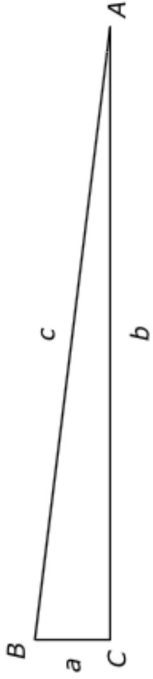**7.**

An entrance ramp from a walkway will be installed at a public library, as modeled in the figure.

In the figure, *a* represents the amount that the ramp rises, *b* represents the distance from the walkway to the base of the library, and *c* represents the length of the ramp.

Part A

If $\angle B$ measures $x°$, what is the measure of $\angle A$?

Enter your answer in the space provided. Enter **only** your answer.

Part B

The length of the ramp will be 25 feet. If the ramp needs to rise 1.3 feet, which of the following is closest to the distance, in feet, from the walkway to the base of the library?

- A. 23.70
- B. 24.97
- C. 25.03
- D. 26.30

7. (continued from previous page)

Part C

For each trigonometric expression, indicate if the expression is equivalent to the measure of $\angle A$ or the measure of $\angle B$.

Drag and drop the measure of $\angle A$ or the measure of $\angle B$ into each box.

Measure of $\angle A$	Measure of $\angle B$

$$\sin^{-1}\left(\frac{a}{c}\right)$$

$$\cos^{-1}\left(\frac{a}{c}\right)$$

$$\tan^{-1}\left(\frac{a}{b}\right)$$

$$\tan^{-1}\left(\frac{b}{a}\right)$$

Part D

If the length of the ramp will be 25 feet but the rise of the ramp will be 3.0 feet, approximately what will be the measure, in degrees, of the angle of elevation, $\angle A$?
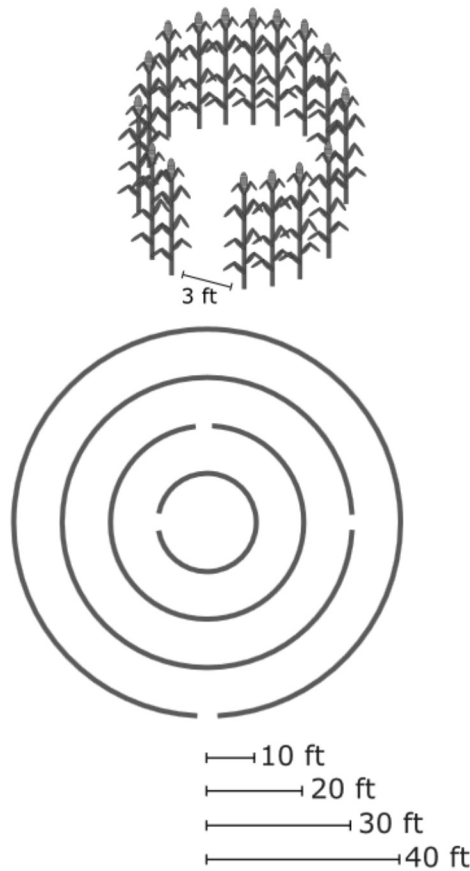
- A. 3°
- B. 5°
- C. 7°
- D. 9°

Part A

Tina and her family live on a farm. Each summer they design and plant a corn maze for local children to enjoy in the autumn. This year Tina is designing the maze. Here are the details of her proposed design.

The corn is to be planted in four concentric circles, as shown in the diagram.
The radii of the circles of corn are as marked in the diagram.
A 3-foot arc of each circle of corn will not be planted, as shown in the picture.

3 ft

├──┤10 ft
├────┤20 ft
├──────┤30 ft
├────────┤40 ft

Find the total length of the circles, in feet, which will be planted with corn. Show your work.

Enter your answer and show your work in the space provided.

▸ Math symbols

▸ Relations

▸ Geometry

▸ Groups

▸ Trigonometry

▸ Statistics

▸ Greek

Part B

Tina's parents want to make a gravel walkway that will extend 6 feet from the outer circle of the maze all the way around the maze. Find the area of the walkway. Round your answer to the nearest square foot, if necessary. Show your work.

Enter your answer and show your work in the space provided.

| ▶ Math symbols |
| ▶ Relations |
| ▶ Geometry |
| ▶ Groups |
| ▶ Trigonometry |
| ▶ Statistics |
| ▶ Greek |

Part C

Tina's parents want to place a cylindrical granite pillar at the center of the corn maze. The column has a diameter of 5 feet and is 10 feet tall. Granite weighs approximately 168 pounds per cubic foot.
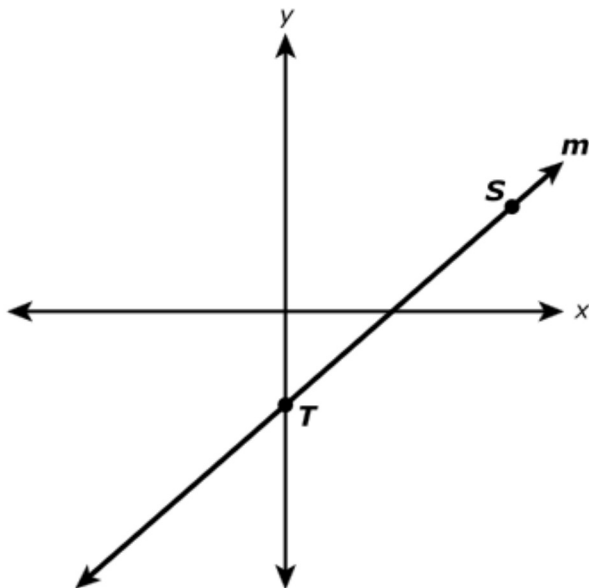
Tina's neighbor has a small crane that is rated to lift 20,000 pounds. Find the weight of the granite column to determine whether Tina's family can use the neighbor's crane to move the pillar, or if they need to rent a larger crane. Show your work.

Enter your answer and show your work in the space provided.

| ▶ Math symbols |
| ▶ Relations |
| ▶ Geometry |
| ▶ Groups |
| ▶ Trigonometry |
| ▶ Statistics |
| ▶ Greek |

Line *m* is shown on the coordinate plane.

Which is the **best** definition of line segment *ST*?

○   A. all points on line *m*

○   B. the two points *S* and *T*

○   C. point *S*, point *T*, and all points on line *m* between *S* and *T*

○   D. the points on line *m* starting at point *T* and extending beyond point *S*