

The Missing First-Aid Box

Sports Day begins soon. The equipment store is at $A(2, 1)$ and the first-aid tent is at $B(6, 4)$. The route must be written as one exact vector.

THE MISSION

Choose and prove the route that moves the box from $A(2, 1)$ to $B(6, 4)$:
 $(4, 3)$, $(8, 5)$, or $(-4, -3)$.

Clear situation. Visible reasoning. A decision you can defend.

Before you begin

Name: _____ Class: _____ Date: _____

LEARNING GOALS

describe horizontal and vertical movement; find a vector using destination minus start; translate a point; add vectors and verify a route

The situation

Sports Day begins soon. The equipment store is at $A(2, 1)$ and the first-aid tent is at $B(6, 4)$. The route must be written as one exact vector.

What information is known, and what must you find?

Build the foundation

HORIZONTAL FIRST

Compare x-coordinates. Right is positive and left is negative.

VERTICAL SECOND

Compare y-coordinates. Up is positive and down is negative.

CHECK THE ROUTE

Add the vector to the starting point. The result must be the destination.

Explain the big idea in your own words.

Follow the worked reasoning

Find AB

A(2, 1) to B(6, 4): $(6 - 2, 4 - 1) = (4, 3)$.

Translate

R(-1, 2) + (5, -3) = (4, -1).

Combine

(3, 2) + (-1, 4) = (2, 6).

Now you try

1. Find the vector from P(1, 2) to Q(5, 7).

2. Translate T(3, -2) by (-4, 6).

3. Add the vectors (5, -1) and (-2, 3).

4. Explain why the order of the two components matters.

Final scenario challenge

YOUR DECISION

Choose and prove the route that moves the box from A(2, 1) to B(6, 4):
(4, 3), (8, 5), or (-4, -3).

Show your calculations.

Write a recommendation that uses your mathematics as evidence.
