

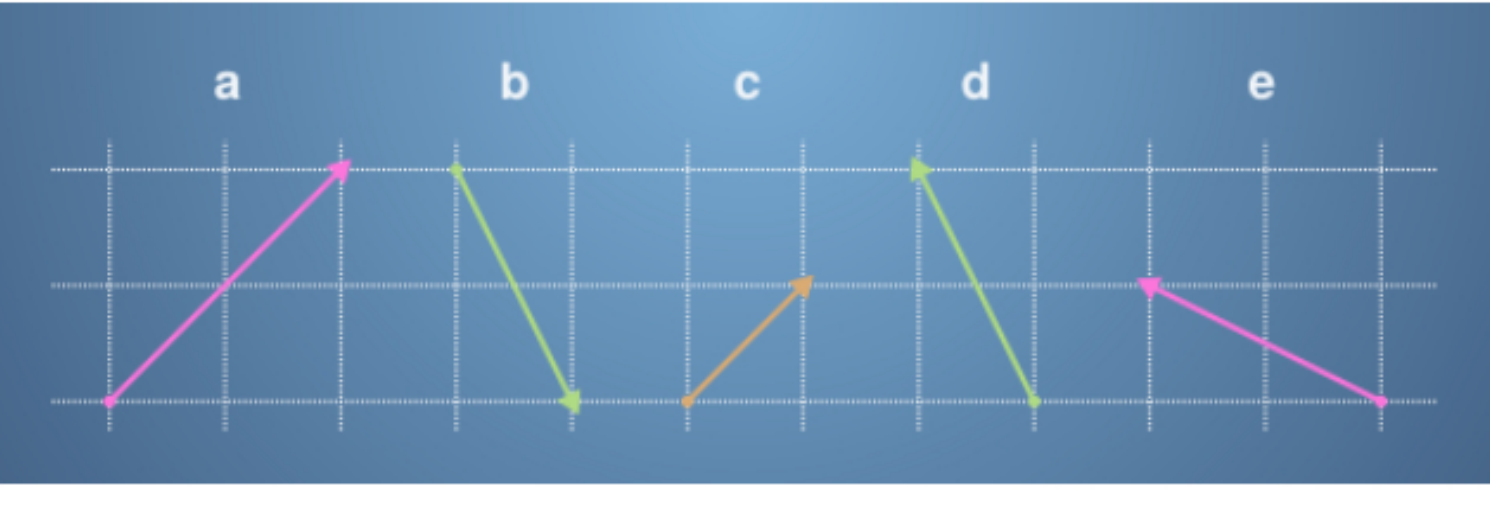
✔ Congratulations! You passed!

Grade received 100% To pass 80% or higher

Go to next item

1. This aim of this quiz is to familiarise yourself with vectors and some basic vector operations.1 / 1 point

For the following questions, the vectors **a**, **b**, **c**, **d** and **e** refer to those in this diagram:



The sides of each square on the grid are of length 1. What is the numerical representation of the vector **a**?

- ☐ $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$
- ☒ $\begin{bmatrix} 2 \\ 2 \end{bmatrix}$
- ☐ $\begin{bmatrix} 2 \\ 1 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 2 \end{bmatrix}$

✔ Correct

You can get the numerical representation by following the arrow along the grid.

