LESSON MAKER PRO

Vector Move Lab

Combine directions with vector operations.

HIGH SCHOOL · MA.912.NSO.3

MA.912.NSO.3 "Represent and perform operations with vectors."

NAME _____ DATE _____

COMPONENT BY COMPONENT

Add or subtract vectors by working with the x-components together and the y-components together. To multiply a vector by a scalar, multiply both components by that scalar.

WORKED EXAMPLE

Find u + v if u = <14,-15> and v = <6,36>.

1. u + v = <14 + 6, -15 + 36>
2. u + v = <20,21>

Answer: <20,21>

PRACTICE 6 problems

1 Find <3,-5> + <-7,2>.

ANSWER _____

2 Find <5,8> - <-2,1>.

ANSWER _____

3 Find -4<2,-3>.

ANSWER _____

4 Find <7,3> + 2<-1,5>.

ANSWER _____

5 Point A is (-3,5) and point B is (4,-2). Find the vector from A to B.

ANSWER _____

6 Solve for x: 5<x,-2> = <10,-10>.

ANSWER _____

APPLY IT Show your work

1 In a video game, a character moves by vector <8,-2> and then by vector <-3,5>. What is the character's total movement vector?

WORK SPACE

ANSWER _____

2 A robotics team needs its robot to reach location <8,5>. The robot is currently at location <3,-2>. What movement vector should the team program next?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Let a = <4,-2> and b = <-3,5>. Find 2a + b. Explain in one sentence why you multiply a before adding b.

WORK SPACE AND ANSWER

ANSWER KEY # Vector Move Lab

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find <3,-5> + <-7,2>.	**<-4,-3>**
2	Find <5,8> - <-2,1>.	**<7,7>**
3	Find -4<2,-3>.	**<-8,12>**
4	Find <7,3> + 2<-1,5>.	**<5,13>**
5	Point A is (-3,5) and point B is (4,-2). Find the vector from A to B.	**<7,-7>**
6	Solve for x: 5<x,-2> = <10,-10>.	**x=2**

PART 2 · APPLY IT

1. **<5,3>** Add corresponding components: 8 + (-3) = 5 and -2 + 5 = 3.
2. **<5,7>** Subtract the current location from the target location: <8,5> - <3,-2> = <5,7>.

CHALLENGE

<5,1>. The scalar 2 multiplies both components of a before b is added.

Accept ordered-pair notation, such as (5, 3), in place of angle-bracket notation when the student clearly means a vector. For the challenge, accept equivalent one-sentence explanations that state the scalar multiplies both components before vector addition.