

# **Geometry**

**Administered May 2013**

**RELEASED**



# STAAR GEOMETRY REFERENCE MATERIALS



## CIRCUMFERENCE

Circle  $C = 2\pi r$  or  $C = \pi d$

## AREA

Triangle  $A = \frac{1}{2}bh$

Rectangle or parallelogram  $A = bh$

Rhombus  $A = \frac{1}{2}d_1d_2$

Trapezoid  $A = \frac{1}{2}(b_1 + b_2)h$

Regular polygon  $A = \frac{1}{2}aP$

Circle  $A = \pi r^2$

## SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Pyramid	$S = \frac{1}{2}Pl$	$S = \frac{1}{2}Pl + B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$
Cone	$S = \pi rl$	$S = \pi rl + \pi r^2$
Sphere		$S = 4\pi r^2$

## VOLUME

Prism or cylinder  $V = Bh$

Pyramid or cone  $V = \frac{1}{3}Bh$

Sphere  $V = \frac{4}{3}\pi r^3$

# STAAR GEOMETRY REFERENCE MATERIALS

## COORDINATE GEOMETRY

Midpoint

$$\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Distance formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Slope of a line

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Slope-intercept form of a linear equation

$$y = mx + b$$

Point-slope form of a linear equation

$$y - y_1 = m(x - x_1)$$

Standard form of a linear equation

$$Ax + By = C$$

## RIGHT TRIANGLES

Pythagorean theorem

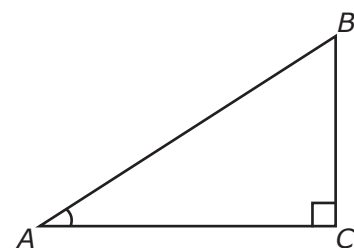
$$a^2 + b^2 = c^2$$

Trigonometric ratios

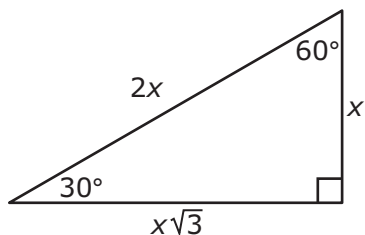
$$\sin A = \frac{\text{opposite leg}}{\text{hypotenuse}}$$

$$\cos A = \frac{\text{adjacent leg}}{\text{hypotenuse}}$$

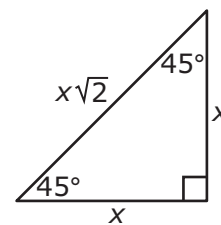
$$\tan A = \frac{\text{opposite leg}}{\text{adjacent leg}}$$

