

The Distance Formula Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the primary purpose of the Distance Formula?

undefined. To calculate the area of a triangle

undefined. To find the distance between two points in a coordinate plane ✓

undefined. To determine the slope of a line

undefined. To measure the angle between two lines

The primary purpose of the Distance Formula is to find the distance between two points in a coordinate plane.

Which of the following are components of the Distance Formula?

undefined. Square root ✓

undefined. Coordinates of two points ✓

undefined. Slope of a line

undefined. Squaring operation ✓

The components of the Distance Formula include the square root, coordinates of two points, and the squaring operation.

Explain how the Distance Formula is derived from the Pythagorean theorem.

The Distance Formula is derived from the Pythagorean theorem by considering the distance between two points as the hypotenuse of a right triangle formed by the differences in their coordinates.

List the axes of a coordinate plane and describe their orientation.

1. What is the x-axis?

The x-axis is the horizontal line in a coordinate plane.

2. What is the y-axis?

The y-axis is the vertical line in a coordinate plane.

The axes of a coordinate plane are the x-axis (horizontal) and the y-axis (vertical).

Part 2: Comprehension and Application

In the Distance Formula $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$, what does d represent?

undefined. The midpoint between two points

undefined. The distance between two points ✓

undefined. The slope of the line connecting two points

undefined. The angle between two lines

In the Distance Formula, d represents the distance between two points.

Which of the following statements about the coordinate plane are true?

undefined. The x-axis is vertical

undefined. The y-axis is horizontal

undefined. Points are expressed as ordered pairs (x, y) ✓

undefined. The origin is where the x-axis and y-axis intersect ✓

The true statements about the coordinate plane include that the x-axis is horizontal, the y-axis is vertical, points are expressed as ordered pairs, and the origin is where the axes intersect.

Calculate the distance between the points $(2, -3)$ and $(-1, 5)$ using the Distance Formula. Show your work.

To calculate the distance, substitute the coordinates into the Distance Formula and simplify to find the distance.

If the coordinates of two points are $(3, 4)$ and $(7, 1)$, what is the distance between them?

undefined. 5

undefined. 6 ✓

undefined. 7

undefined. 8

The distance between the points (3, 4) and (7, 1) can be calculated using the Distance Formula.

Part 3: Analysis, Evaluation, and Creation

Which part of the Distance Formula ensures that the distance is always a positive value?

undefined. Subtraction of coordinates

undefined. Squaring of differences ✓

undefined. Addition of squares

undefined. Square root operation

The squaring of differences ensures that the distance is always a positive value.

When analyzing the Distance Formula, which mathematical operations are involved?

undefined. Addition ✓

undefined. Subtraction ✓

undefined. Multiplication

undefined. Division

The mathematical operations involved in the Distance Formula include addition, subtraction, and squaring.

Analyze how changing the coordinates of one point affects the calculated distance. Provide an example to illustrate your explanation.

Changing the coordinates of one point affects the calculated distance by altering the differences in the x and y values, which can increase or decrease the distance.

Which of the following best evaluates the importance of the Distance Formula in geometry?

undefined. It is only useful for simple calculations

undefined. It is essential for determining distances in coordinate geometry ✓

undefined. It is rarely used in practical applications

undefined. It is primarily used for theoretical purposes

The Distance Formula is essential for determining distances in coordinate geometry.

Imagine you are designing a game that involves moving characters on a grid. How could the Distance Formula be used in your game design?

undefined. To calculate the shortest path between two characters ✓

undefined. To determine the area covered by a character

undefined. To find the distance a character can move in one turn ✓

undefined. To measure the distance between a character and an obstacle ✓

The Distance Formula could be used to calculate the shortest path between characters, determine movement limits, and measure distances to obstacles.

Create a real-world problem that involves finding the distance between two points. Provide a solution using the Distance Formula.

A real-world problem could involve finding the distance between two locations on a map, and the solution would involve applying the Distance Formula to the coordinates of those locations.