Geometry
Daily Quiz 01072020

Question 1.

The side length of a smaller square is one-third the side length of a larger square. Which of the following statements describes the area of the smaller square?

F The area of the smaller square is $\frac{1}{27}$ the area of the larger square.

G The area of the smaller square is $\frac{1}{6}$ the area of the larger square.

H The area of the smaller square is $\frac{1}{9}$ the area of the larger square.

J The area of the smaller square is $\frac{1}{3}$ the area of the larger square.

Question 2.

The equation of a line containing one leg of a right triangle is $y = -4x$. Which of the following equations could represent the line containing the other leg of this triangle?

F $y = -\frac{1}{4}x$

G $y = \frac{1}{4}x + 2$

H $y = 4x$

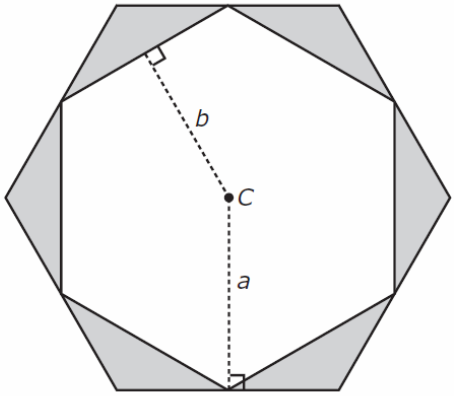
J $y = -4x + 2$

Question 3.

The formula for area of a hexagon: **Area = 1/2 x perimeter x apothem**.

You must show your work to get full points in this question.

Two regular hexagons with center C and apothems a and b are shown in the figure below. Each vertex of the smaller hexagon is a midpoint on a side of the larger hexagon.



If $a = 12\sqrt{3}$ cm and $b = 18$ cm, what is the total area of the shaded regions?

A $648\sqrt{3}$ cm^2

B $36\sqrt{3}$ cm^2

C $216\sqrt{3}$ cm^2

D $1{,}512\sqrt{3}$ cm^2

Question 4.

The two conditional statements below are true.

> If $\angle 3$ and $\angle 4$ form a linear pair, then they are supplementary.
> If $\angle 3$ and $\angle 4$ are supplementary, then $m\angle 3 + m\angle 4 = 180°$.

Based on these conditional statements, which statement must also be true?

F If $\angle 3$ and $\angle 4$ form a linear pair, then $m\angle 3 + m\angle 4 = 180°$.

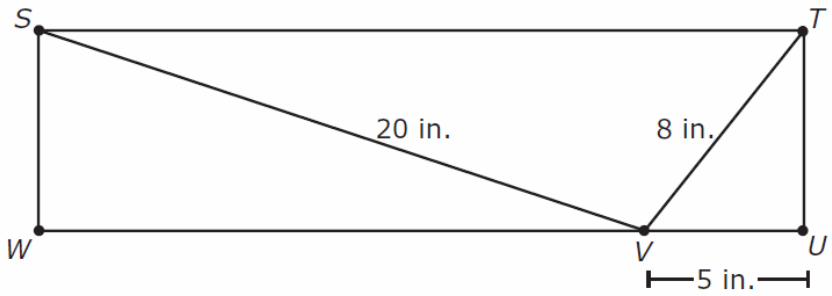
G If $\angle 3$ and $\angle 4$ form a linear pair, then $m\angle 3 = 90°$, and $m\angle 4 = 90°$.

H If $m\angle 3 + m\angle 4 = 180°$, then $\angle 3$ and $\angle 4$ form a linear pair.

J If $\angle 3$ and $\angle 4$ are supplementary, then $\angle 3$ and $\angle 4$ form a linear pair.

Question 5.

Rectangle *STUW* is shown below.



What is *ST*?

A 33 in.

B 24 in.

C $\sqrt{464}$ in.

D $\sqrt{361}$ in.

Question 6.

A statement is given below.

> The number of square units in the area of a square is greater than or equal to the number of units in the perimeter of the square.

Which side length of a square provides a counterexample to the given statement?

F 6 units

G 4 units

H 10 units

J 2 units

Question 7.

The table below contains a pattern formed by the number of sides and the measure in degrees of each exterior angle of several regular convex polygons.

Exterior Angle Measures of Regular Polygons

Number of Sides	3	4	5	6	10	15	20	45	90
Exterior Angle Measure (degrees)	120	90	72	60	36	24	18	8	4

If the pattern in the table continues, which statement is true?

A As the number of sides in the polygon increases by 1, the measure of each exterior angle decreases by 25%.

B The product of the number of sides in the polygon and the measure of each exterior angle is a constant.

C The measure of each exterior angle is a multiple of 6 degrees.

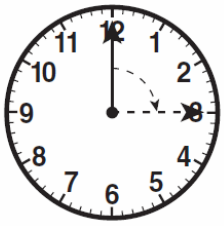
D If the number of sides in the polygon is even, the measure of each exterior angle is a multiple of 3 degrees.

Question 8.

The volume of a rectangular prism is 960 cubic inches. If the dimensions of the base are doubled and the height remains the same to create a new prism, what will be the volume of the new rectangular prism in cubic inches?

Question 9.

The hand on the circular clock in the figure below measures 10 cm.



Which of the following is closest to the distance that the tip of the hand travels as it moves from the 12 to the 3?

A 79 cm

B 21 cm

C 63 cm

D 16 cm

Question 10.

A plane intersects a cylinder. Which of the following cannot be formed by this intersection?

F Triangle

G Line

H Rectangle

J Circle

Bonus.

Jericho is making several constructions based on the segment shown.

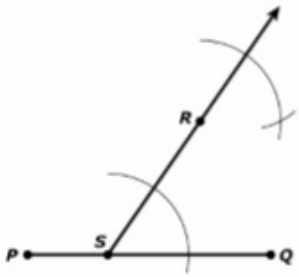
Part A

For his first construction, Jericho made the markings shown with a compass open to a length less than the length of segment $\overline{PQ}$. Jericho's markings are useful for the construction of which of the figures listed?

Select **all** that apply.

- A. a 60° angle
- B. a bisector of $\overline{PQ}$
- C. a line perpendicular to $\overline{PQ}$
- D. a rhombus with $\overline{PQ}$ as one diagonal
- E. an equilateral triangle with side $\overline{PQ}$

Part B



The first steps of Jericho's second construction are shown. After drawing arcs from point S and point R, he adjusted the compass length using the intersection of the arc from point S with $\overline{PQ}$ and $\overrightarrow{SR}$. Which figure is he constructing?

- A. the bisector of $\overline{PQ}$ through point R
- B. an angle congruent to $\angle RPQ$ with vertex R
- C. a line through point R that is parallel to $\overline{PQ}$
- D. a circle containing points P, Q, and R

PARCC
Partnership for Assessment of Readiness for College and Careers

High School Mathematics Assessment Reference Sheet

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2000 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 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d \text{ or } C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Arithmetic Sequence	$a_n = a_1 + (n-1)d$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1-r}$ where $r \neq 1$
Radians	1 radian $= \frac{180}{\pi}$ degrees
Degrees	1 degree $= \frac{\pi}{180}$ radians

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942260 1 2 3 4 5 A B C D E Printed in the USA ISD10957

The incenter of a triangle is the point where the three angle bisectors meet.