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Midpoint Distance Formula Worksheet

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Part 1: Building a Foundation

What is the formula for finding the midpoint between two points (x_1, y_1) and (x_2, y_2)?

Hint: Consider the average of the x-coordinates and y-coordinates.

○ $(x_1 + x_2, y_1 + y_2)$
○ $(x_1 - x_2, y_1 - y_2)$
○ $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
○ $\left(\frac{x_1 - x_2}{2}, \frac{y_1 - y_2}{2}\right)$

What is the formula for finding the midpoint between two points (x_1, y_1) and (x_2, y_2)?

Hint: Consider how the coordinates are averaged.

○ $(x_1 + x_2, y_1 + y_2)$
○ $(x_1 - x_2, y_1 - y_2)$
○ $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
○ $\left(\frac{x_1 - x_2}{2}, \frac{y_1 - y_2}{2}\right)$

Which of the following are components of the distance formula?

Hint: Think about the operations involved in calculating distance.

☐ Subtraction of coordinates
☐ Division by two
☐ Squaring differences
☐ Square root of the sum

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Hint: Think about the operations involved in calculating distance.

☐ Subtraction of coordinates

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- ☐ Division by two
- ☐ Squaring differences
- ☐ Square root of the sum

Explain in your own words why the midpoint formula is useful in geometry.

Hint: Consider its applications in various geometric problems.

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Part 2: comprehension and Application

If the midpoint of a line segment is $(3, 4)$ and one endpoint is $(1, 2)$, what is the other endpoint?

Hint: Use the midpoint formula to find the missing endpoint.

- ○ (5, 6)
- ○ (4, 5)
- ○ (6, 8)
- ○ (7, 8)

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Hint: Use the midpoint formula to find the missing endpoint.

○ (5, 6)
○ (4, 5)
○ (6, 8)
○ (7, 8)

Which scenarios can the distance formula be applied to?

Hint: Think about real-world applications of distance.

☐ Calculating the length of a diagonal in a rectangle
☐ Finding the height of a triangle
☐ Measuring the distance between two cities on a map
☐ Determining the perimeter of a square

Which scenarios can the distance formula be applied to?

Hint: Think about different geometric shapes and measurements.

☐ Calculating the length of a diagonal in a rectangle
☐ Finding the height of a triangle
☐ Measuring the distance between two cities on a map
☐ Determining the perimeter of a square

Given points $(2, 3)$ and $(4, 7)$, what is the midpoint?

Hint: Use the midpoint formula to calculate the answer.

○ (3, 5)
○ (3, 6)
○ (2, 5)
○ (4, 5)

Given points $(2, 3)$ and $(4, 7)$, what is the midpoint?

Hint: Use the midpoint formula to find the answer.

○ (3, 5)
○ (3, 6)
○ (2, 5)
○ (4, 5)

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Calculate the distance between the points $(1, 1)$ and $(4, 5)$ using the distance formula. Show your work.

Hint: Remember to follow the steps of the distance formula.

Calculate the distance between the points $(1, 1)$ and $(4, 5)$ using the distance formula. Show your work.

Hint: Remember to apply the distance formula step by step.

Part 3: Analysis, Evaluation, and Creation

Which of the following statements is true about the midpoint and distance formulas?

Hint: Consider the operations involved in both formulas.

○ Both formulas require subtraction of coordinates.
○ The midpoint formula involves division, while the distance formula involves a square root.
○ Both formulas are used to find the length of a line segment.
○ The distance formula is only applicable in three-dimensional space.

Compare and contrast the midpoint and distance formulas in terms of their mathematical operations and applications.

Hint: Think about how each formula is derived and used.

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Compare and contrast the midpoint and distance formulas in terms of their mathematical operations and applications.

Hint: Think about how each formula is derived and used.

A student claims that the midpoint of $(2, 3)$ and $(6, 7)$ is $(4, 5)$. Is this correct?

Hint: Calculate the midpoint to verify the claim.

○ Yes, the calculation is correct.
○ No, the correct midpoint is $(3, 5)$.
○ No, the correct midpoint is $(4, 6)$.
○ No, the correct midpoint is $(5, 6)$.

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