- C. Converse of the Corresponding Angles Postulate
- D. Consecutive Interior Angles Theorem

5. In the diagram below, $m \parallel n$. Select all of the angles that are congruent to $\angle 1$.



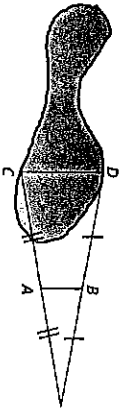
- $\angle 2$
- $\angle 3$
- $\angle 5$
- $\angle 7$
- $\angle 13$



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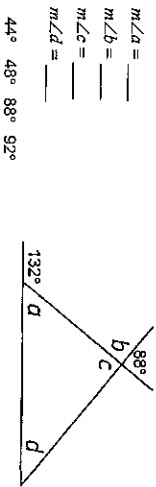
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1. A surveyor needs to determine the length across a lake as shown below. The length of \overline{AB} is 60 yards. Find the distance across the lake as indicated by \overline{CD} .



- A. 30 yards
B. 60 yards
C. 90 yards
D. 120 yards

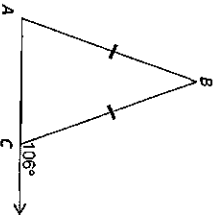
2. Mr. Youngman assigned the diagram below for his students to complete. Match each angle with the correct angle measure.



- $m\angle a =$ _____
 $m\angle b =$ _____
 $m\angle c =$ _____
 $m\angle d =$ _____
- 44° 48° 88° 92°

3. $\triangle ABC$ is given as shown to the right. What is the measure of the vertex angle?

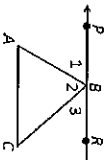
- A. 106°
B. 74°
C. 37°
D. 32°



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4. Complete the proof of the Triangle Angle-Sum below.

Given: $\triangle ABC$
Prove: $m\angle A + m\angle B + m\angle C = 180^\circ$



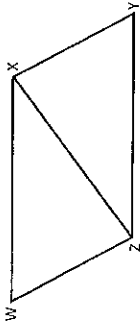
Statements	Reasons
1. $\triangle ABC$	1. Given
2. Draw \overline{PR} through B parallel to \overline{AC} .	2. Parallel Postulate
3. $\angle PBC + \angle 3$ form a linear pair.	3. Definition of a Linear Pair
4. $\angle PBC + \angle 3$ are supplementary	4. Linear Pair Postulate
5. $m\angle PBC + m\angle 3 = 180^\circ$	5. Definition of Supplementary Angles
6. $m\angle PBC = m\angle 1 + m\angle 2$	6. _____
7. $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$	7. Substitution Property of Equality
8. $\angle 1 \cong \angle A$ and $\angle 3 \cong \angle C$	8. _____
9. $m\angle 1 = m\angle A$ and $m\angle 3 = m\angle C$	9. Definition of Congruence
10. $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$	10. _____

5. Ms. Jones gave her student Ian three plastic angle leg pieces. The angle legs measure 3 centimeters, 10 centimeters, and 14 centimeters. Explain why Ian could not make a triangle using these three angle leg pieces.



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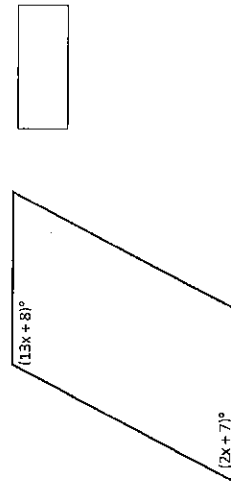
1. Given that quadrilateral WXYZ is a parallelogram, complete the proof below.



Given: Parallelogram WXYZ
Prove: $\angle W \cong \angle Y$

Statements	Reasons
1. Parallelogram WXYZ	1. Given
2. $WX \parallel YZ, WZ \parallel XY$	2.
3. $\angle WXZ \cong \angle YZX, \angle WZX \cong \angle YXZ$	3.
4.	4. Reflexive Property of Congruence
5.	5.
6.	6.

2. Find the value of x in the figure below.

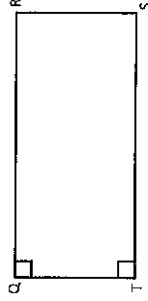




3. Margo has drawn a parallelogram and is giving you clues about it for a guessing game. If her first clue is that the parallelogram has 4 congruent sides but does not have congruent diagonals, which parallelogram could Margo have drawn?

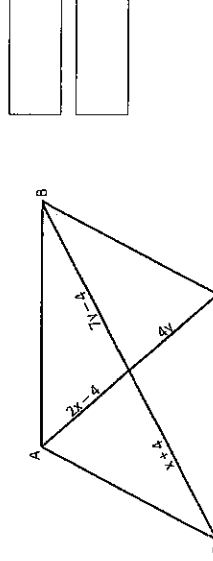
- A. Trapezoid
- B. Rhombus
- C. Rectangle
- D. Square

4. Pictured below is quadrilateral QRST. Which statement is NOT sufficient to prove that QRST is a rectangle?



- A. $\overline{QR} \parallel \overline{ST}$
- B. $\angle T \cong \angle R$
- C. $\angle Q \cong \angle S$
- D. $\overline{QT} \parallel \overline{RS}$

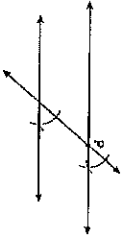
5. Given that ABCD is a parallelogram, find the values for x and y.





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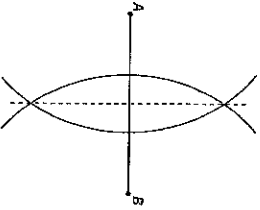
1. Mr. Williams constructed a line through point P that is parallel to a second line as shown below.



Which geometric principle is used to justify the construction?

- A. A line perpendicular to one of two parallel lines is perpendicular to the other.
- B. Two lines are perpendicular if they intersect to form congruent adjacent angles.
- 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 the corresponding angles are congruent, the lines are parallel.

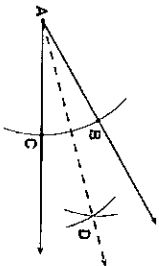
2. What geometric construction is shown in the diagram below?



- A. An angle bisector
- B. A line parallel to a given line
- C. An angle congruent to a given angle
- D. A perpendicular bisector



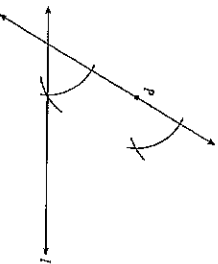
3. List the steps of constructing an angle bisector in order.



