Geometry
Daily Quiz 12102019

Question 1.

Circle J is located in the first quadrant with center (a, b) and radius s. Felipe transforms Circle J to prove that it is similar to any circle centered at the origin with radius t.

Which sequence of transformations did Felipe use?

(A) Translate Circle J by $(x + a,\ y + b)$ and dilate by a factor of $\frac{t}{s}$.

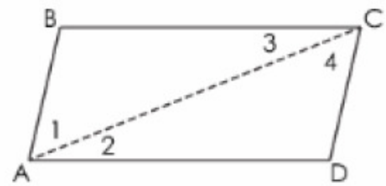
(B) Translate Circle J by $(x + a,\ y + b)$ and dilate by a factor of $\frac{s}{t}$.

(C) Translate Circle J by $(x - a,\ y - b)$ and dilate by a factor of $\frac{t}{s}$.

(D) Translate Circle J by $(x - a,\ y - b)$ and dilate by a factor of $\frac{s}{t}$.

Question 2.

The proof shows that opposite angles of a parallelogram are congruent.



Given: ABCD is a parallelogram with diagonal $\overline{AC}$.
Prove: $\angle BAD \cong \angle DCB$

Proof:

Statements	Reasons
ABCD is a parallelogram with diagonal $\overline{AC}$.	Given
$\overline{AB} \parallel \overline{CD}$ and $\overline{AD} \parallel \overline{BC}$	Definition of parallelogram
$\angle 2 \cong \angle 3$ $\angle 1 \cong \angle 4$	Alternate interior angles are congruent.
$m\angle 2 = m\angle 3$ and $m\angle 1 = m\angle 4$	Measures of congruent angles are equal.
$m\angle 1 + m\angle 2 = m\angle 4 + m\angle 2$	Addition property of equality
$m\angle 1 + m\angle 2 = m\angle 4 + m\angle 3$	?
$m\angle 1 + m\angle 2 = m\angle BAD$ $m\angle 3 + m\angle 4 = m\angle DCB$	Angle addition postulate
$m\angle BAD = m\angle DCB$	Substitution
$\angle BAD \cong \angle DCB$	Angles are congruent when their measures are equal.

What is the missing reason in this partial proof?

Ⓐ ASA

Ⓑ Substitution

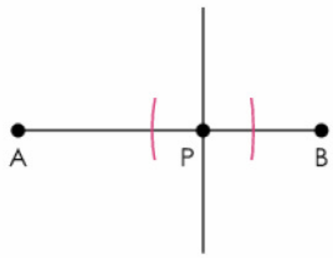
Ⓒ Angle addition postulate

Ⓓ Alternate interior angles are congruent.

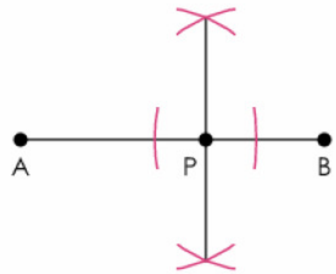
Question 3.

Which diagram shows only the first step of constructing the line perpendicular to $\overline{AB}$ through point P?

Ⓐ



Ⓒ



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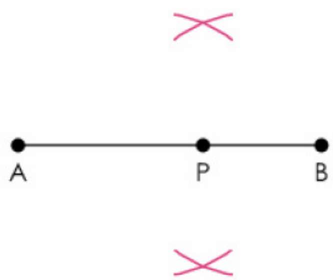
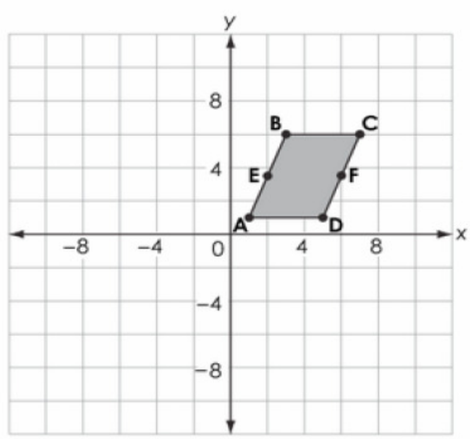


Ⓓ

Question 4.

Parallelogram ABCD is shown. Point E is the midpoint of segment AB. Point F is the midpoint of segment CD.



Which transformation carries the parallelogram onto itself?

Ⓐ a reflection across line segment AC

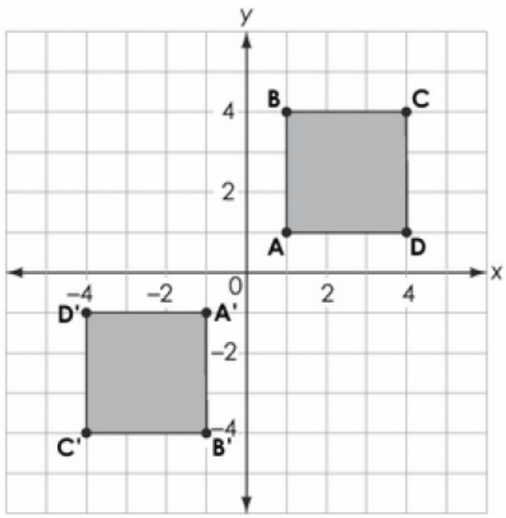
Ⓑ a reflection across line segment EF

Ⓒ a rotation of 180 degrees clockwise about the origin

Ⓓ a rotation of 180 degrees clockwise about the center of the parallelogram

Question 5.

Square ABCD is transformed to create the image A′B′C′D′, as shown.

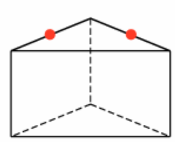


Select all of the transformations that could have been performed.

