

Vector Move Map

Find each movement from start to finish.

HIGH SCHOOL • HSN-VM.A.2

CCSS.Math.Content.HSN-VM.A.2 "(+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point."

NAME _____

DATE _____

SUBTRACT START FROM FINISH

A vector shows how to move from an initial point to a terminal point. Subtract the initial x-coordinate from the terminal x-coordinate, then subtract the initial y-coordinate from the terminal y-coordinate.

WORKED EXAMPLE

Find the components of vector AB if A(-3, 4) is the initial point and B(5, -2) is the terminal point.

1. Subtract the x-coordinates: $5 - (-3) = 8$.
2. Subtract the y-coordinates: $-2 - 4 = -6$.
3. Write the components in order: $\langle 8, -6 \rangle$.

Answer: $\langle 8, -6 \rangle$

PRACTICE 6 problems

- 1** Find the components of vector PQ if P(1, 7) and Q(9, 10).

ANSWER _____

- 2** Find the components of vector MN if M(-6, 2) and N(-1, 11).

ANSWER _____

- 3** Find the components of vector RS if R(12, -4) and S(3, 6).

ANSWER _____

- 4** Find the components of vector UV if U(0, 13) and V(-8, 1).

ANSWER _____

- 5** Find the components of vector AB if A(14, 9) and B(7, -5).

ANSWER _____

- 6** Find the components of vector CD if C(-10, -7) and D(2, -12).

ANSWER _____

APPLY IT Show your work

- 1** At a gaming tournament, a robot camera starts at coordinate $(6, -8)$ and finishes at coordinate $(15, 3)$. What are the components of the camera's movement vector?

WORK SPACE

ANSWER _____

- 2** A student tracks a bike ride on a coordinate map. The ride starts at $(-11, 16)$ and ends at $(8, 19)$. What is the displacement vector from the start to the end?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A drone's terminal point is $(26, -17)$. Its displacement vector from its initial point is $\langle 19, -8 \rangle$. Find the initial point. Explain how you know.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the components of vector PQ if P(1, 7) and Q(9, 10).	<8, 3>
2	Find the components of vector MN if M(-6, 2) and N(-1, 11).	<5, 9>
3	Find the components of vector RS if R(12, -4) and S(3, 6).	<-9, 10>
4	Find the components of vector UV if U(0, 13) and V(-8, 1).	<-8, -12>
5	Find the components of vector AB if A(14, 9) and B(7, -5).	<-7, -14>
6	Find the components of vector CD if C(-10, -7) and D(2, -12).	<12, -5>

PART 2 • APPLY IT

1. **<9, 11>** Subtract the starting coordinates from the finishing coordinates: $15 - 6 = 9$ and $3 - (-8) = 11$.
2. **<19, 3>** Subtract the start from the end: $8 - (-11) = 19$ and $19 - 16 = 3$.

CHALLENGE

Initial point: (7, -9). Since terminal - initial = displacement, the initial x-coordinate is $26 - 19 = 7$ and the initial y-coordinate is $-17 - (-8) = -9$.

Accept component notation such as $\langle 8, 3 \rangle$ or an ordered pair such as (8, 3) if the student clearly identifies it as a vector. Check that students subtract initial coordinates from terminal coordinates in the correct order.