Draw \overline{AD}
From points B and C, draw two congruent arcs that intersect at D.
From point A, draw an arc that intersects the sides of the angle at points B and C.

- Step 1: _____
- Step 2: _____
- Step 3: _____

4. Marsha is using a compass and straightedge to do the construction shown below.

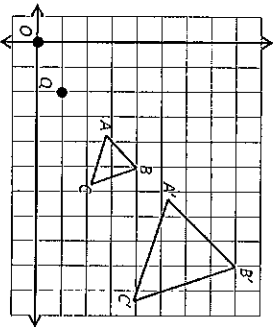


Which describes the construction Marsha is doing?

- A. Line P parallel to line l
- B. Line through P intersecting line l
- C. Line through P congruent to line l
- D. Line through P perpendicular to line l

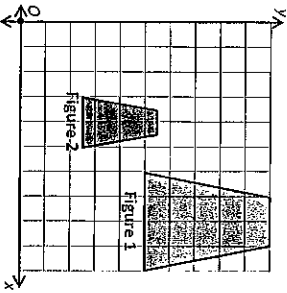
Name: _____ Date: ____/____/____

1. Given $\triangle ABC$ and its dilated object $\triangle A'B'C'$. If the center of dilation is Q with scale factor $\frac{2}{3}$, select all of the true statements.

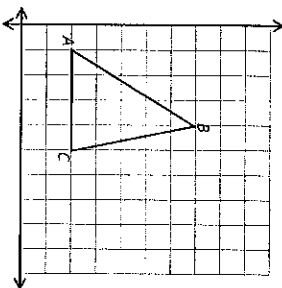


- Points Q , A , and A' are collinear.
- $QA > QA'$
- $QB < QB'$
- The slope of $\overline{QC'}$ is $\frac{2}{3}$ the slope of \overline{QC} .
- $\triangle ABC \sim \triangle A'B'C'$

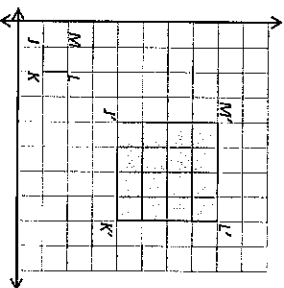
2. If figure 1 is dilated with center O to form figure 2, what is the scale factor of the dilation?



3. $\triangle ABC$ is dilated with center $(0, 0)$ according to the rule $(x, y) \rightarrow (2.5x, 2.5y)$ to create $\triangle A'B'C'$. Find the coordinates of A' , B' , and C' .



4. If the center of dilation is the origin in the diagram below, what would be the scale factor?



5. Which of the following explains a scale factor?
- A. The distance between the two images.
 - B. The coordinate pair of the center of dilation.
 - C. The number by which the distance from the center of dilation to an image is added to obtain a similar image as measured from its center of dilation.
 - D. The number by which the distance from the center of dilation to an image is multiplied to obtain a similar image as measured from its center of dilation.



Calculator: Neutral
for this Standard

Geometry
Secondary Education
MAFS.912.G-SRT.1.2 – Worksheet 1

Name: _____ Date: ____/____/____

1. $\triangle GHI$ is dilated by a scale factor of $\frac{3}{4}$ to result in $\triangle JKL$. Which of the following statements is true?

- A. The triangles are congruent but not similar.
- B. The lengths of the sides of $\triangle JKL$ are $\frac{3}{4}$ the lengths of the sides of $\triangle GHI$.
- C. The lengths of the sides of $\triangle GHI$ are $\frac{3}{4}$ the lengths of the sides of $\triangle JKL$.
- D. The measures of the angles of $\triangle JKL$ are $\frac{3}{4}$ the measures of the angles of $\triangle GHI$.

2. Drag the correct words into the blanks to complete the statement below.

congruent similar proportional equal dilation

$\triangle ABC$ is dilated with the center of dilation at the origin and a scale factor of 2 to obtain

$\triangle A'B'C'$. The triangles are _____ because their side lengths are _____ and their angles are _____.

3. Select all that would result in an image that is similar but not congruent to its pre image.

- Translation 2 units to the left and 3 units up followed by a dilation with scale factor 4.
- Reflection over the x-axis followed by a rotation of 180° .
- Rotation of 270° counterclockwise followed by a dilation with scale factor $\frac{9}{10}$.
- Reflection over the line $y = x$ followed by a dilation with scale factor 1.5.
- Translation 7 units to the right followed by a rotation of 90° clockwise.

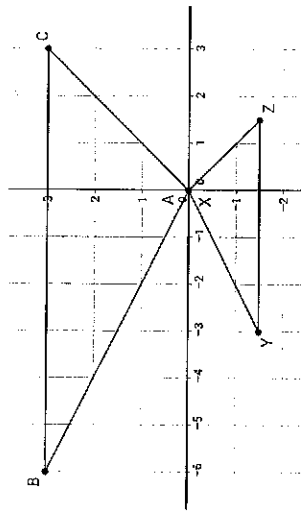


Geometry
Secondary Education
MAFS.912.G-SRT.1.2 – Worksheet 1
Calculator: Neutral
for this Standard

4. $\triangle WED$ is obtained by dilating $\triangle MON$ by a scale factor of 3, then translating it 11 units to the right. If $WE = 3$ inches, which statement must be correct?

- A. Since translation preserves sides lengths, the length of corresponding side $MO = 3$ inches.
- B. Since translation results in proportional side lengths, the length of corresponding side $MO = 33$ inches.
- C. Since dilation preserves angle measures, $m\angle M = m\angle W$.
- D. Since dilation results in proportional side lengths, the length of corresponding side $MO = 9$ inches.

5. Which statement best describes whether or not $\triangle ABC$ is similar to $\triangle XYZ$, as pictured below?

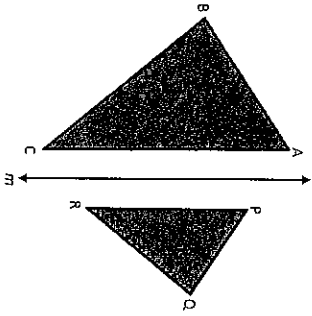


- A. The triangles are similar because $\triangle ABC$ can be mapped onto $\triangle XYZ$ through a reflection across the x-axis.
- B. The triangles are similar because $\triangle ABC$ can be mapped onto $\triangle XYZ$ through a dilation with scale factor 0.5.
- C. The triangles are similar because $\triangle ABC$ can be mapped onto $\triangle XYZ$ through a reflection across the x-axis followed by a dilation with scale factor 0.5.
- D. The triangles are similar because $\triangle ABC$ can be mapped onto $\triangle XYZ$ through a reflection across the x-axis followed by a dilation with scale factor 2.



