Distance Formula Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the distance formula used to calculate the distance between two points \((x_1, y_1)\) and \((x_2, y_2)\) in a 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 = (x_2 - x_1)^2 + (y_2 - y_1)^2

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

The correct answer is B) d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.

Which of the following are components of the distance formula?

undefined. A) Subtraction of coordinates ✓

undefined. B) Addition of coordinates

undefined. C) Squaring of differences ✓

undefined. D) Taking the square root ✓

The correct answers are A) Subtraction of coordinates, C) Squaring of differences, and D) Taking the square root.

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 in a coordinate plane.

List the steps involved in calculating the distance between two points using the distance formula.

1. Step 1

Identify the coordinates of the points.

2. Step 2

Subtract the x-coordinates and y-coordinates.

3. Step 3

Square the results.

4. Step 4

Add the squared results.

5. Step 5

Take the square root of the sum.

The steps include: 1) Identify the coordinates of the points, 2) Subtract the x-coordinates and y-coordinates, 3) Square the results, 4) Add the squared results, 5) Take the square root of the sum.

Part 2: Understanding and Interpretation

If the points \((3, 4)\) and \((7, 1)\) are plotted on a graph, what is the first step in using the distance formula to find the distance between them?

undefined. A) Add the x-coordinates

undefined. B) Subtract the y-coordinates

undefined. C) Subtract the x-coordinates ✓

undefined. D) Add the y-coordinates

The correct answer is C) Subtract the x-coordinates.

Which statements correctly describe the purpose of the distance formula?

undefined. A) To find the midpoint between two points

undefined. B) To calculate the length of a line segment ✓

undefined. C) To determine the slope of a line

undefined. D) To measure the straight-line distance between two points ✓

The correct answers are B) To calculate the length of a line segment and D) To measure the straight-line distance between two points.

Describe a real-world scenario where the distance formula might be used.

A real-world scenario could involve calculating the distance between two locations on a map, such as finding the distance between two cities.

Part 3: Application and Analysis

Calculate the distance between the points \((2, -3)\) and \((5, 4)\).

undefined. A) 5
undefined. B) 7 ✓
undefined. C) 8
undefined. D) 10

The correct answer is B) 7.

Given the points \((1, 2)\) and \((4, 6)\), which of the following calculations are correct steps in finding the distance?

undefined. A) \((4 - 1)^2\) ✓
undefined. B) \((6 - 2)^2\) ✓
undefined. C) \(\sqrt{9 + 16}\) ✓
undefined. D) \(\sqrt{3 + 4}\)

The correct answers are A) \((4 - 1)^2\), B) \((6 - 2)^2\), and C) \(\sqrt{9 + 16}\).

A drone flies from point \((0, 0)\) to point \((8, 6)\). Use the distance formula to determine how far the drone has traveled.

The distance traveled by the drone is 10 units, calculated using the distance formula.

What is the effect of changing one coordinate of a point on the distance between two points?

undefined. A) The distance remains the same
undefined. B) The distance always increases
undefined. C) The distance always decreases
undefined. D) The distance may increase or decrease ✓

The correct answer is D) The distance may increase or decrease.

Part 4: Evaluation and Creation

If the distance between two points is zero, what can be concluded about the points?

undefined. A) They are on the same line

undefined. B) They are the same point ✓

undefined. C) They are equidistant from the origin

undefined. D) They are at opposite ends of a diameter

The correct answer is B) They are the same point.

Evaluate the following scenarios. In which cases would the distance formula be applicable?

undefined. A) Measuring the length of a shadow

undefined. B) Calculating the distance between two cities on a map ✓

undefined. C) Determining the height of a building

undefined. D) Finding the shortest path between two points ✓

The correct answers are B) Calculating the distance between two cities on a map and D) Finding the shortest path between two points.

Create a real-world problem that involves using the distance formula, and provide a solution to the problem.

An example problem could involve calculating the distance between two locations for a delivery service, with a solution showing the application of the distance formula.