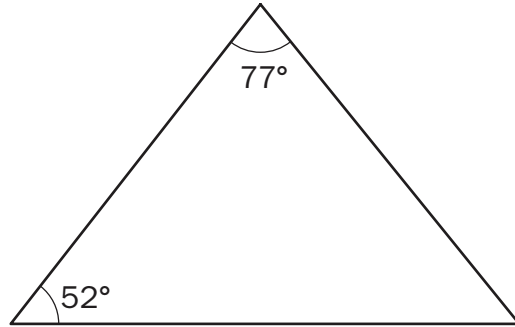


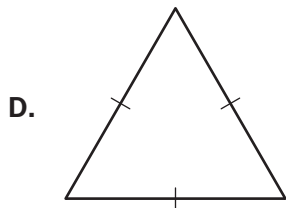
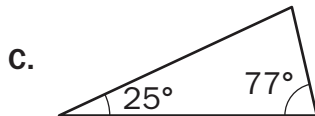
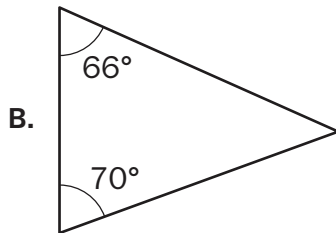
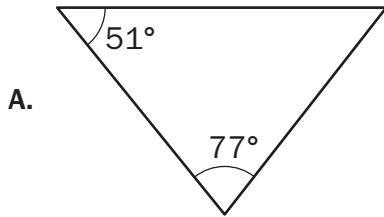
Item 1

Selected-Response

Look at the triangle.



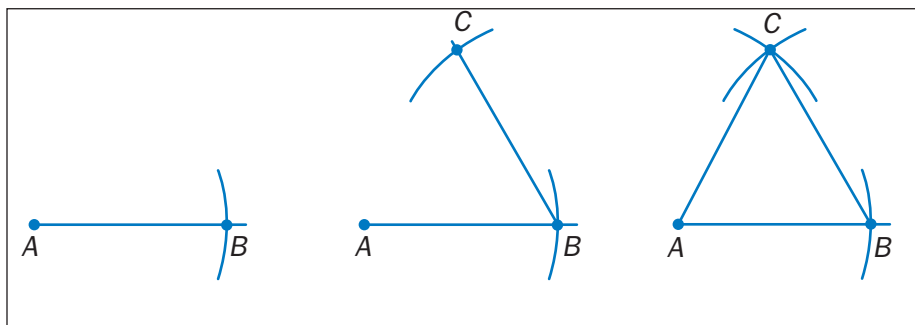
Which triangle is similar to the given triangle?



Item 2

Constructed-Response

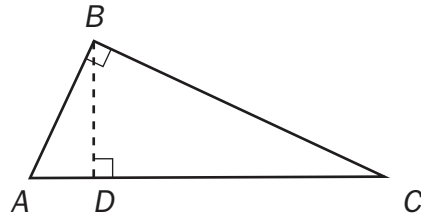
The following are the steps to construct an equilateral triangle. Determine the error in the steps. Write your answer on the lines provided.



Item 3

Extended Constructed-Response

Right $\triangle ABC$ with altitude BD .



Prove $\triangle ABC$ is similar to $\triangle BDC$.

Statement	Reason

Item 4

Technology-Enhanced

Triangle ABC is similar but not congruent to triangle DEF .

Part A

Which series of transformations could map triangle ABC onto triangle DEF ?

- A. translation 4 units up, rotation 75° about the origin
- B. reflection across the line $y = 2$, rotation 90° about the origin
- C. translation 3 units left, dilation of scale factor 2 centered at the origin
- D. reflection across the line $x = 1$, reflection across the line $y = 5$

Part B

Which equation must be true about triangle ABC and triangle DEF ?

- A. $AB = DE$
- B. $AC = EF$
- C. $m\angle A + m\angle B = m\angle D + m\angle F$
- D. $m\angle A + m\angle C = m\angle D + m\angle F$

Item 5

Selected-Response

Which equation is true?

- A. $\sin 40^\circ = \tan 50^\circ$
- B. $\cos 40^\circ = \cos 50^\circ$
- C. $\sin 40^\circ = \sin 50^\circ$
- D. $\cos 40^\circ = \sin 50^\circ$

Item 6

Technology-Enhanced

Triangle GHI is a right triangle. Angle G has a measure of g° , angle H has a measure of h° , and angle I is a right angle.