Name: _____ Date: ____/____/____

1. In the figure below, $\triangle ABC$ was dilated and then reflected over line m to create $\triangle PQR$.



If $m\angle A = 49^\circ$ and $m\angle C = 38^\circ$, which statement must be true?

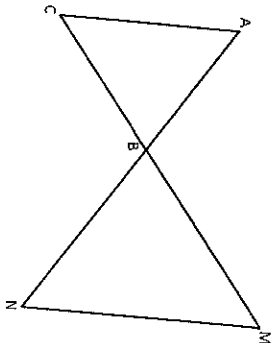
- A. $m\angle P = 49^\circ$ and $m\angle Q = 38^\circ$
- B. $m\angle P = 38^\circ$ and $m\angle Q = 49^\circ$
- C. $m\angle P = 49^\circ$ and $m\angle R = 38^\circ$
- D. $m\angle P = 38^\circ$ and $m\angle Q = 49^\circ$

2. Which of these statements about the dilation of a triangle is true?

- A. Dilations preserve side lengths, so the pre image and image are always congruent by SSS.
- B. Dilations preserve angle measures, so the triangles are always congruent by AAA.
- C. Dilations preserve both side lengths and angle measures, so the triangles are always similar by SAS.
- D. Dilations preserve angle measures, so the triangles are always similar by AA.



3. In the figure below, $\triangle ABC$ was dilated and then rotated 180° about point B to create $\triangle MBN$.



Based on the given transformations, which statements must be true?

- A. $\angle A \cong \angle M$ and $\angle C \cong \angle N$, so $\triangle ABC \sim \triangle MBN$.
- B. $\angle A \cong \angle N$ and $\angle C \cong \angle M$, so $\triangle ABC \sim \triangle MBN$.
- C. $\angle A \cong \angle M$ and $\angle C \cong \angle N$, so $\triangle ABC \cong \triangle MBN$.
- D. $\angle A \cong \angle M$ and $\angle C \cong \angle N$, so $\triangle ABC \cong \triangle MBN$.

4. Dawn drew right triangle EFG . She then drew $\triangle KLM$, which was a dilation of $\triangle EFG$ by a scale factor of 2.5 with a center of dilation at E. Which of the following reasons can be used to prove that $\triangle KLM$ is similar to $\triangle EFG$?

- A. $m\angle M = m\angle G$ and $m\angle K = m\angle E$
- B. $m\angle M = 2.5(m\angle G)$ and $m\angle K = m\angle E$
- C. $m\angle M = m\angle G$ and $m\angle K = 2.5(m\angle E)$
- D. $m\angle M = 2.5(m\angle G)$ and $m\angle K = 2.5(m\angle E)$

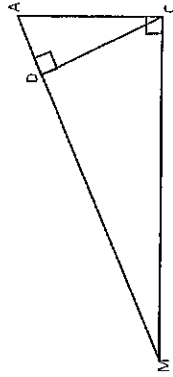


Name: _____ Date: ____/____/____

1. Supply the missing reasons to complete the proof.

Given: $\triangle ABC \sim \triangle ACD \sim \triangle CBD$

Prove: $(AC)^2 + (BC)^2 = (AB)^2$



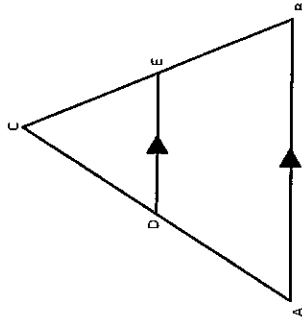
Statements	Reasons
1. $\triangle AMC \sim \triangle ACD \sim \triangle CMD$	1. _____
2. $\frac{AB}{AC} = \frac{AC}{AD}, \frac{AB}{BC} = \frac{BC}{BD}$	2. _____
3. $(AC)^2 = (AB)(AD), (BC)^2 = (AB)(BD)$	3. _____
4. $(AC)^2 + (BC)^2 = (AB)(AD) + (AB)(BD)$	4. _____
5. $(AC)^2 + (BC)^2 = (AB)(AD + BD)$	5. _____
6. $AD + BD = AB$	6. _____
7. $(AC)^2 + (BC)^2 = (AB)(AB)$	7. _____
8. $(AC)^2 + (BC)^2 = (AB)^2$	8. _____



2. Supply the missing reasons to complete the proof.

Given: $\overline{AB} \parallel \overline{DE}$

Prove: $\frac{DA}{CD} = \frac{EB}{CE}$



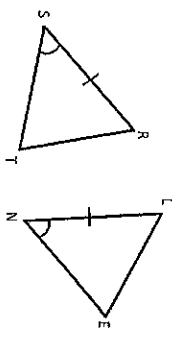
Statements	Reasons
1. $\overline{AB} \parallel \overline{DE}$	1. _____
2. $\angle CDE \cong \angle CAB, \angle CED \cong \angle CBA$	2. _____
3. $\triangle CDE \sim \triangle CAB$	3. _____
4. $\frac{CA}{CD} = \frac{CB}{CE}$	4. _____
5. $CD + DA = CA, CE + EB = CB$	5. _____
6. $\frac{CD+DA}{CD} = \frac{CE+EB}{CE}$	6. _____
7. $1 + \frac{DA}{CD} = 1 + \frac{EB}{CE}$	7. _____
8. $\frac{DA}{CD} = \frac{EB}{CE}$	8. _____



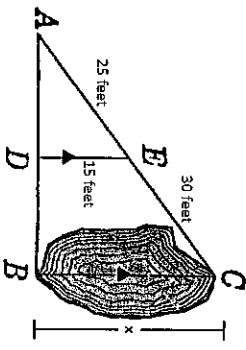
Name: _____ Date: ____/____/____

1. For the figures pictured to the right, what relationship must be true in order to prove $\triangle RST \cong \triangle LNE$ by ASA?

