G8 Unit 2 Geometry

Grade 8 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5,280 feet
1 mile = 1,760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilogram
1 kilogram = 2.2 pounds
1 ton = 2,000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallon
1 liter = 1,000 cubic centimeters

FORMULAS

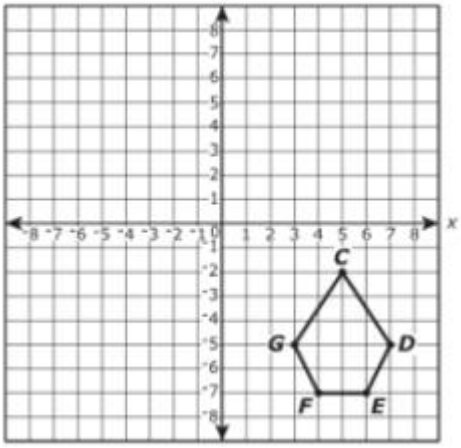
Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pythagorean Theorem	$a^2 + b^2 = c^2$

Question 1.

Drag and drop the word choices below to complete the sentences.

greater than | less than | equal to

Pentagon *CDEFG* is shown on the coordinate plane.



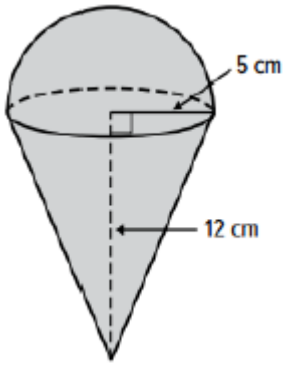
Pentagon *CDEFG* is translated 7 units up and 5 units left, resulting in pentagon *C'D'E'F'G'* (not shown).

The length of $\overline{FG}$ is [DEST_1] the length of $\overline{F'G'}$

The length of pentagon *CDEFG* is [DEST_2] the perimeter of pentagon *C'D'E'F'G'* .

Question 2.

Frozen yogurt completely fills the cone and the hemisphere above the cone. Select whether each statement is true or false.



	True	False
The slant height of the cone is 13 cm.	☐	☐
The volume of frozen yogurt is approximately 576.0 cm^3.	☐	☐

Question 3.

The length of the diagonal of a rectangle is $\sqrt{181}$ inches. Which statement describes the length of the diagonal?

A. The length is between 12 and 13 inches.

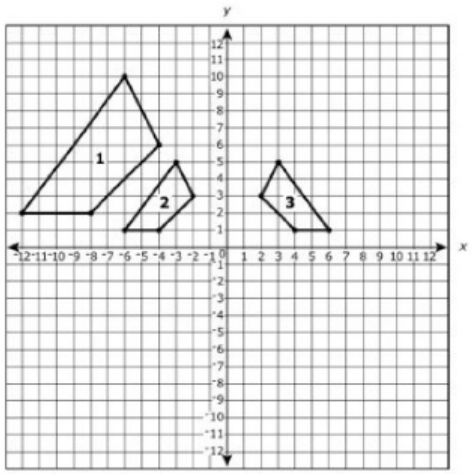
B. The length is between 13 and 14 inches.

C. The length is between 14 and 15 inches.

D. The length is between 15 and 16 inches.

Question 4.

On the coordinate plane shown, Figure 1 is transformed into Figure 2, which is transformed this Figure 3. Figure 1 and Figure 3 are similar by a sequence of transformations.



Part A

What type of transformation was used to transform Figure 1 into Figure 2?

A. dilation

B. reflection

C. rotation

D. translation

Part B

Which statement describes the transformation of Figure 2 into Figure 3?

A.

reflection across the x –axis

B. reflection across the y –axis

C. translation 4 units to the right

D. translation 6 units to the right

Question 5.

Lines m and n are parallel on a coordinate plane. Lines m and n are transformed by the same rotation, resulting in image lines s and t. Which statement describes the relationship between lines s and t?

