LESSON MAKER PRO

Vector Moves

Combine directions one component at a time.

HIGH SCHOOL · HSN-VM.B.4

CCSS.Math.Content.HSN-VM.B.4 "(+) Add and subtract vectors."

NAME _____ DATE _____

ADD BY COMPONENTS

To add vectors, add the x-components and add the y-components. To subtract a vector, add its opposite, which changes the sign of each component.

WORKED EXAMPLE

Find <17,-16> + <19,18>.

1. Add the x-components: 17 + 19 = 36.
2. Add the y-components: -16 + 18 = 2.
3. Write the sums in order: <36,2>.

Answer: <36,2>

PRACTICE 6 problems

1 Find <5,-8> + <9,4>.

ANSWER _____

2 Find <7,6> - <-3,10>.

ANSWER _____

3 Find <15,-7> + <-6,-5>.

ANSWER _____

4 Find <1,13> - <8,-9>.

ANSWER _____

5 Let a = <6,11> and b = <-4,7>. Find a - b.

ANSWER _____

6 Find <-10,3> - <5,-6>.

ANSWER _____

APPLY IT Show your work

1 On a map, positive x is east and positive y is north. At a music festival, a student walks <14,6> blocks from the main gate to a stage, then walks <-5,9> blocks to a food stand. What is the student's displacement from the main gate?

WORK SPACE

ANSWER _____

2 In a coding club, a robot begins at the origin. Its final displacement is <22,9> centimeters. Its first command moves it <7,-4> centimeters. What displacement must its next command make?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Compute <9,-11> - <-4,6> + <7,-4>. Explain why subtracting <-4,6> changes both signs before you combine the vectors.

WORK SPACE AND ANSWER

ANSWER KEY # Vector Moves

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find <5,-8> + <9,4>.	**<14,-4>**
2	Find <7,6> - <-3,10>.	**<10,-4>**
3	Find <15,-7> + <-6,-5>.	**<9,-12>**
4	Find <1,13> - <8,-9>.	**<-7,22>**
5	Let a = <6,11> and b = <-4,7>. Find a - b.	**<10,4>**
6	Find <-10,3> - <5,-6>.	**<-15,9>**

PART 2 · APPLY IT

1. **<9,15> blocks, or 9 blocks east and 15 blocks north** Add the displacements component by component: <14,6> + <-5,9> = <9,15>.
2. **<15,13> centimeters** Subtract the first displacement from the final displacement: <22,9> - <7,-4> = <15,13>.

CHALLENGE

<20,-21>. Subtracting a vector means adding its opposite, so -<-4,6> = <4,-6>. Then <9,-11> + <4,-6> + <7,-4> = <20,-21>.

Accept equivalent component-vector notation, including ordered pairs when the component order is clear. For word problems, accept the component vector alone or the vector with correct directional language.