Part A

Select TWO equations that must be true.

- A. $\sin(h^\circ) = \sin(g^\circ)$
- B. $\cos(g^\circ) = \sin(h^\circ)$
- C. $\cos(h^\circ) = \cos(g^\circ)$
- D. $\sin(h^\circ) + \cos(h^\circ) = \sin(g^\circ) + \cos(g^\circ)$
- E. $\sin(g^\circ) + \cos(h^\circ) = \cos(g^\circ) + \sin(h^\circ)$

Part B

Given that $\tan(g^\circ) = \frac{\sin(g^\circ)}{\cos(g^\circ)}$, which ratio must have a value equivalent to the tangent of g° ?

- A. $\frac{\cos(h^\circ)}{\sin(g^\circ)}$
- B. $\frac{\cos(h^\circ)}{\sin(h^\circ)}$
- C. $\frac{\sin(h^\circ)}{\cos(h^\circ)}$
- D. $\frac{\sin(h^\circ)}{\cos(g^\circ)}$

Item 7**Selected-Response**

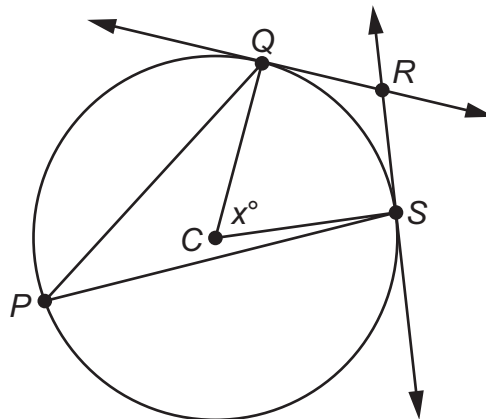
Which point is NOT on a circle with a center of $(0, 0)$ and a radius of 10?

- A. $(0, 5)$
- B. $(10, 0)$
- C. $(0, -10)$
- D. $(-8, 6)$

Item 10

Technology-Enhanced

The figure shows circle C with tangent lines \overline{QR} and \overline{SR} .



The measure of $\angle QCS$ is x° .

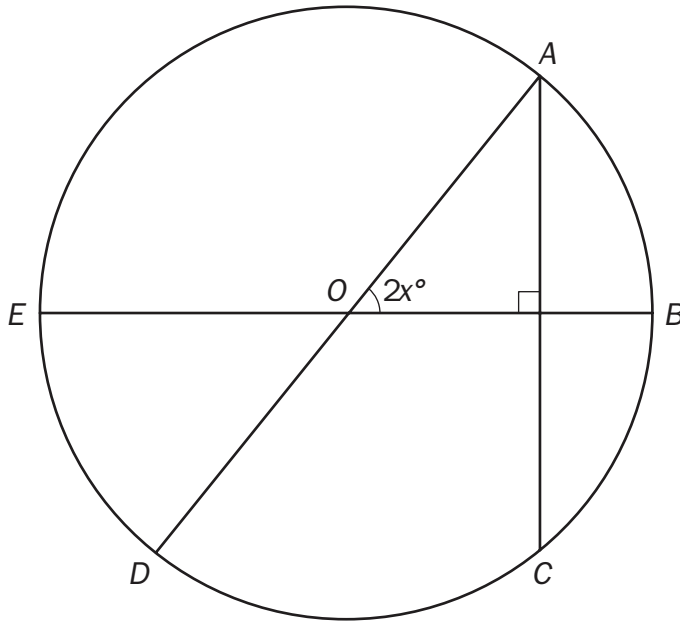
Select **THREE** statements that are true about the figure.

- A. The measure of $\angle QPS$ is $(90 - x)^\circ$.
- B. The measure of $\angle QPS$ is $\frac{1}{2}x^\circ$.
- C. The measure of $\angle PSR$ is 90° .
- D. The measure of $\angle CQR$ is 90° .
- E. The measure of $\angle QRS$ is $(180 - x)^\circ$.
- F. The measure of $\angle QRS$ is $2x^\circ$.

Item 11

Selected-Response

Points A , B , C , D , and E are located on the circle O , as shown in this figure.