2.1 / 1 point



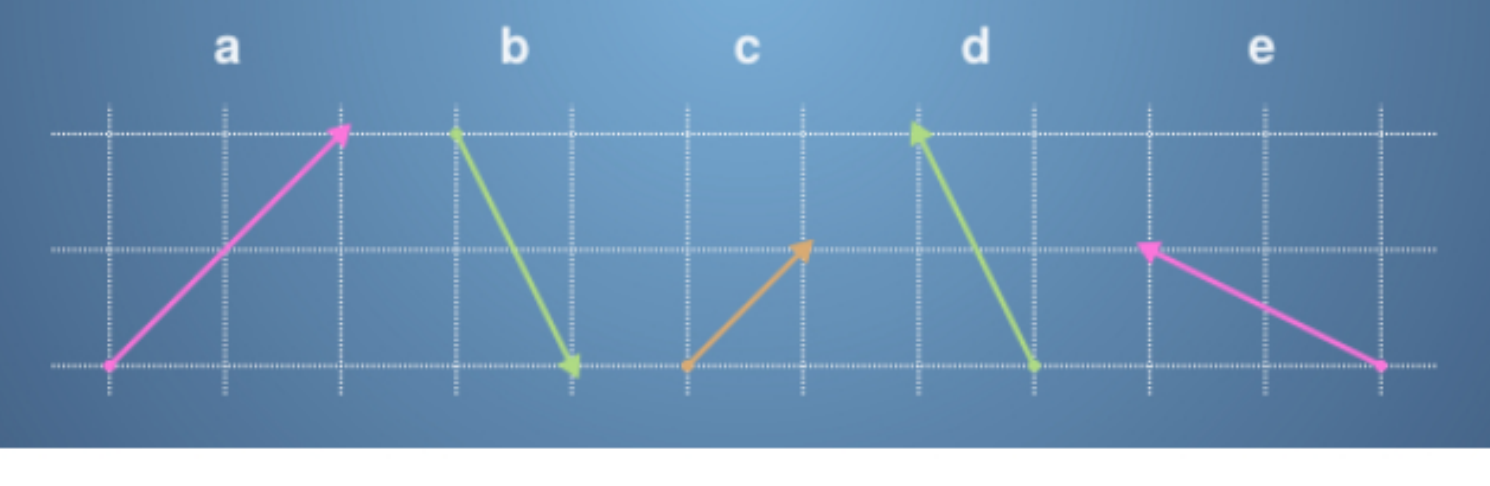
Which vector in the diagram corresponds to $\begin{bmatrix} -1 \\ 2 \end{bmatrix}$?

- ☐ Vector **a**
- ☐ Vector **b**
- ☐ Vector **c**
- ☒ Vector **d**

✔ Correct

You can get the numerical representation by following the arrow along the grid.

3.1 / 1 point



What vector is $2\mathbf{c}$?

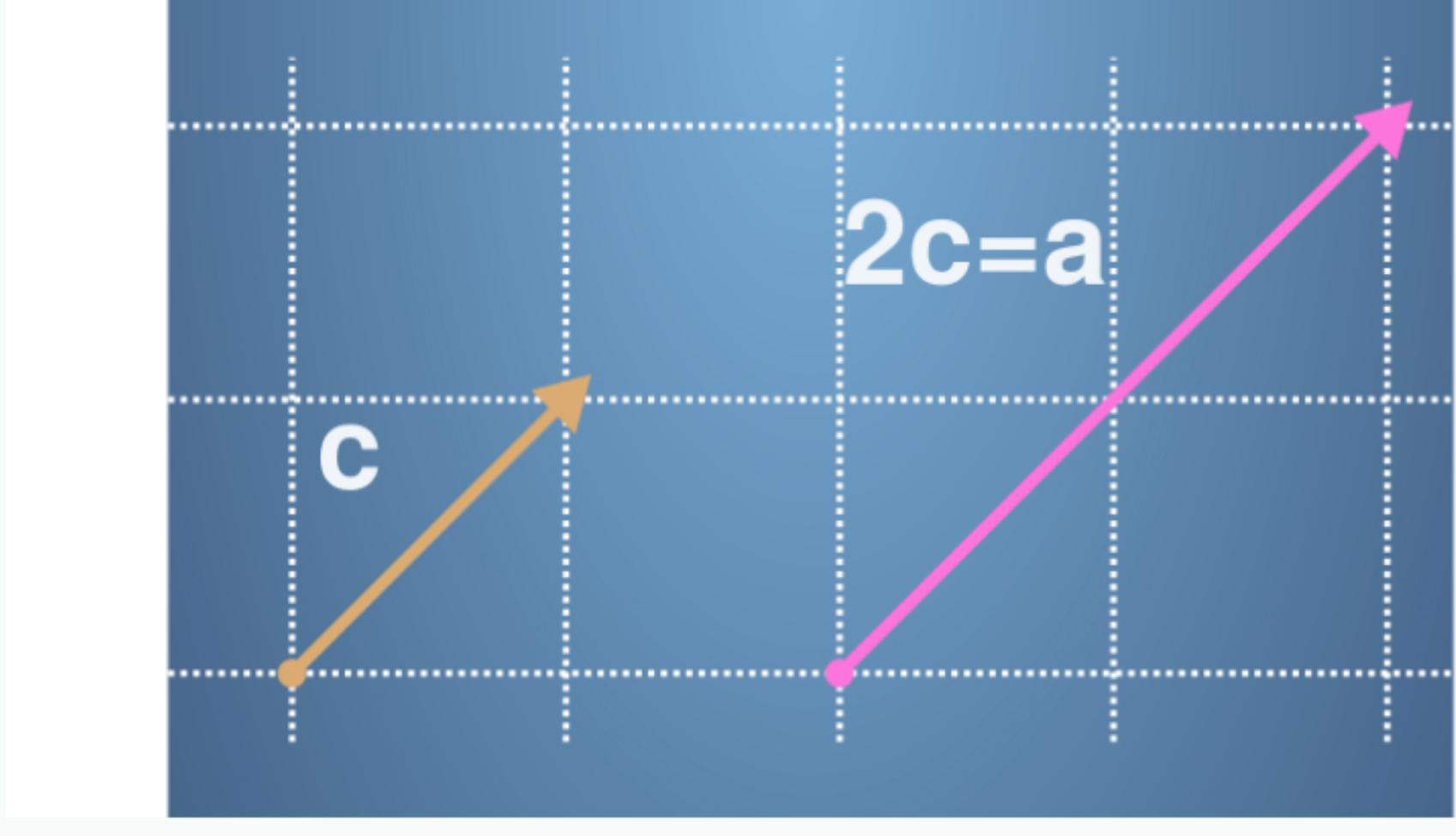
Please select all correct answers.

