

Geometry · Coordinate Geometry Proofs · Quiz

Common Core G-GPE.B.4, G-GPE.B.5, G-GPE.B.6, G-GPE.B.7 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This 10-question quiz checks the core coordinate geometry skills: distance, midpoint, slopes of parallel and perpendicular lines, partitioning a segment, area, perimeter and proof criteria. Choose the one best answer for each question.

GeometryCommon Core: G-GPE.B.4 · G-GPE.B.5 · G-GPE.B.6 · G-GPE.B.7

Questions

Question 1

What is the distance between $(-1,2)$ and $(5,10)$?

- A. 10
- B. 14
- C. 100
- D. $\sqrt{14}$

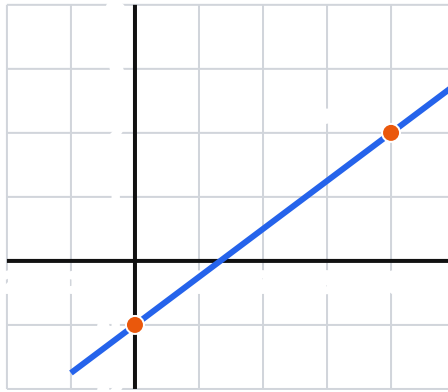
Question 2

What is the midpoint of the segment with endpoints $(-6,4)$ and $(2,-10)$?

- A. $(-2,-3)$
- B. $(4,-7)$
- C. $(-8,-6)$
- D. $(-2,3)$

Question 3

Line $\mathcal{P}$ passes through the two labeled points. What is the slope of a line perpendicular to $\mathcal{P}$?



Line p.

- A. $\frac{4}{3}$
- B. $-\frac{3}{4}$
- C. $\frac{3}{4}$
- D. $-\frac{4}{3}$

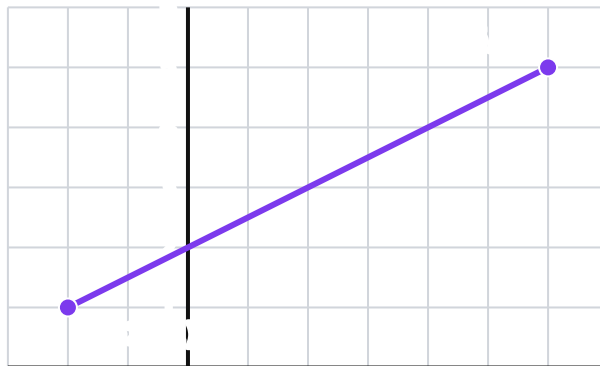
Question 4

Which line is parallel to $y = -2x + 7$ and passes through $(1, 4)$?

- A. $y = 2x + 2$
- B. $y = -2x + 6$
- C. $y = \frac{1}{2}x + \frac{7}{2}$
- D. $y = -2x + 7$

Question 5

Point P partitions $\overline{AB}$ in the ratio 1:3 measured from A . What are the coordinates of P ?



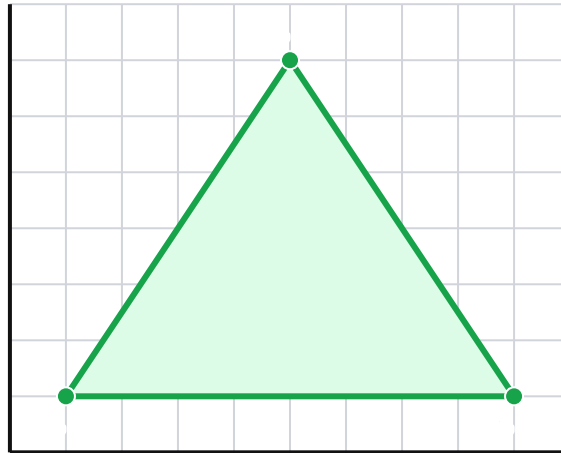
Segment AB.

- A. $(0, 2)$

- B. (2,3)
- C. (4,4)
- D. $(\frac{2}{3}, \frac{7}{3})$

Question 6

What is the area of the triangle shown?