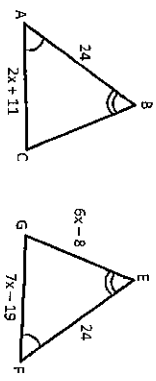
- A. $\overline{ST} \cong \overline{NE}$
- B. $\overline{RT} \cong \overline{LE}$
- C. $\angle T \cong \angle E$
- D. $\angle L \cong \angle R$



2. Find the distance across the lake.



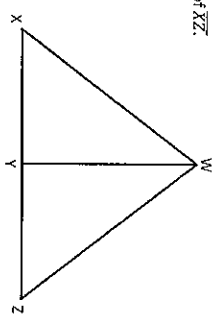
3. Find the perimeter of $\triangle ABC$.



4. Esteban is using similar triangles to calculate the height of a tree. The tree casts a shadow that is 56 feet long, while Esteban's shadow is 21 feet long. If Esteban is 4.5 feet tall, how tall is the tree in feet?

5. Drag and drop the answer choices to complete the proof below.

Given: \overline{WY} is the bisector of $\angle XZ$.
Prove: $\triangle XWY \cong \triangle ZWY$



$\overline{XY} \cong \overline{YZ}$	$\overline{XY} \cong \overline{XZ}$	Definition of segment bisector	Symmetric Property
Definition of angle bisector	Definition of angle bisector	Reflexive Property	CPCTC
Definition of congruence	XWY	VWZ	ZWY
		SSS	SAS
			ASA
			Prove

It is given that Y bisects \overline{XZ} , so _____ from the _____.
 $\overline{WY} \cong \overline{WY}$ by the _____ A _____ \cong A _____ by _____.
 Therefore, $\triangle XWY \cong \triangle ZWY$ by _____.

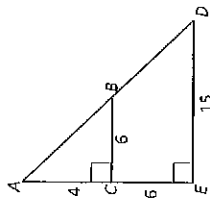




Name: _____ Date: _____

1. A right triangle has a hypotenuse of 43 cm and an angle of 56° opposite leg m . What is the length of leg m rounded to the nearest hundredth?

2. Compare the ratios of the two pairs of sides that are opposite and adjacent to $\angle A$ in the two triangles below.



3. A right triangle has legs e and f and hypotenuse h . The value of $e = 10$. The angle opposite leg f is 35° . Which expression can be used to find the length of the hypotenuse?

- A. $10 \sin 35^\circ$
 B. $10 \cos 35^\circ$
 C. $\frac{10}{\sin 35^\circ}$
 D. $\frac{10}{\cos 35^\circ}$



4. A right triangle has a hypotenuse of 18 feet and a side length opposite $\angle A$ of 12 feet. What is the measure of $\angle A$ to the nearest degree?

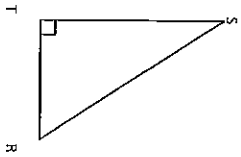
5. A right triangle has legs f and g . The length of $f = 11$ inches. $m\angle G = 73^\circ$. What is the length of leg g to the nearest tenth?



Name: _____ Date: _____

1. Which expression is equivalent to $\sin \angle R$?

- A. $\cos \angle R$
- B. $\sin \angle S$
- C. $\cos \angle R$
- D. $\tan S$



2. If $\cos(a) = \sin(52^\circ)$, what is the value of a ?

- A. 28°
- B. 38°
- C. 52°
- D. 128°

3. If $\sin(2x + 5)^\circ = \cos(5x - 22)^\circ$, find the value of x .

- A. $\frac{25}{3}$
- B. 15
- C. $\frac{65}{7}$
- D. 22

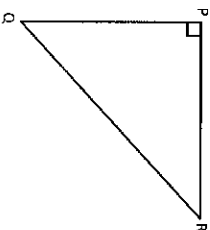


4. Which expression is equivalent to $\cos(61^\circ)$?

- A. $\sin(61^\circ)$
- B. $\sin(29^\circ)$
- C. $\tan(61^\circ)$
- D. $\tan(29^\circ)$

5. For $\triangle PQR$, select all of the statements that are true.

- $\sin \angle R = \cos \angle P$
- $\sin \angle Q = \tan \angle R$
- $\sin \angle Q = \cos \angle R$
- $\frac{\sin \angle R}{\cos \angle Q} = 1$
- $\frac{\sin \angle R}{\sin \angle Q} = 1$
- $\tan \angle R - \sin \angle Q = 0$





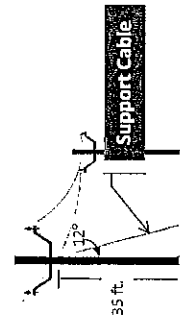
Name: _____ Date: ____/____/____

1. Mr. Carpenter is building a treehouse. He needs to begin with part of the structure in the shape of a right triangle. He has several different lengths of wood to choose from, as listed below. Determine which of the options would form a right triangle.

- A. 9 meters, 7 meters, and 6 meters
- B. 12 meters, 10 meters, and 8 meters
- C. 15 meters, 10 meters, and 12 meters
- D. 20 meters, 21 meters, and 29 meters

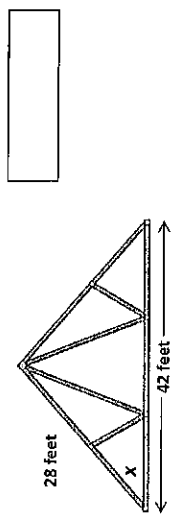
2. A rectangular painting by Leonardo da Vinci measures 62 centimeters along its diagonal. If the painting has a height of 42 centimeters, how wide is the painting to the nearest whole centimeter?

3. FPL workmen replaced a support cable from a utility pole as shown below. How far from the pole is the support cable anchored to the ground?



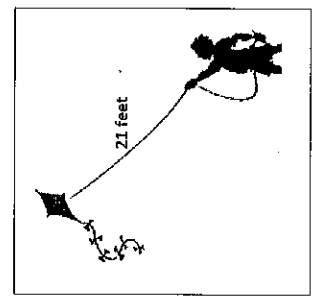


4. Mogan's Construction is pre-building roof trusses in the shape of isosceles triangles for new homes being built in Wellington.



What is the value of x ?

5. Tony is flying a kite as shown below. He is looking up at the kite at an angle of elevation of 42° .

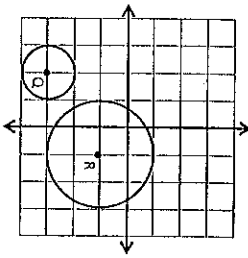


If Tony's hand that is holding the string is 5 feet above the ground, what is the kite's vertical distance from the ground?