- ☐ $\begin{bmatrix} -2 \\ 2 \end{bmatrix}$

- ☒ **a**

✔ Correct

Multiplying by a positive scalar is like stretching out a vector in the same direction.



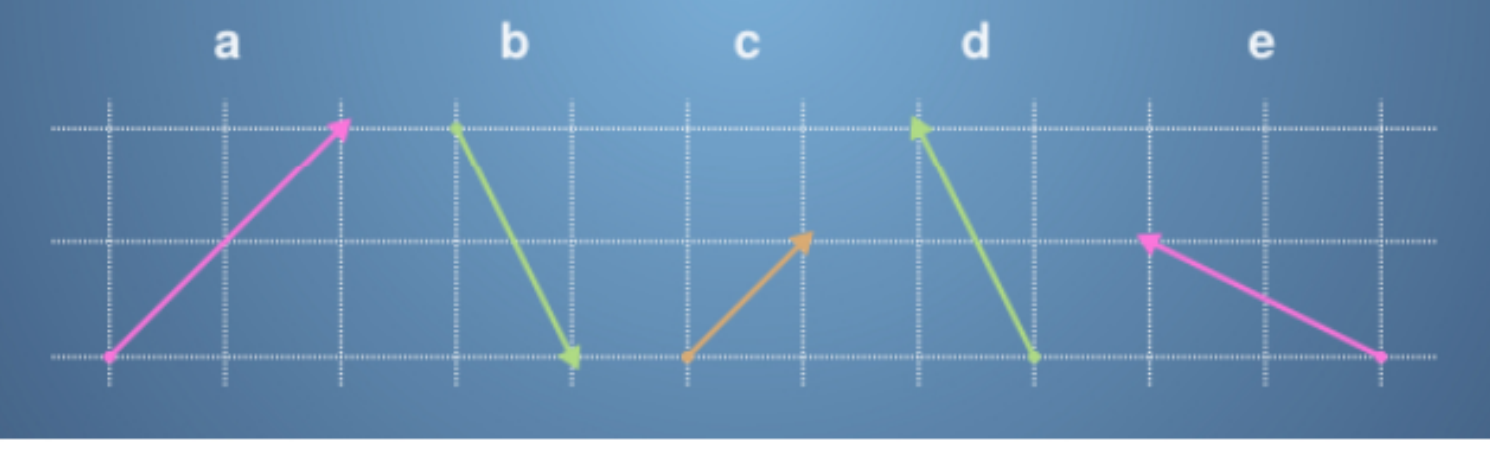
- ☒ $\begin{bmatrix} 2 \\ 2 \end{bmatrix}$

✔ Correct

A scalar multiple of a vector can be calculated by multiplying each component.

