

# Worksheet 08: Advanced Map Grid Operations

Use coordinates, distances, routes, and written justification.

## Part A: Coordinate Mission Planning

Coordinate map: HQ (2,3), Water Point (8,3), Observation Tower (8,10), Aid Station (1,9), Supply Depot (11,6), Checkpoint Echo (5,7). Move using grid units unless the question says otherwise.

1. Find the horizontal and vertical change from HQ to Observation Tower. Then find the total grid distance if movement is only north/south/east/west.

*Show your work / final answer:*

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2. Which two locations are closest if you use only horizontal/vertical movement? Show your comparison for at least two pairs.

*Show your work / final answer:*

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3. A route goes from HQ to Checkpoint Echo, then to the Aid Station, then to the Supply Depot. Find the total grid distance.

*Show your work / final answer:*

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4. The team wants to place a relay point exactly halfway between HQ (2,3) and Tower (8,10). What are the midpoint coordinates? What problem might this create on a grid map?

*Show your work / final answer:*

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**Extra workspace / final response:**

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## Part B: Explain and Defend

5. Choose the safest route from HQ to Supply Depot if the Water Point must be visited first. Explain your route using coordinates and directions.

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6. Write a clear radio-style instruction that guides someone from the Aid Station to the Observation Tower without using the word "there."

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7. Why can two routes have the same distance but different risk? Give a realistic example.

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**Extra workspace / final response:**

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