Name: _____ Date: _____

1. Circle Q has a center at $(-2, -3)$ and circle R has a center at $(1, -1)$.



Which two transformations on circle Q prove that circle Q is similar to circle R?

- A. $(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$ and $(x, y) \rightarrow [x - 3, y - 2]$
- B. $(x, y) \rightarrow (2x, 2y)$ and $(x, y) \rightarrow [x + 3, y + 2]$
- C. $(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$ and $(x, y) \rightarrow [x + 3, y + 2]$
- D. $(x, y) \rightarrow (2x, 2y)$ and $(x, y) \rightarrow [x - 3, y - 2]$

2. Which statement best explains why all circles are similar?

- A. All circles are perfectly round with one center point.
- B. In all circles, the length of the radius is half the length of the diameter.
- C. Any circle can be mapped onto any other circle using a translation.
- D. Any circle can be mapped onto any other circle using a dilation and a rotation.



3. Mrs. O'Brien used a compass to draw two circles on a coordinate plane. Circle A is centered at $(3, -1)$ and has a radius of 4 units. Circle B is centered at $(4, 5)$ and has a radius of 3 units. Select all of the transformations that can be performed on circle A to prove that it is similar to circle B.

- Translation left 1, down 6
- Translation right 1, up 6
- Rotation 90° about point A
- Rotation 180° about point A
- Dilation about A by a scale factor of $\frac{3}{4}$
- Dilation about A by a scale factor of $\frac{4}{3}$
- Dilation about A by a scale factor of $\frac{4}{5}$

4. Circle M and circle N are drawn on a coordinate plane. Circle M has the origin as its center, and the circumference of circle N is $\frac{2}{3}$ times that circumference of circle M. If the center of circle N is $(-10, 6)$, what two transformations will map circle M onto circle N?

Drag and drop an answer choice into each empty box below.

$\frac{7}{2}x$	$\frac{7}{2}y$	$\frac{2}{7}x$	$\frac{2}{7}y$	$x - 6$	$y - 6$	$x - 10$	$x + 10$	$y + 6$
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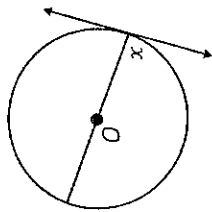
$(x, y) \rightarrow$ (,)

$(x, y) \rightarrow$ (,)

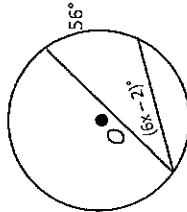


Name: _____ Date: ____/____/____

1. In circle O below, what is the measure of angle x , the angle formed by a tangent and the diameter of the circle?



2. In circle O below, what is the value of x ?

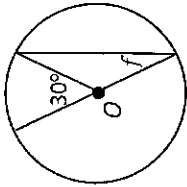


3. What is the measure of a central angle that intercepts an arc measuring 65° ?

- A. 32.5°
B. 65°
C. 130°
D. 295°



4. In circle O below, what is the value of f ?



5. Given: Circle O with tangent segments \overline{AC} and \overline{AB} . What is the measure of angle A ?

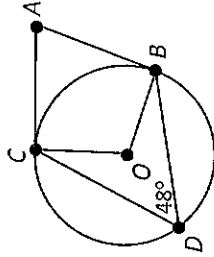


Diagram not drawn to scale.

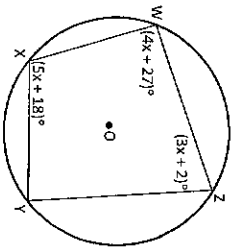
- A. 48°
B. 84°
C. 90°
D. 96°



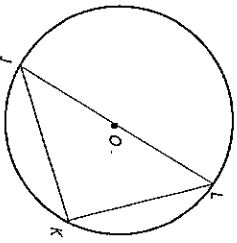
Name: _____

Date: ____/____/____

1. In the circle below, quadrilateral WXYZ is inscribed in circle O. Find $m\angle W$.



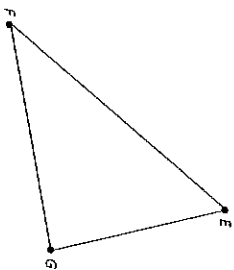
2. The figure below shows a circle circumscribed about $\triangle FKG$. Select all statements that are true.



- $m\angle K = 90^\circ$
- O is the circumcenter of $\triangle FKG$
- O is the incenter of $\triangle FKG$
- $\angle F \cong \angle G$
- $OF = OG = OK$



3. The cities of Jupiter, Wellington, and West Palm Beach are located at points E, F, and G, respectively, on the map below. A cell phone tower will be placed at the center of a circle that passes through all three cities. Which intersection best describes the center of the circle?



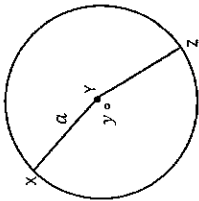
- A. The intersection of the medians of the triangle
 - B. The intersection of the altitudes of the triangle
 - C. The intersection of the angle bisectors of the triangle
 - D. The intersection of the perpendicular bisectors of the triangle
4. Which of these constructions must be completed first in order to construct the inscribed circle to $\triangle QRS$?

- A. The perpendicular bisector to \overline{QR}
- B. The bisector of $\angle Q$
- C. The median to \overline{RS}
- D. The altitude to \overline{QS}



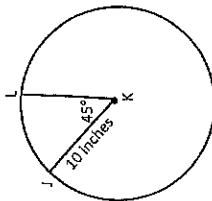
Name: _____ Date: ____/____/____

1. Circle Y has radius a with central angle $\angle XYZ$ that measures y° . Which expression can be used to find the length of arc XZ, in degrees?



- A. $\frac{y}{180} \cdot 2a\pi$
 B. $\frac{y}{90} \cdot 2a\pi$
 C. $\frac{180}{y} \cdot a^2\pi$
 D. $\frac{y}{360} \cdot a^2\pi$

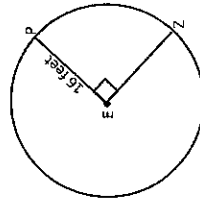
2. Circle K has radius 10 inches with central angle $\angle JKL$ that measures 45° . Find the area of sector JKL.



3. Luigi's Pizza sells an extra-large pizza with a 40 inch diameter. If the pie is cut into 8 equal slices, what is the area of one slice of Luigi's pizza?