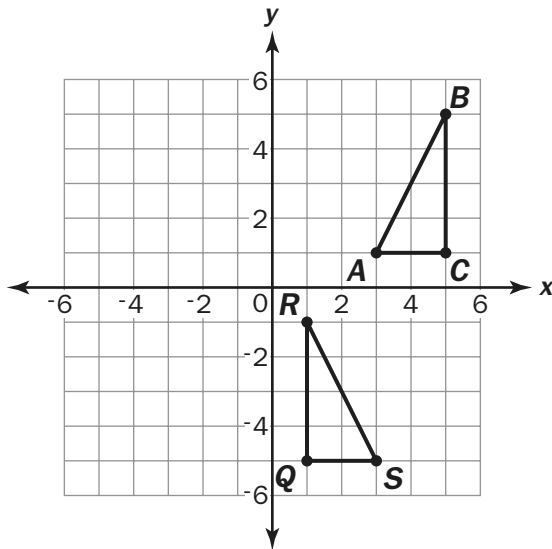
The measure of \widehat{CD} is 80° . What is the value of x ?

- A. 50
- B. 40
- C. 35
- D. 25

Item 13

Selected-Response

What is the sequence of transformations that carry triangle ABC to triangle QRS ?



- A. Triangle ABC is reflected across the line $x = 3$. Then it is translated 2 units down.
- B. Triangle ABC is reflected across the line $x = 3$. Then it is translated 6 units down.
- C. Triangle ABC is translated 2 units to the left. Then it is rotated 90 degrees counterclockwise about the point $(1, 1)$.
- D. Triangle ABC is translated 2 units to the right. Then it is rotated 90 degrees counterclockwise about the point $(1, 1)$.

Item 14

Selected-Response

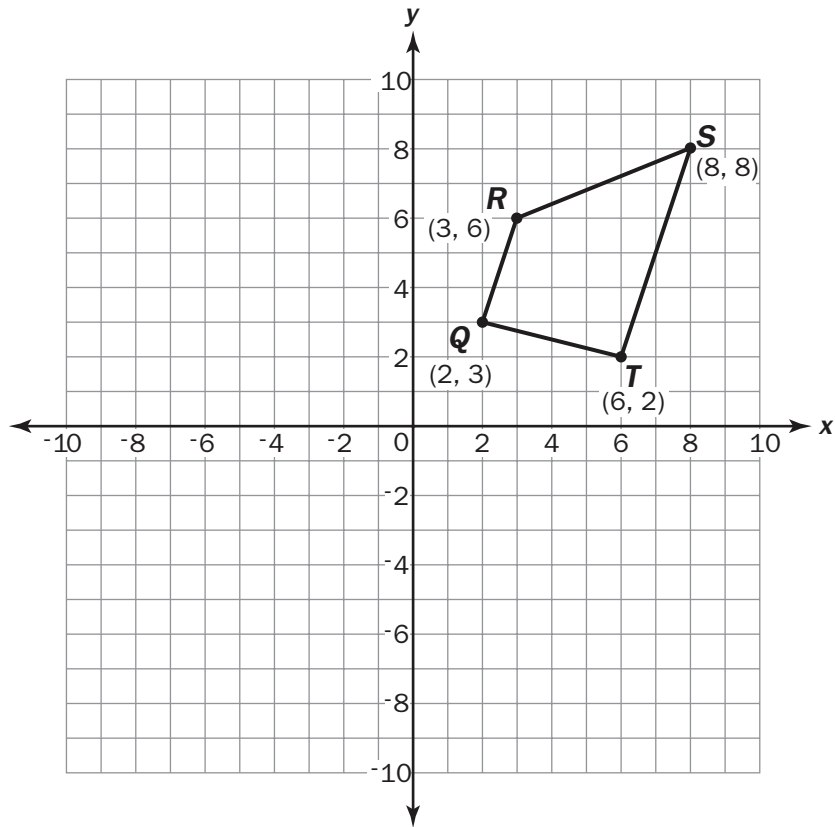
Which transformation on quadrilateral $ABCD$ produces an image that does not preserve distance between points in quadrilateral $ABCD$?

- A. reflection across $y = x$
- B. translation 3 units down and 4 units to the right
- C. dilation by a scale factor of 2
- D. rotation of 270 degrees

Item 15

Selected-Response

Look at quadrilateral $QRST$.