- ☐ a reflection across the line $y = x$
- ☐ a reflection across the line $y = -2x$
- ☐ a rotation of 180 degrees clockwise about the origin
- ☐ a reflection across the x-axis, and then a reflection across the y-axis
- ☐ a rotation of 270 degrees counterclockwise about the origin, and then a reflection across the x-axis

Question 6. Read carefully.

A cross section of a right triangular prism is created by a plane cut through the points shown and is also perpendicular to the opposite base.



What is the most specific name of the shape representing the cross section?

Ⓐ triangle

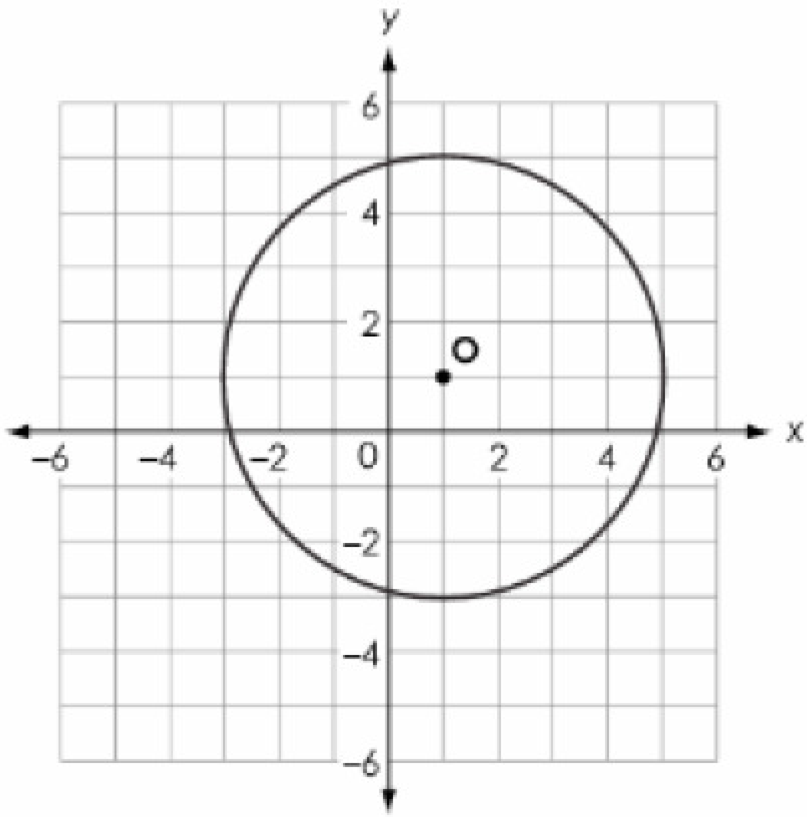
Ⓑ rectangle

Ⓒ trapezoid

Ⓓ parallelogram

Question 7.

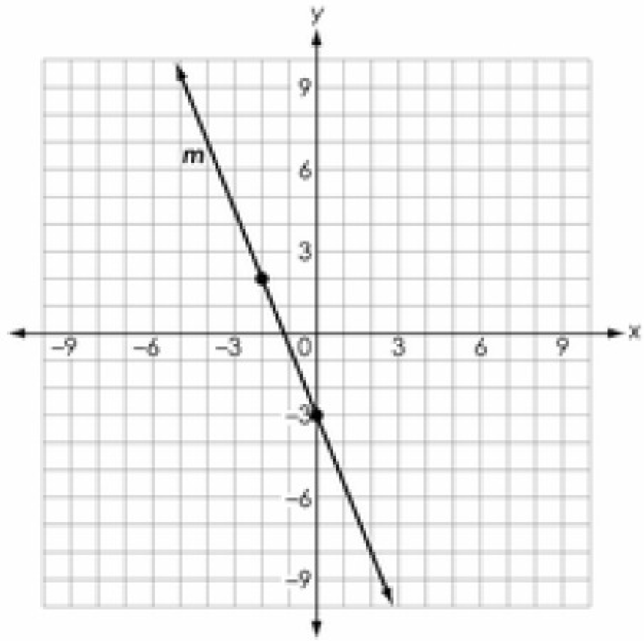
A circle with center O is shown.



Create the equation for the circle.

Question 8.

The graph of line *m* is shown.



What is the equation of the line that is perpendicular to line *m* and passes through the point (3, 2)?

$y =$ ______

Question 9.

Line segment AC has endpoints A (–1, –3.5) and C (5, –1).

Point B is on line segment AC and is located at (0.2, –3).

What is the ratio of $\frac{AB}{BC}$?

______

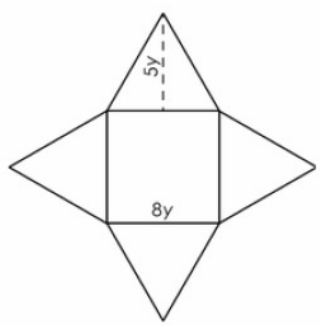
Question 10.

Triangle ABC has vertices at $(-4, 0)$, $(-1, 6)$ and $(3, -1)$.

What is the perimeter of triangle ABC, rounded to the nearest tenth?

Bonus.

Allison designs fancy boxes to fill with chocolates. The boxes are in the shape of a right square pyramid as shown, where $8y$ represents the length of one side of the base of the pyramid, and $5y$ represents the height of one triangular face of the pyramid.



The large size box must be designed to have a volume of 1,000 cubic centimeters.

A. Create an equation that can be used to calculate the length of the base and height of the triangular face of the box. Enter your equation in the first response box.

B. What dimensions for the length, in centimeters, of the base and the height of the triangular face, in centimeters, satisfy these constraints?

A.

B. Length of Base = ______ *centimeters*

B. Height of Triangular Face = ______ *centimeters*

You must show your working to get your points for this problem.

PARCC
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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	$C = \pi d$ *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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