4. Mrs. Child bakes pumpkin pies using a deep-dish pie plate with a 9 inch diameter. If she cuts her pies into 12 equal slices and you eat two slices for dessert, what is the total length of the crust you have eaten?

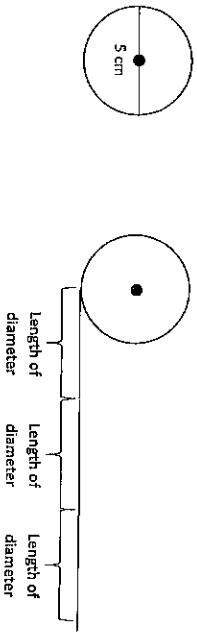
5. Based on the diagram below, choose all of the statements that are true.



- The length of arc PZ = $\frac{1}{4} \cdot 16\pi$
 The length of arc PZ = $\frac{1}{4} \cdot 32\pi$
 The length of arc PZ = $\frac{1}{4} \cdot 256\pi$
 Area of sector PEZ = $\frac{1}{4} \cdot 1024\pi$
 Area of sector PEZ = $\frac{1}{4} \cdot 256\pi$

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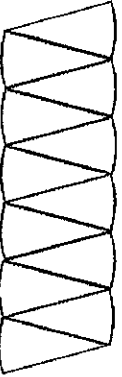
1. While discussing circles, Ms. Williams showed a circle with a diameter of 5 cm. She showed how she could unroll the circle to create a straight line as pictured below.



Which formula was Ms. Williams proving?

- A. Area of a circle
- B. Circumference of a circle
- C. Arc Length
- D. Area of a Sector

2. We can prove the area of a circle formula by dissecting and rearranging a circle as shown below.



Which formula is now used to prove that the area of a circle is $A = \pi r^2$?

- A. Area of a parallelogram
- B. Area of an ellipse
- C. Area of a triangle
- D. Area of an oval

3. Proving the formula for the volume of a pyramid can be informally done by stacking blocks as shown below.



Continuing this and comparing the ratios of the number of blocks in each figure, the ratio decreases to approximately .3333 repeating. This proves which of the following formulas?

- A. $V = Bh$
- B. $V = bhw$
- C. $V = 3Zh$
- D. $V = \frac{1}{3}Zh$

4. To prove the formula for the volume of a cone, _____ principle can be used, which states that a solid's total volume is the sum of all of the cross-sectional slices across the solid.

- A. Pythagoras's
- B. Cavalieri's
- C. Euler's
- D. Archimedes's



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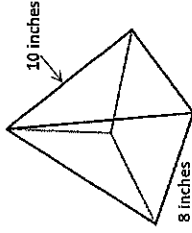
- At Robin's Snow Cones, the shaved ice portion of the cone is shaped like a perfect sphere with a diameter of 8 cm. Exactly half of the shaved ice sphere extends above the paper cup holder. What is the volume of ice that extends above the cup to the nearest centimeter?

- A cylinder-shaped cup and a cone-shaped cup both have radii of 3 inches and heights of 5 inches. Compare the volumes of the two cups.

- Florida Juice and Citrus Company wants to change the size of their frozen concentrate orange juice containers. Presently, the containers are a circular cylinder with a radius of 2 inches and a height of 4 inches. If the company changes its containers so that the radius is 1.8 inches and the height is 4.25 inches, will the new container have more, less, or the same amount of frozen concentrate. Explain your answer.



- For her presentation on the Wonders of the World, Mary baked a pyramid-shaped cake as pictured below. Find the volume of Mary's cake.



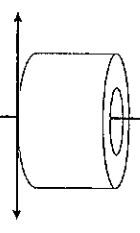
- A right circular cylinder has a diameter of 8 inches. If the volume of the cylinder is 192π inches³, what is the height of the cylinder?

- A. 3 inches
- B. 6 inches
- C. 12 inches
- D. 24 inches



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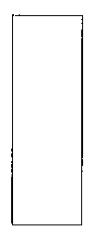
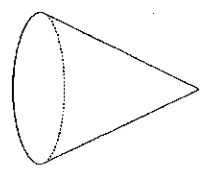
1. Choose the two-dimensional figure that, when rotated about the y-axis, forms the three-dimensional figure pictured below.



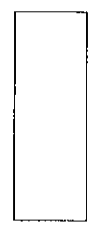
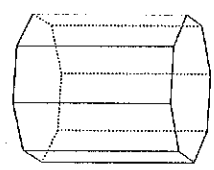
- A. A. B. C. D. D.



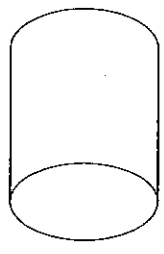
2. Describe the shape formed by a cross section that is taken perpendicular to the base of the cone below.



3. Describe the shape formed by a cross section that is taken parallel to the base of the prism below.



4. Draw a line that shows the location of a rectangular cross section of the cylinder below.



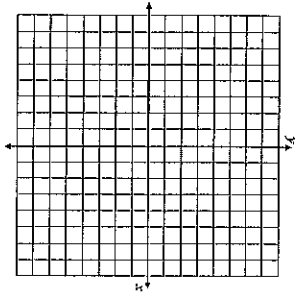


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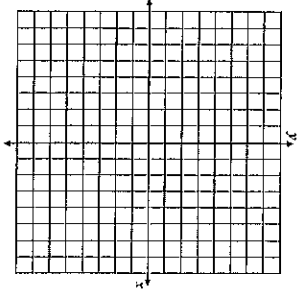
1. Quadrilateral $ABCD$ is located at $A(-4, -2)$, $B(0, -2)$, $C(1, 2)$, and $D(-3, 2)$. What is the most specific classification of $ABCD$?

- A. Parallelogram
- B. Square
- C. Rectangle
- D. Rhombus



2. Quadrilateral $ABCD$ is located at $A(2, 0)$, $B(3, -4)$, and $C(7, -5)$. What are the coordinates of point D that makes the quadrilateral a rhombus?

