Distance Formula And Midpoint Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the formula for calculating the distance between two points \((x_1, y_1)\) and \((x_2, y_2)\) in a coordinate plane?

undefined. A) \(d = (x_2 - x_1) + (y_2 - y_1) \)

undefined. B) \(d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \) ✓

undefined. C) \(d = \frac{(x_2 + x_1)}{2} + \frac{(y_2 + y_1)}{2} \)

undefined. D) \(d = (x_2 - x_1)^2 + (y_2 - y_1)^2 \)

The correct formula is the one that uses the square root of the sum of the squares of the differences in coordinates.

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The correct formula is derived from the Pythagorean Theorem.

Which of the following statements are true about the Midpoint Formula?

undefined. A) It calculates the average of the x-coordinates and y-coordinates. ✓
undefined. B) It is used to find the distance between two points.
undefined. C) It provides the coordinates of the midpoint of a line segment. ✓
undefined. D) It is derived from the Pythagorean Theorem.

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The Midpoint Formula calculates the average of the coordinates.

Explain how the Distance Formula is related to the Pythagorean Theorem.

The Distance Formula is derived from the Pythagorean Theorem, which relates the lengths of the sides of a right triangle to the distance between two points.

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The Distance Formula is derived from the Pythagorean Theorem, relating the lengths of the sides of a right triangle.

List the steps involved in using the Midpoint Formula to find the midpoint of a line segment with endpoints \((3, 4)\) and \((7, 8)\).

1. Step 1

Identify the coordinates of the endpoints.

2. Step 2

Add the x-coordinates and divide by 2.

3. Step 3

Add the y-coordinates and divide by 2.

To find the midpoint, average the x-coordinates and the y-coordinates of the endpoints.

Part 2: Application and Analysis

Calculate the distance between the points \((1, 2)\) and \((4, 6)\).

undefined. A) 5 ✓

undefined. B) 6

undefined. C) 7

undefined. D) 8

The distance can be calculated using the Distance Formula.

Calculate the distance between the points \((1, 2)\) and \((4, 6)\).

undefined. A) 5 ✓

undefined. B) 6

undefined. C) 7

undefined. D) 8

The distance is calculated using the Distance Formula, resulting in a numerical value.

Calculate the distance between the points \((1, 2)\) and \((4, 6)\).

undefined. A) 5 ✓
undefined. B) 6
undefined. C) 7
undefined. D) 8

The distance can be calculated using the formula and substituting the coordinates.

You are given the points \((2, 3)\) and \((10, 7)\). Which of the following are correct coordinates for the midpoint?

undefined. A) \((6, 5)\) ✓
undefined. B) \((4, 5)\)
undefined. C) \((8, 10)\)
undefined. D) \((5, 5)\)

The correct midpoint coordinates are found by averaging the x and y coordinates of the given points.

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The correct midpoint can be found by averaging the coordinates.

Apply the Midpoint Formula to find the midpoint of a line segment with endpoints \((-2, 4)\) and \((6, -8)\). Show your work.

The midpoint is calculated by averaging the x-coordinates and y-coordinates of the endpoints.

Apply the Midpoint Formula to find the midpoint of a line segment with endpoints \((-2, 4)\) and \((6, -8)\). Show your work.

The midpoint can be calculated by averaging the x-coordinates and y-coordinates of the endpoints.

Apply the Midpoint Formula to find the midpoint of a line segment with endpoints \((-2, 4)\) and \((6, -8)\). Show your work.

The midpoint can be calculated by averaging the x and y coordinates of the endpoints.

Which of the following statements best describes the relationship between the Distance Formula and the Midpoint Formula?

undefined. A) Both formulas calculate the same type of measurement.
undefined. B) The Distance Formula is used to verify the Midpoint Formula.
undefined. C) The Midpoint Formula is used to simplify the Distance Formula.
undefined. D) Both formulas use coordinates to provide different types of information about a line segment. ✓

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undefined. D) Both formulas use coordinates to provide different types of information about a line segment. ✓

Both formulas use coordinates to provide different types of information about a line segment.

Analyze the following points: \((3, 3)\), \((3, -3)\), \((-3, 3)\), and \((-3, -3)\). Which statements are true?

undefined. A) They form a square. ✓

undefined. B) The distance between any two adjacent points is 6.

undefined. C) The midpoint of the diagonal is the origin. ✓

undefined. D) The distance between opposite points is 12.

The points form a square and have specific distances between them.

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Part 3: Evaluation and Creation

Evaluate the following statement: "The Midpoint Formula can be used to find the center of mass of a uniform rod."

undefined. A) True ✓
undefined. B) False
undefined. C) N/A
undefined. D) N/A

The statement is true as the midpoint represents the center of mass for a uniform rod.

Evaluate the following statement: "The Midpoint Formula can be used to find the center of mass of a uniform rod."

undefined. A) True ✓
undefined. B) False
undefined. C) Not applicable
undefined. D) Only for certain shapes

The statement is true as the midpoint represents the center of mass for a uniform object.

Create a scenario where both the Distance Formula and Midpoint Formula are necessary to solve a problem. Which elements would be included?

undefined. A) A triangle with known vertices. ✓
undefined. B) A circle with a known diameter.
undefined. C) A line segment with a known slope.
undefined. D) A rectangle with known diagonals.

A triangle with known vertices would require both formulas to find distances and midpoints.

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A scenario involving a triangle with known vertices would require both formulas.

Create a scenario where both the Distance Formula and Midpoint Formula are necessary to solve a problem. Which elements would be included?

undefined. **A) A triangle with known vertices. ✓**

undefined. B) A circle with a known diameter.

undefined. C) A line segment with a known slope.

undefined. D) A rectangle with known diagonals.

A scenario involving geometric shapes would require both formulas.

Design a real-world problem that involves both calculating the distance between two points and finding the midpoint. Provide a solution outline.

A real-world problem could involve finding the distance between two locations and the midpoint for a meeting point.

Design a real-world problem that involves both calculating the distance between two points and finding the midpoint. Provide a solution outline.

A real-world problem could involve finding the midpoint of a route and the distance between two locations.

Design a real-world problem that involves both calculating the distance between two points and finding the midpoint. Provide a solution outline.

A real-world problem could involve navigation or construction.