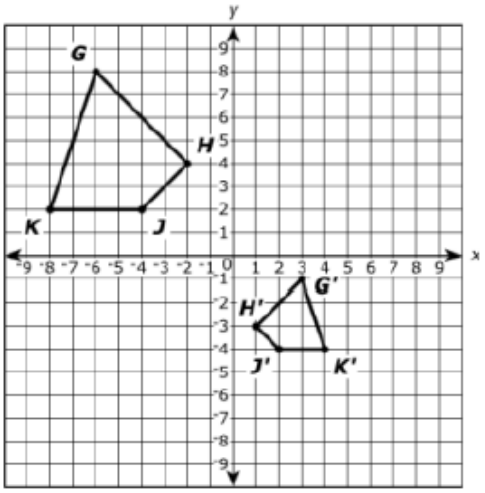
A. Lines s and t are parallel.

B. Lines s and t are perpendicular.

C. Lines s and t are intersecting but not perpendicular.

D. The relationship between line s and t cannot be determined without knowing the angle of the rotation.

Question 6.



Part A

Which describes a possible sequence at transformations that transforms polygon $GHJK$ into polygon $G'H'J'K'$?

A. a 180–degree rotation about the origin followed by a dilation centered at the origin with a scale factor of $\frac{1}{2}$

B. a reflection across the line $y = x$, followed by a dilation centered at the origin with a scale factor of 2

C. a reflection across y –axis, followed by a reflection across the x –axis, followed by a dilation centered at the origin with a scale factor of 2

D. a reflection across the y –axis, followed by a translation down 10 units, followed by a dilation

centered at the origin with a scale factor of $\frac{1}{2}$

Part B

Which best describes the relationship between polygon *GHJK* and polygon *G'H'J'K'* ?

A. They are Similar because polygon *G'H'J'K'* can be obtained from polygon G*HJK* by a sequence of transformations.

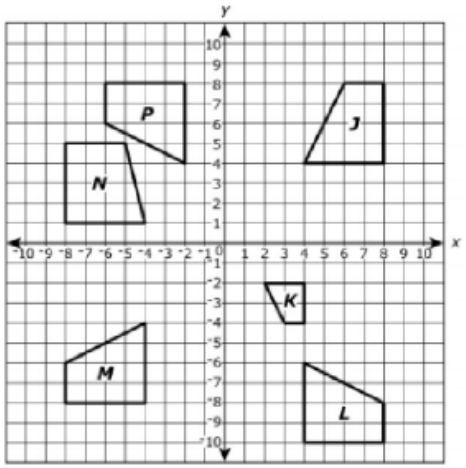
B. They are similar because the area of polygon G*HJK* is the same as the area of polygon *G'H'J'K'*

C. They are not similar because polygon *G'H'J'K'* cannot be obtained from polygon *GHJK* in a Single transformation.

D. They are NOT Similar because the orientation of polygon *GHJK* is not the same as the orientation of polygon *G'H'J'K'*.

Question 7.

Figures *J*, *K*, *L*, *M*, *N* and *P* are shown on the coordinate plane.



Part A

Which figure can be transformed into figure *P* by a translation 2 units to the right followed by a reflection across the *x* –axis?

A. figure *J*

B. figure *K*

C. figure *L*

D. figure *M*

Part B

Which figure can be transitioned into figure *L*. by a 90" rotation clockwise about the origin followed by a translation 2 units down?

A. figure *J*

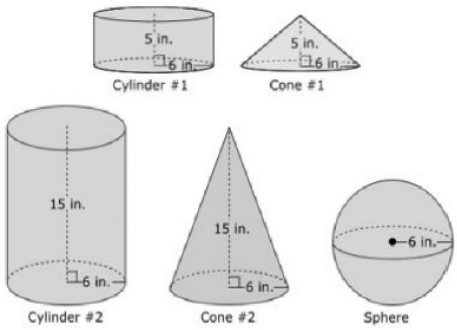
B. figure *M*

C. figure *N*

D. figure *P*

Question 8.

Consider the figure shown.



Part A

Which figures have a volume greater than 600 cubic inches?

A. Cylinder #1

B. Cone #1

C. Cylinder #2

D. Cone #2

E. Sphere

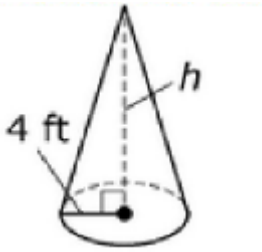
Fill in the box to the best completes the sentences.