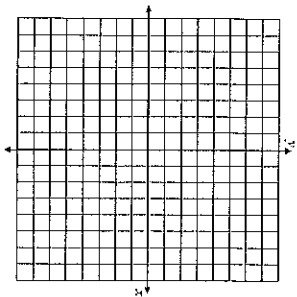
- A. $(6, -1)$
- B. $(6, 1)$
- C. $(-2, -1)$
- D. $(2, 1)$



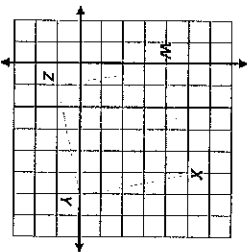
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3. Triangle QRS is located at $Q(2, 3)$, $R(6, 3)$, and $S(-2, 2)$. Which of the following classifies triangle QRS ?

- A. Scalene
- B. Equilateral
- C. Isosceles
- D. Equilateral



4. Use coordinate geometry to name quadrilateral $WXYZ$ with as specific a classification as possible.



5. Given quadrilateral $MNOP$, where M is located at $(0, 0)$ and N is located at $(5, -2)$. What is the slope of OP if $MNOP$ is a rectangle?



Name: _____ Date: ____/____/____

1. \overline{AB} has endpoints $A(4, -3)$ and $B(3, 7)$. Line d is the perpendicular bisector of \overline{AB} . Which of the following is NOT an equation of line d ?

- A. $-x + 10y = 165$
 B. $y = -10x + 37$
 C. $(y - 2) = \frac{1}{10}(x - 3.5)$
 D. $y = \frac{1}{10}x + 1.65$

2. \overleftrightarrow{AB} runs through the points $(0, 8)$ and $(6, 10)$. Write the equation of a line, in standard form, that is parallel to \overleftrightarrow{AB} and has a y-intercept of -4 .

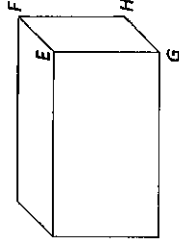
3. \overleftrightarrow{XY} has an equation of $4x + 2y = 10$. What is the slope of a line that is perpendicular to \overleftrightarrow{XY} ?



4. \overleftrightarrow{MN} has an equation of $2x - y = 3$. Which of the following is the equation of a line perpendicular to \overleftrightarrow{MN} and passes through the point $(4, 3)$?

- A. $y = -\frac{1}{2}x - 5$
 B. $y = -2x - 5$
 C. $y = \frac{1}{2}x - 5$
 D. $y = -\frac{1}{2}x + 5$

5. In the rectangular prism shown below, \overline{GH} is parallel to \overline{EF} . If the equation of \overline{GH} is $6y - x = 12$, could the equation of \overline{EF} be $4 = y + 6x$? Explain your reasoning.





Name: _____ Date: ____/____/____

1. Given a directed line segment with endpoints $A(3, 2)$ and $B(6, 11)$, what is the point that divides \overline{AB} two-thirds from A to B ?

2. What are the coordinates for point C on directed line segment \overline{AC} , with $A(2, -1)$ and $C(x, y)$, for which point $B(4, 2)$ partitions the segment in a ratio of $1 : 3$?

3. Given $A(-4, 7)$ and $B(12, -1)$, what are the coordinates of point C on \overline{AB} , so that C partitions \overline{AB} in the ratio 1 to 7 ?



Name: _____ Date: ____/____/____

1. Given a directed line segment with endpoints $A(3, 2)$ and $B(6, 11)$, what is the point that divides \overline{AB} two-thirds from A to B ?

2. What are the coordinates for point C on directed line segment \overline{AC} , with $A(2, -1)$ and $C(x, y)$, for which point $B(4, 2)$ partitions the segment in a ratio of $1 : 3$?

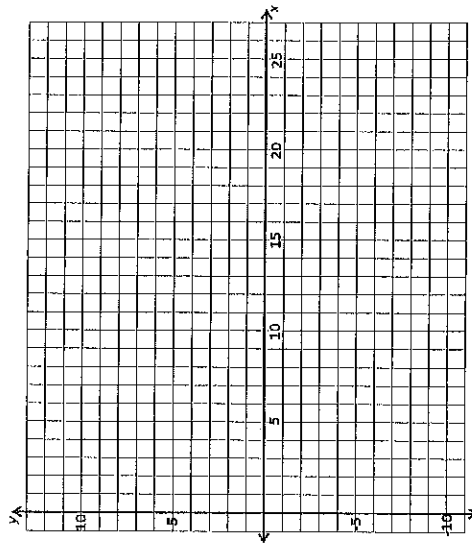
3. Given $A(-4, 7)$ and $B(12, -1)$, what are the coordinates of point C on \overline{AB} , so that C partitions \overline{AB} in the ratio 1 to 7 ?



Name: _____ Date: ____/____/____

1. A farmer has fenced off a section of his land for a pigpen. The section of land can be described as a polygon with vertices $W(7, 12)$, $X(14, 12)$, $Y(17, 7)$, and $Z(2, 7)$. If each unit represents one foot, what is the area of the pigpen?

2. Megan is embroidering a pillow with a star-shaped design. The endpoints of her design can be described by the points $A(0, 0)$, $B(7, 4)$, $C(8.5, 9.5)$, $D(12, 5)$, $E(25, 5)$, $F(13, 0)$, $G(12.5, -10.5)$ and $H(8, -4)$. If each unit represents one inch, what is the total length of thread Megan will need in order to create the design?





3. Era rides his bike from home at point $H(-1, 2)$ to school at point $S(2, 2)$, to the comic book store at $C(2, -2)$, and then back home again. If each unit represents one mile, what is the total distance Era rode?

4. Mei is retiling her bathroom walls. Each tile can be described as a polygon with vertices at points $A(10, 6)$, $B(13, 10)$, $C(17, 7)$ and $D(14, 3)$. If each unit is equal to one centimeter, what is the perimeter of each tile Mei uses?

5. Eunice is flying a kite with vertices at points $A(0, 0)$, $B(0, 4)$, $C(7, 7)$, and $D(4, 0)$. If each unit represents one foot, what is the area of Eunice's kite?



Name: _____ Date: ____/____/____

1. A plastic pipe in the shape of a right circular cylinder is used for drainage under a new home construction site. The length of the pipe is 12 feet (ft) and the diameter of the pipe is 36 inches (in.). The pipe is open at both ends.
 - A. How many square feet of plastic is the outer surface of the pipe? (Round answer to nearest integer.)

- B. The plastic pipe has a square wire mesh screen attached at one end of the pipe. This screen allows water, but not debris, to flow through the pipe. The length of the diagonals of the wire mesh screen are equal to the diameter of the pipe. What are the area and perimeter of the square wire mesh screen? (Round answers to nearest whole number.)