Triangle on a grid.

- A. 48
- B. 28
- C. 24
- D. 14

Question 7

Which fact is enough to prove that a quadrilateral is a parallelogram?

- A. The diagonals have equal lengths
- B. One pair of opposite sides has equal length
- C. Both pairs of opposite sides have equal slopes
- D. Two adjacent sides are perpendicular

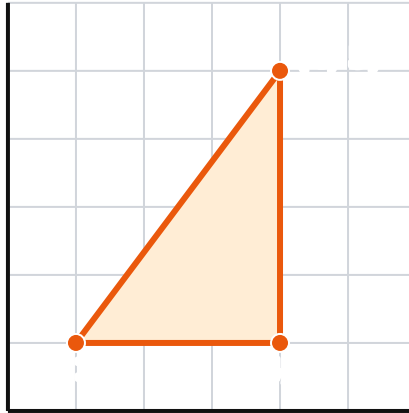
Question 8

The midpoint of $\overline{AB}$ is $(3, -2)$ and $A = (-1, 4)$. What are the coordinates of B ?

- A. (1,1)
- B. (7,-8)
- C. (5,-6)
- D. (-5,10)

Question 9

What is the perimeter of the triangle shown?



Triangle on a grid.

- A. 7
- B. 6
- C. $7 + \sqrt{7}$
- D. 12

Question 10

Two sides of a triangle have slopes $\frac{2}{5}$ and $-\frac{5}{2}$. What do the slopes show about the angle between them?

- A. It is an acute angle
- B. It is a right angle
- C. The sides are parallel
- D. It cannot be determined

Answer key

1. **A** - The legs are 6 and 8, so $d = \sqrt{36+64} = 10$. Adding the legs (14) or forgetting the square root (100) are the usual mistakes.
2. **A** - Average the coordinates: $\frac{-6+2}{2} = -2$ and $\frac{4+(-10)}{2} = -3$. Half the difference gives $(4, -7)$.
3. **D** - Slope of p is $\frac{2-(-1)}{4-0} = \frac{3}{4}$. The perpendicular slope is the opposite reciprocal, $-\frac{4}{3}$.
4. **B** - A parallel line keeps the slope -2 , and $4 = -2(1)+6$. The other lines pass through $(1,4)$ but have slope 2 or $\frac{1}{2}$, or they miss the point.
5. **A** - The fraction is $\frac{1}{4}$: $(-2+\frac{1}{4}(8), 1+\frac{1}{4}(4)) = (0,2)$. Using $\frac{1}{3}$ instead of $\frac{1}{4}$ is a common slip.
6. **C** - The base is $9-1=8$ and the height is $7-1=6$, so $A = \frac{1}{2}(8)(6) = 24$. Leaving out the factor $\frac{1}{2}$ gives 48.
7. **C** - Equal slopes for both pairs of opposite sides mean both pairs are parallel, which is the definition. Each other fact also fits a shape that is not a parallelogram, such as an isosceles trapezoid.
8. **B** - From A to M is 4 right and 6 down, so continue the same step:
 $B = (3+4, -2-6) = (7, -8)$.
9. **D** - The legs are 3 and 4, so the hypotenuse is $\sqrt{3^2+4^2} = 5$ and the perimeter is $3+4+5=12$.
10. **B** - The product is $\frac{2}{5} \cdot (-\frac{5}{2}) = -1$, so the sides are perpendicular and the angle is a right angle.

Remember:

- Distance: $d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$; midpoint: the average of the coordinates.
- Parallel lines have equal slopes; perpendicular lines have slopes with product -1 .
- A point that splits a segment in ratio $a:b$ is $\frac{a}{a+b}$ of the way from the first endpoint.
- Perimeter adds distance-formula lengths; triangle area is $\frac{1}{2}bh$ with a horizontal or vertical base.
- A parallelogram has diagonals with the same midpoint; add a right angle to get a rectangle.