$\frac{1}{700}$	$\frac{1}{5}$	$\frac{1}{3}$	$\frac{1}{2}$
2	3	5	700

The volume of the sphere is about _____ times greater than the volume of cone #1.

Question 9.

A cone with radius 4 feet is Shown. Its approximate volume is 165 cubic feet.



Find the height of the cone. Type your answer in the box, and round your answer to the nearest tenth.

The height is _____ feet ball.

Question 10.

A triangular flower bed has the angle measures shown. Drag and drop the values to complete the equation to find the value of *x*

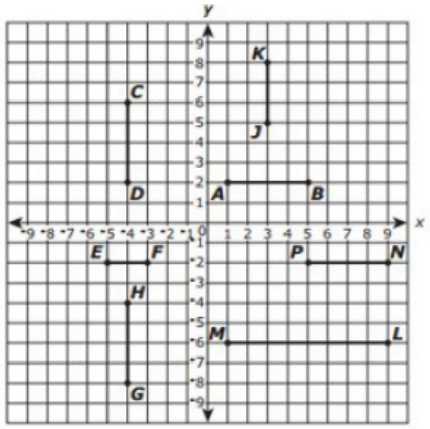
x	2	10	40
90	100	140	180

DEST_1 · *DEST_2* + *DEST_3* = *DEST_4*

What is the value of *x* ? *DEST_5*

Question 11.

Seven line segments are shown on the coordinate plane.



Which of these segments could be the image of segment *AB* after a sequence of reflections, rotations, and/or translations?

Select **each** correct answer.

A. line segment *CD*

B. line segment *EF*

C. line segment *GH*

D. line segment *JK*

E. line segment *LM*

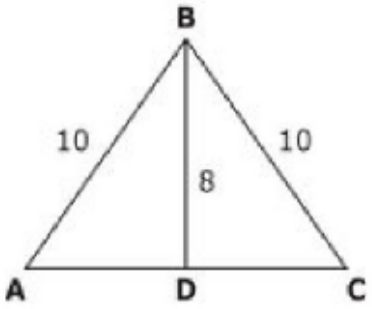
F. line segment *NP*

Question 12.

Drag and drop the appropriate value to complete the sentence.

3	6	12
12.8	18	24

In ΔABC, $\overline{BD}$ is perpendicular to $\overline{AC}$. The dimensions are shown in centimeters.



The length of $\overline{AC}$ is DEST_1 centimeters.

Question 13.

Segment FG begins at point F (−2, 4) and ends at point G (−2,−3). The segment is translated by (x − 3, y + 2) and then reflected across the y − axis to form segment $F'G'$.

How many units long is segment $F'G'$?

A. 0

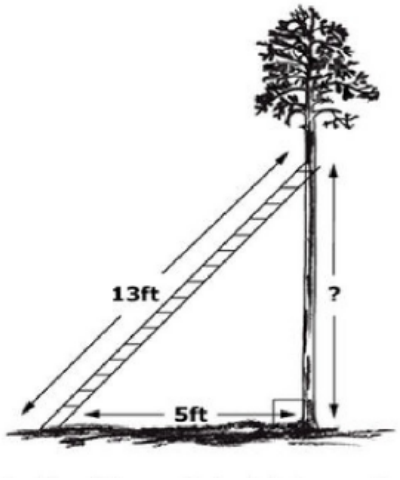
B. 2

C. 3

D. 7

Question 14.

A 13−foot ladder is leaning, on a tree. The bottom of the ladder is on the ground at a distance of 5 feet from the base of the tree. The base of the tree and the ground form a right angle as shown.



Enter the distance, in feet, between the ground and the top of the ladder.

_____ feet

Question 15.

A sequence of transformations is applied to a polygon. Select **all** statements which indicate a sequence of transformations where the resulting polygon has an area greater than the original polygon.