2. Tennis balls are packed vertically in cylindrical canisters, with three balls in each canister. Let C represent the circumference of the can and let h represent the height of the can. Assuming that the three tennis balls, stacked vertically, fit into the can with no additional space. Which of the following is a correct conclusion?

- $C = h$
- $C > h$
- $C < h$
- $C \geq 2h$



Name: _____ Date: ____/____/____

3. A cylindrical water tank with a diameter of 4 feet (ft) and a height of 6 ft is filled with water to a depth of 3 ft (when in a horizontal position). If the tank is turned vertically (upright), and no water is added or removed, what is the depth of the water in the tank?

4. On a map, Boynton Beach Boulevard intersects Congress Avenue at a right angle. Gulf Road intersects both Boynton Beach Boulevard and Congress Avenue. What shape could best be used to model the area between these roadways, provided that all three streets are straight?
 - A. Triangle
 - B. Square
 - C. Rectangle
 - D. Hexagon

5. Regina is using wooden slats to make a circular basket. Each rectangular slat measures 12 inches (in.) by 2.5 in. The slats are arranged, edge to edge along their long sides, so that each piece meets with no gaps, bound by thin metal strips to hold the slats in a curve. Regina wants the basket to have a diameter of 18 inches. What is the best estimate of the number of slats she will use to make its sides?
 - A. 12
 - B. 15
 - C. 18
 - D. 23



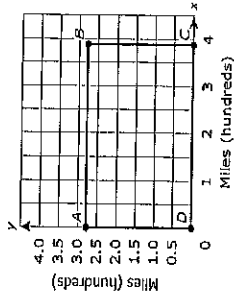
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Geometry
Secondary Education
MAFS.912.G-MG.1.2 – Worksheet 1

Name: _____ Date: ____/____/____

- A steel cylinder has a diameter of 2 meters (m) and a height of 2 m. The mass of the steel cylinder is 14500 kilograms (kg). To the nearest kg/m^3 , what is the density of the steel?
 - 577 kg/m^3
 - 2308 kg/m^3
 - 4615 kg/m^3
 - 14500 kg/m^3

- Rectangle $ABCD$ shown below can be used to approximate the size of the state of Colorado, with the x and y scales representing hundreds of miles.



In a recent survey, the population of Colorado was approximately 5.1 million people. Based on this information, what is the population density in people per square mile?



Calculator Neutral
for this Standard

Geometry
Secondary Education
MAFS.912.G-MG.1.2 – Worksheet 1

- Helium is less dense than air and is an excellent choice for filling party balloons. If a helium-filled spherical balloon has a diameter of 1 foot and a density of 0.04 pounds per cubic foot, what is the weight of the helium in the balloon?

- The density of water is approximately 62.5 pounds per cubic foot. Snow has a lower density than water, but it can vary greatly. Your cousin lives in New York City and says that a recent snowfall resulted in snow with a density of approximately 16 pounds per cubic foot. Your cousin measured the snowfall to a depth of 8 inches and has to shovel his sidewalk that is 40 feet long and 5 feet wide. Assuming that your cousin will successfully complete the task, how many pounds of snow will your cousin shovel off his sidewalk?
 - Less than 500 pounds of snow
 - Between 500 and 1,000 pounds of snow
 - Between 1,000 and 2,000 pounds of snow
 - More than 2,000 pounds of snow



Name: _____

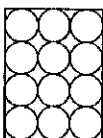
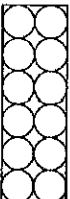
Date: ____/____/____

- The tank on a hot water heater holds 15 liters (L) of hot water. Which of the following containers could be completely filled from the hot water heater and leave less than 0.5 L water in the tank? (Recall that 1 L is equivalent to 1,000 cm³.) Select all that apply.
 - Circular container with a radius of 25 centimeters (cm) and height of 27 cm
 - Cylindrical container with a radius of 15 cm and height of 21 cm
 - Container in the shape of a rectangular prism with dimensions of 22 cm, 30 cm, and 22 cm
 - Container in the shape of a rectangular prism with base of 30 cm by 50 cm and height of 10 cm
 - Container in the shape of a square pyramid with base length of 30 cm and height of 50 cm

- Carson needs to build a closed container out of sheet metal, but needs to minimize the amount of sheet metal used. The volume of Carson's container needs to be approximately 320 cubic inches. Carson needs to select one of the following designs that meets his volume requirement, using the least amount of sheet metal. Which design should Carson choose?
 - Rectangular prism with dimensions of 8 inches (in.), 8 in., and 5 in.
 - Rectangular prism with dimensions of 10 in., 8 in., and 4 in.
 - Cylinder with a radius of 5 in. and height of 4 in.
 - Square pyramid with a base length of 10 in., height of 10 in., and slant height of approximately 14 in.



- When cylindrical cans are sold by the dozen, the cans may be placed into a cardboard box such that the cans are in a rectangular array. Two possible arrangements are shown below.



A can of corn is 4 inches (in.) tall with a diameter of 3 in. The company manager wants to use a package design that requires the least amount of cardboard. Which of the following results in the best analysis of the situation?

- A 1 × 12 arrangement is 3 inches wide, 36 inches long and 4 inches high. Its total surface area is $3 \times 36 + 3 \times 4 + 36 \times 4 = 264$ square inches. The surface areas of the arrangements shown are 408 square inches and 384 square inches. $264 < 384 < 408$, so a 1 × 12 arrangement should be recommended.
- A 2 × 3 arrangement in two layers creates a 2 × 3 × 2 arrangement. This will be 6 inches wide, 9 units long and 8 units high. Its total surface area is 348 square inches, which is less than the surface areas of either arrangement shown. A 2 × 3 × 2 arrangement should be recommended.
- A 2 × 6 arrangement is 6 inches wide, 18 inches long and 4 inches high. Its total surface area will be 408 square inches. A 3 × 4 arrangement is 9 inches wide, 12 inches long and 4 inches high. Its total surface area is 384 square inches. Since $384 < 408$, the 3 × 4 arrangement should be selected.
- A 2 × 6 arrangement is 6 inches wide, 18 inches long and 4 inches high. A 3 × 4 arrangement is 9 inches across, 12 inches across and 4 inches high. Since they have the same height, you can compare the areas of their bases. Since $6 \times 18 = 9 \times 12$, the two arrangements have the same area. Either arrangement is equally cost-effective.