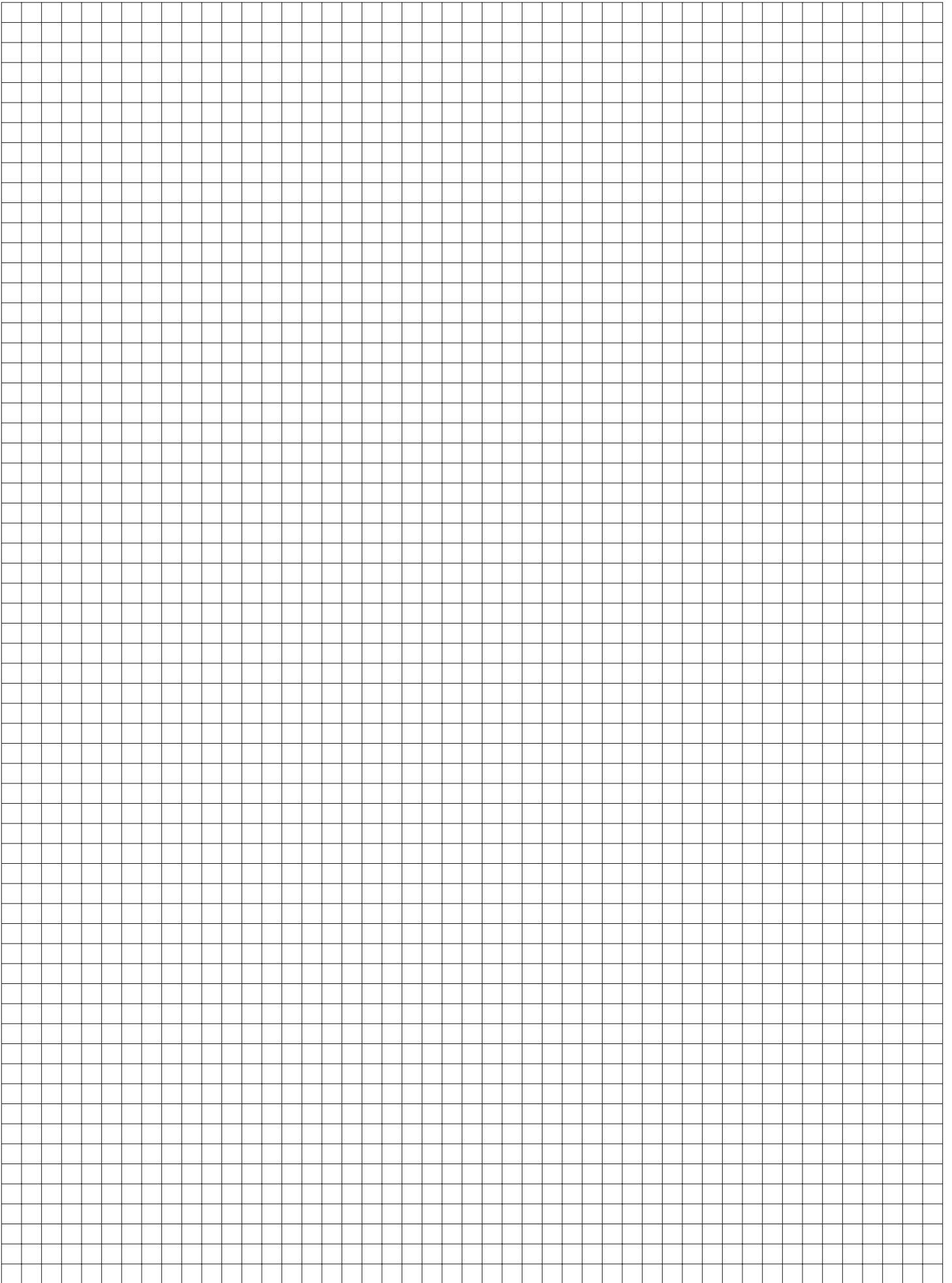


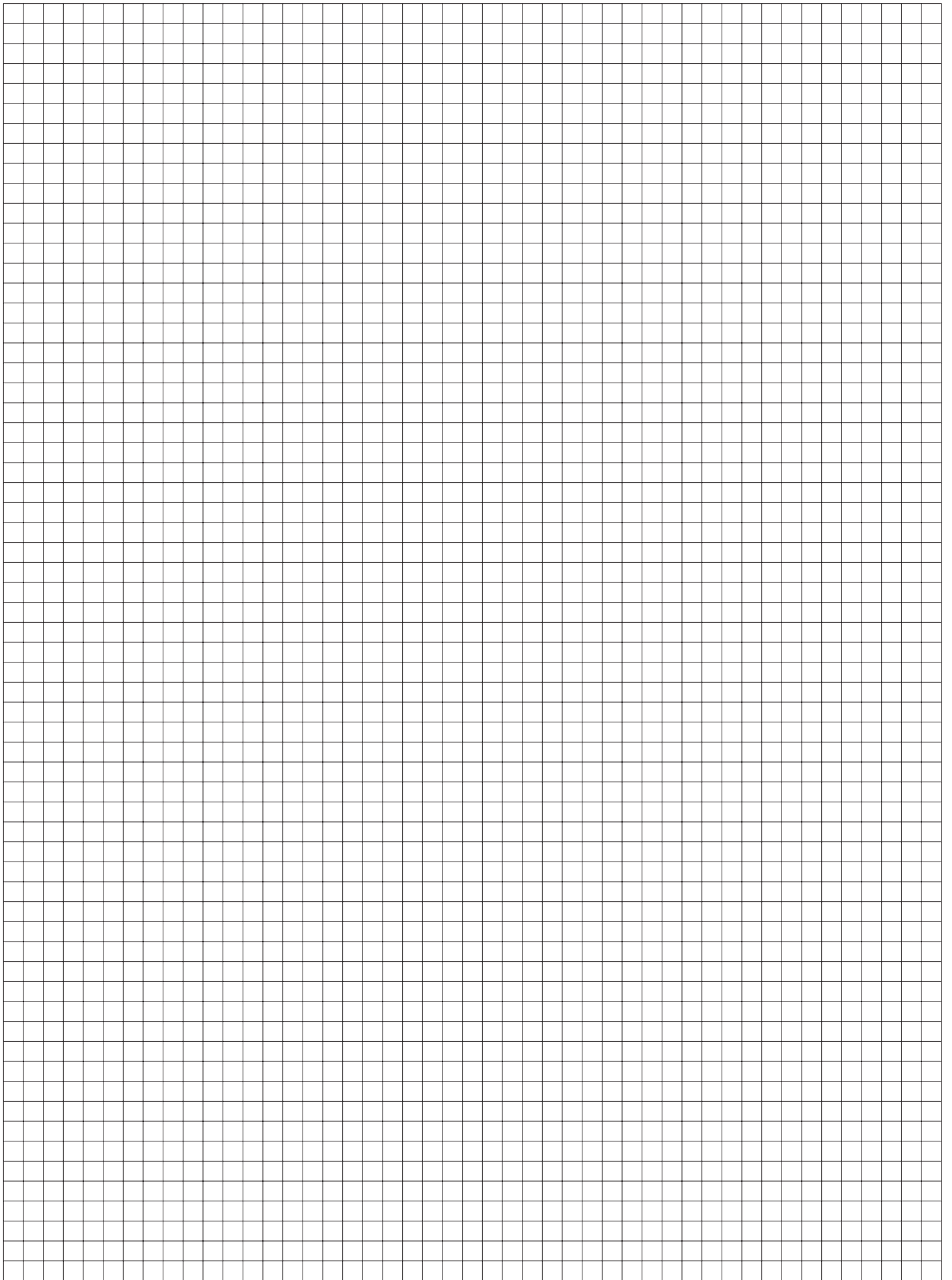
30° - 60° - 90° triangle



45° - 45° - 90° triangle







# Geometry



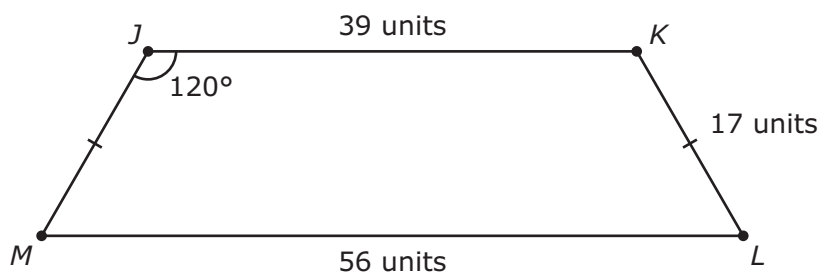


**DIRECTIONS**

Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

- 1  $\overline{CD}$  has an endpoint at  $(2, -1)$  and a midpoint at  $(8, 3)$ . Which measure is closest to the length of  $\overline{CD}$ ?
- A 20.4 units  
B 8.9 units  
C 14.4 units  
D 11.7 units
- 

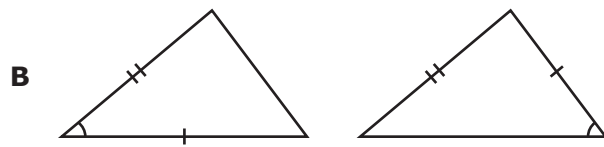
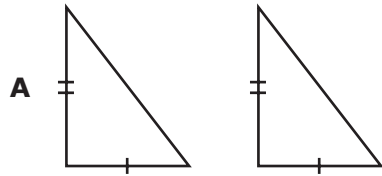
- 2 Isosceles trapezoid  $JKLM$  is shown below.



If the dimensions of trapezoid  $JKLM$  are multiplied by a scale factor of  $f$  to create trapezoid  $J'K'L'M'$ , which statement is true?