A. Reflect over the x-axis, dilate about the origin by a scale factor of $\frac{1}{2}$, translate up 5 units.

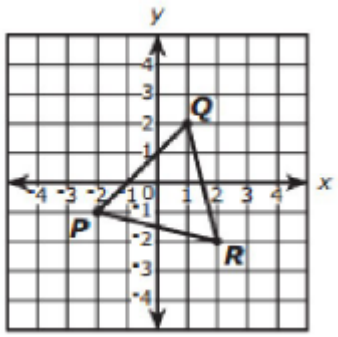
B. Rotate 90° counterclockwise around the origin, dilate about the origin by a scale factor of $\frac{3}{2}$.

C. Dilate about the origin by a scale factor of $\frac{3}{2}$. rotate 180° clockwise around the origin, translate down 2 units.

D. Dilate about the origin by a scale factor of 2, reflect over the y -axis, dilate about the origin by a scale factor of $\frac{2}{3}$.

Question 16.

Triangle PQR is shown on the coordinate plane.



Triangle PQR is rotated 90" counterclockwise about the origin to form the image triangle $P'Q'R'$ (not shown). Then triangle $P'Q'R'$ is reflected across the x -axis to form triangle $P''Q''R''$ (not shown).

Part A

What are the signs of the coordinates (x, y) of point P'?

A. Both x and y are positive.

B. x is negative and y is positive.

C. Both x and y are negative.

D. x is positive and y is negative.

Part B

What are the signs of the coordinates (x, y) of point Q''?

A.

Both x and y are positive.

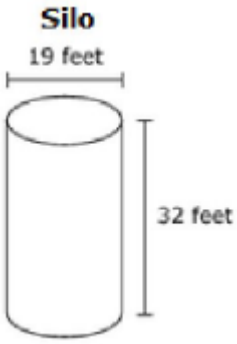
B. x is negative and y is positive.

C. Both x and y are negative.

D. x is positive and y is negative.

Question 17.

An empty corn silo in the shape of a cylinder is being filled corn.



The silo is filled at a constant rate for a total of 10 hours. The table shows the amount of corn, in cubic feet, in the silo at the given number of hours after filling started.

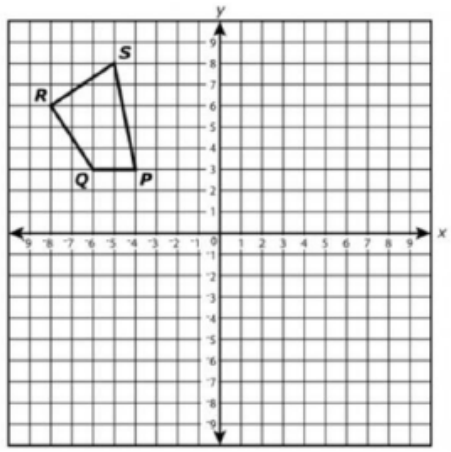
Number of Hours	Amount of Corn (cu ft)
0	0
3	2475
5	4125
8	6600

Enter the percent, to the nearest whole number, of the silo that is filled with corn at 10 hours.

_____ %

Question 18.

Polygon *KLMN* is the image of polygon *PORS* after a 180' rotation.



Which angle of polygon *KLMN* is congruent to $\angle S$?

A. $\angle K$

B. $\angle L$

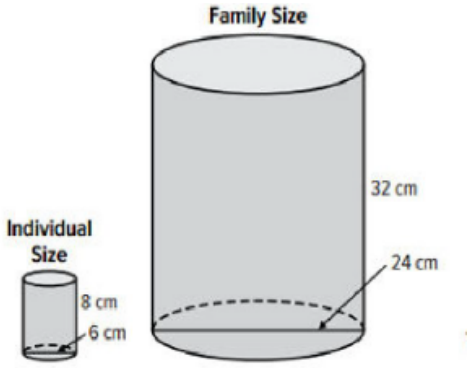
C. $\angle M$

D. $\angle N$

Question 19.

A company sells pineapple juice in two sizes — a small individual size and a large family size. Both cans are similar in shape. Drag and drop the values to complete the sentences.

