LESSON MAKER PRO

Vector Stretch Lab

Scale every component with the same factor.

HIGH SCHOOL · HSN-VM.B.5

CCSS.Math.Content.HSN-VM.B.5 "(+) Multiply a vector by a scalar."

NAME _____ DATE _____

SCALE BOTH COMPONENTS

To multiply a vector by a scalar, multiply each component of the vector by that scalar. Keep the components in the same order, and pay close attention to the signs.

WORKED EXAMPLE

Find 4<11, -13>.

1. Multiply the first component: 4 x 11 = 44.
2. Multiply the second component: 4 x -13 = -52.
3. Write the new vector: <44, -52>.

Answer: <44, -52>

PRACTICE 6 problems

1 Find 3<6, -8>.

ANSWER _____

2 Find -1<-9, 16>.

ANSWER _____

3 Find 1/3<15, -21>.

ANSWER _____

4 Find 2/3<21, -30>.

ANSWER _____

5 Find -2<-18, 0>.

ANSWER _____

6 Let u = <3, -9>. Find -6u.

ANSWER _____

APPLY IT Show your work

1 In a video game, a player's move in one round is represented by the vector <-5, 12> squares. The player makes the same move for 6 rounds. What vector represents the total movement?

WORK SPACE

ANSWER _____

2 On a coordinate-plane stage map, a dancer moves <14, -3> feet during one transition. The dancer practices that same transition 8 times. What vector represents the total movement during those transitions?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find k if k<-6, 15> = <42, -105>. Explain how both components support your value of k.

WORK SPACE AND ANSWER

ANSWER KEY

Vector Stretch Lab

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find 3<6, -8>.	**<18, -24>**
2	Find -1<-9, 16>.	**<9, -16>**
3	Find 1/3<15, -21>.	**<5, -7>**
4	Find 2/3<21, -30>.	**<14, -20>**
5	Find -2<-18, 0>.	**<36, 0>**
6	Let u = <3, -9>. Find -6u.	**<-18, 54>**

PART 2 · APPLY IT

1. **<-30, 72>** Multiply each component of <-5, 12> by 6. The total movement vector is <-30, 72>.
2. **<112, -24>** Multiply each component of <14, -3> by 8. The total movement vector is <112, -24>.

CHALLENGE

k = -7, because -7 x -6 = 42 and -7 x 15 = -105.

Accept angle-bracket notation or equivalent column-vector notation. Require students to multiply both components by the scalar and preserve signs correctly.