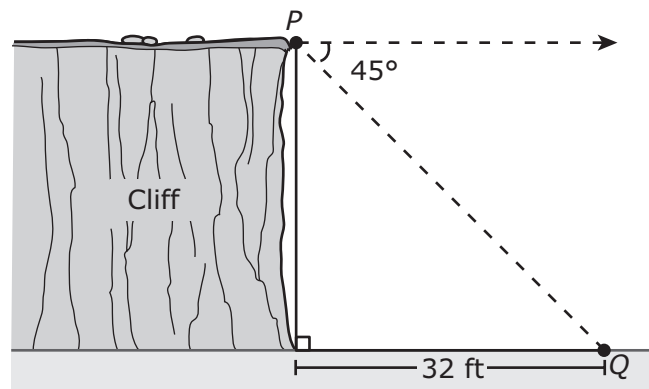
- F Trapezoid  $J'K'L'M'$  contains two base angles measuring  $30^\circ$  each.  
G The longer base of trapezoid  $J'K'L'M'$  is  $56f$  units.  
H The bases of trapezoid  $J'K'L'M'$  have lengths of 22 units and 39 units.  
J Trapezoid  $J'K'L'M'$  contains two base angles measuring  $(120f)^\circ$  each.

- 3 Which pair of triangles has enough given information to prove that the triangles are congruent?



- D None of these

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- 4 In the diagram below, the angle of depression from  $P$  to  $Q$  is  $45^\circ$ .



Not drawn to scale

Which of the following is closest to the distance between  $P$  and  $Q$ ?

- F 45.3 ft
- G 22.6 ft
- H 55.4 ft
- J 18.5 ft