1/64	1/27	1/16	1/4
4	16	27	64



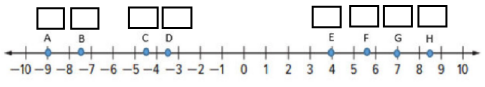
The height of the large can is DEST_1 times the height of the small can.

The volume of the large can is DEST_2 times the volume of the small can.

Question 20.

Drag the numbers to the point on the graph that best approximates its value.

$\sqrt{70}$ $-\sqrt{55}$ $-\sqrt{20}$ $\sqrt{32}$



Question 21.

Roberta plots coordinates to represent the corners of her garden: A (2.5, 1.5), B (−4, 3), and C (1−2,−5). She decides to quadruple the length of each side using the origin as the center for the enlargement of her garden. Select all of the statements that are true about the new coordinates.

A. The perimeter of the garden is 4 times the original perimeter.

B. A' is located at (10, 6).

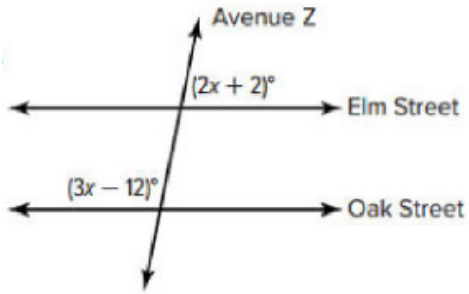
C. B' is located at (−1, 0.75).

D. C' is located at (−8,−20).

E. The area of the garden is 8 times greater than the original.

Question 22.

Elm Street and Oak Street are parallel. Avenue 2 crosses each of them. The city planner needs to find the measures of the angles at each intersection. Find the measures of the labeled angles.



angle between Avenue Z and Elm St.:

_____ Degree

angle between Avenue Z and Oak St.:

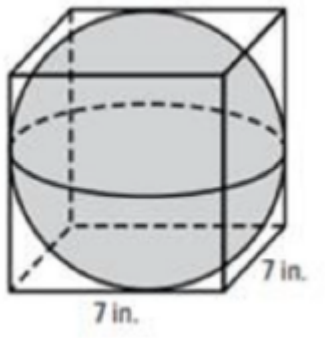
_____ Degree

Question 23.

Drag and drop the appropriate values to complete the sentences.

14	43.93	49
163.4	179.6	343

A pet store sells a spherical exercise ball for hamsters. The ball fits in the Cube-shaped box, touching the top, bottom, and sides of the box.



The volume of the box is DEST_1 in^3.

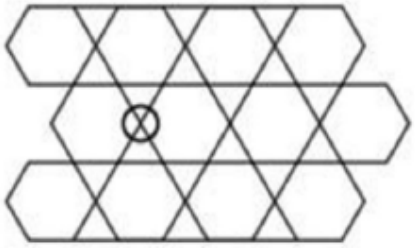
The volume of the exercise ball is approximately DEST_2 in^3.

The volume of the empty space in the box is approximately DEST_3 in^3.

Question 24.

Drag and drop the values to best fill the boxes.

Kaylee is using two different shapes of tiles to cover her kitchen floor. as shown.



Part A

Write the correct values to complete the equations to find x and z, the degrees measures of the interior angles of the two kinds of the tiles.

3	6	60	90
120			
180	540	720	270
360			

Equilateral Triangle:

DEST_1 . x = DEST_2

x = DEST_3

Regular hexagon :

DEST_4 . z = DEST_5

z = DEST_6

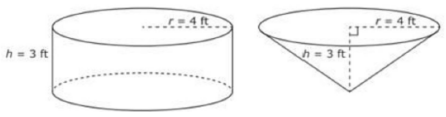
Part B

What is the sum of the degree measure of the angles at the circled vertex'. Type your answer in the box below

DEST_7 Degree

Question 25.

The figure shows a right-circular cylinder and a right-circular cone. The cylinder and the cone have the same base and the same height.



Part A

What is the volume of the cone, in cubic feet?

A. 12π

B. 16π

C. 36π

D. 48π

Part B

What is the ratio of the cone's volume to the cylinder's volume?

A. $\frac{1}{1}$

B. $\frac{1}{2}$

C. $\frac{1}{3}$

D. $\frac{1}{4}$