

Finding Distance Between Points on a Grid

Grade 8 math · Test Answer Key · Standards: 8.G.B.8

Award points as shown in each scoring note. Give credit for exact answers or correct roundings, and accept either order when subtracting coordinates, since the squared differences are the same.

Standards: 8.G.B.8 · **Level:** Grade 8

Question 1 Grid-line distances (2 points)

(a) $|4 - (-9)| = \mathbf{13 \text{ units}}$

(b) $|6 - (-8)| = \mathbf{14 \text{ units}}$

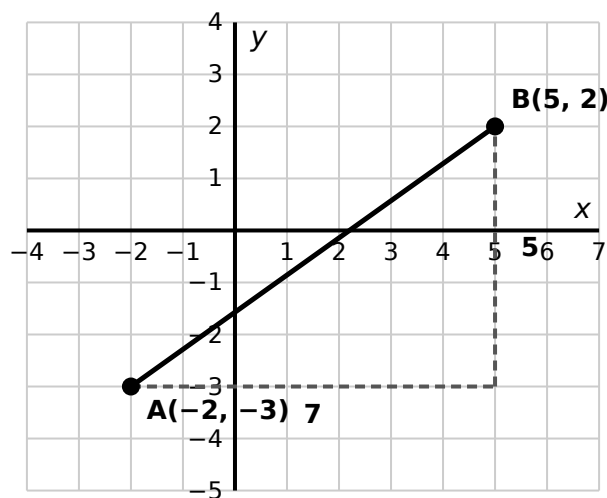
Scoring: 1 point per part.

Question 2 Distance from a graph (3 points)

(a) Horizontal: $|5 - (-2)| = 7$. Vertical: $|2 - (-3)| = 5$. **7 and 5**

(b) $AB = \sqrt{(49 + 25)} = \mathbf{\sqrt{74}}$

(c) $\sqrt{74} \approx 8.60$, so **8.6**



Legs 7 and 5: $AB = \sqrt{74}$.

Scoring: 1 point per part.

Question 3 Two distances (3 points)

(a) Legs: $|-6 - 1| = 7$ and $|3 - (-5)| = 8$. $\sqrt{(49 + 64)} = \sqrt{113} \approx \mathbf{10.6}$

(b) $\sqrt{(144 + 1,225)} = \sqrt{1,369} = \mathbf{37}$

Scoring: part (a) 1 point for the legs, 1 point for the distance; part (b) 1 point.

Question 4 Right triangle test (3 points)

(a) $AB^2 = 6^2 + 2^2 = 40$. $BC^2 = 2^2 + 6^2 = 40$. $AC^2 = 4^2 + 8^2 = 80$.

(b) $40 + 40 = 80$, so $AB^2 + BC^2 = AC^2$. **Yes, a right triangle with the right angle at B**

Scoring: part (a) 2 points for all three values (1 point if two are correct); part (b) 1 point for the converse reasoning.

Question 5 Perimeter on a grid (3 points)

(a) $AB = 8$, $CD = |2 - (-4)| = 6$, $DA = 5$, $BC = \sqrt{((4 - 2)^2 + (-2 - 3)^2)} = \sqrt{29} \approx 5.39$.

(b) $8 + 5.39 + 6 + 5 = 24.39$.

About 24.4 units

Scoring: part (a) 1 point for the three grid-line sides, 1 point for BC; part (b) 1 point.

Question 6 Missing coordinate (2 points)

$(6 - (-2))^2 + (y - 3)^2 = 17^2$, so $64 + (y - 3)^2 = 289$.

$(y - 3)^2 = 225$, so $y - 3 = 15$ or -15 . Since y is positive, $y = 18$.

$y = 18$

Scoring: 1 point for the equation, 1 point for the value of y .

Question 7 Drone flight (2 points)

Legs: $8 - (-4) = 12$ and $4 - (-1) = 5$.

$d = \sqrt{(144 + 25)} = 13$ units, and $13 \cdot 0.2 = 2.6$.

2.6 miles

Scoring: 1 point for the distance in units, 1 point for the conversion.

Question 8 Robot path (2 points)

$$AB = \sqrt{6^2 + 6^2} = \sqrt{72} \approx 8.49. \quad BC = |3 - (-4)| = 7.$$

$$\text{Total: } 8.49 + 7 = 15.49.$$

About 15.5 units

Scoring: 1 point for each leg of the route.