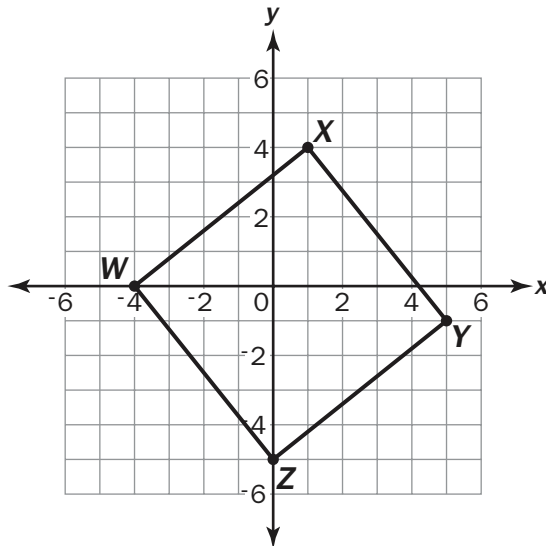
What is the image of point R after a counterclockwise rotation of 270 degrees about the origin?

- A. $(6, -3)$
- B. $(-3, 6)$
- C. $(-6, 3)$
- D. $(3, -6)$

Item 16

Selected-Response

Look at the square $WXYZ$ on this coordinate plane.



What is the perimeter of the square $WXYZ$?

- A. 20 units
- B. 25.6 units
- C. 32 units
- D. 40.9 units

Item 17

Selected-Response

What is the coordinate of point P that lies along the directed line segment from $Q(2, 5)$ to $R(7, 12)$ and partitions the segment in the ratio of 3 to 2?

- A. (3, 4.2)
- B. (4.5, 8.5)
- C. (5, 9.2)
- D. (5, 7)

Item 18

Selected-Response

What is the equation of a line that is perpendicular to $y = \frac{1}{2}x - 6$ and passes through the point (6, 4)?

A. $y = -\frac{1}{2}x + 1$

B. $y = -\frac{1}{2}x + 7$

C. $y = -2x - 8$

D. $y = -2x + 16$

Item 19

Selected-Response

Study this equation of a circle.

$$x^2 - 6x + y^2 + 2y + 6 = 0$$

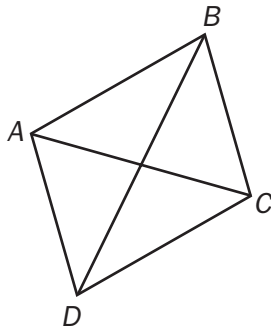
Which of these represents the center and radius of the circle?

- A. center: (3, -1), radius: 4
- B. center: (-3, 1), radius: 4
- C. center: (3, -1), radius: 2
- D. center: (-3, 1), radius: 2

Item 20

Selected-Response

What proves that figure *ABCD* is a parallelogram?



- A. Diagonal *BD* bisects angle *ABC*.
- B. Side *AB* is equal to diagonal *AC*.
- C. Diagonals *BD* and *AC* bisect one another.
- D. Diagonal *BD* is greater than diagonal *AC*.

Item 21

Constructed-Response

One bag of lawn fertilizer can cover approximately 5,000 square feet. Mike’s lawn is about 500 square feet. When Mike applies fertilizer to his lawn, he applies it to $\frac{3}{4}$ of his lawn only.

Part A: About how many complete times can Mike fertilize his lawn with one bag of fertilizer?

Part B: Mike fertilizes his lawn an average of 4 times per year. About how many full years will he be able to fertilize his lawn with one bag of fertilizer?

Item 22

Constructed-Response

A student draws a card from a standard deck and then draws another card without replacing the first card. Explain why the probability of picking an ace on the first draw and the probability of picking a 7 on the second draw are NOT independent events. Write your answer on the lines provided.

Item 23**Selected-Response**

When rolling a fair, six-sided number cube, what is the probability of rolling an even number or a number less than 3?

- A. $\frac{5}{6}$
- B. $\frac{2}{3}$
- C. $\frac{1}{2}$
- D. $\frac{1}{3}$

Item 24**Selected-Response**

What is the probability of rolling a 5 on a fair, six-sided number cube if you know that you rolled an odd number?

- A. $\frac{1}{6}$
- B. $\frac{1}{3}$
- C. $\frac{1}{2}$
- D. $\frac{2}{3}$