- ☐ **e**

4.1 / 1 point



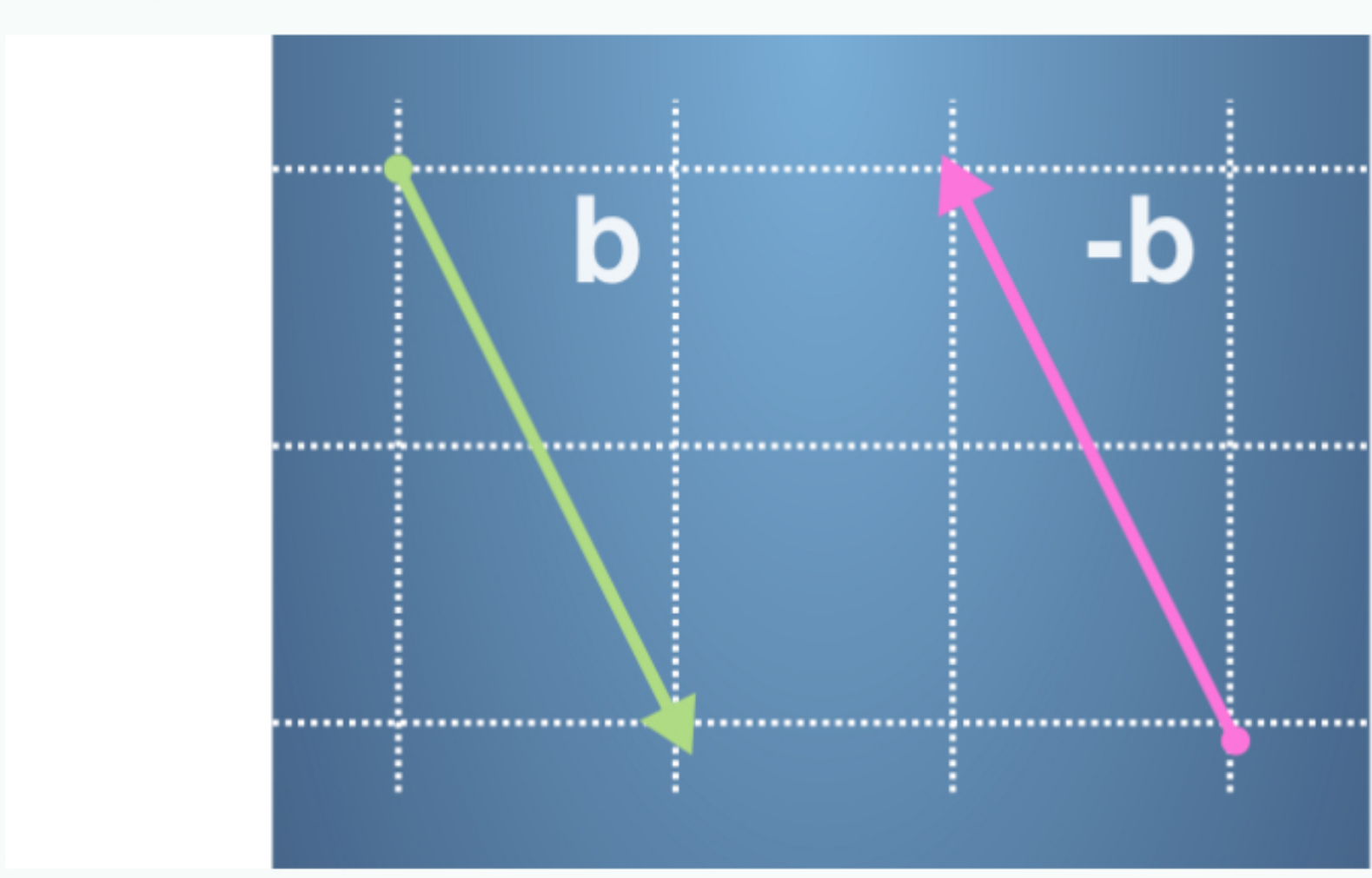
What vector is $-\mathbf{b}$?

Please select all correct answers.

- ☐ **e**
- ☒ **d**

✔ Correct

Multiplying by a negative number points the vector in the opposite direction.



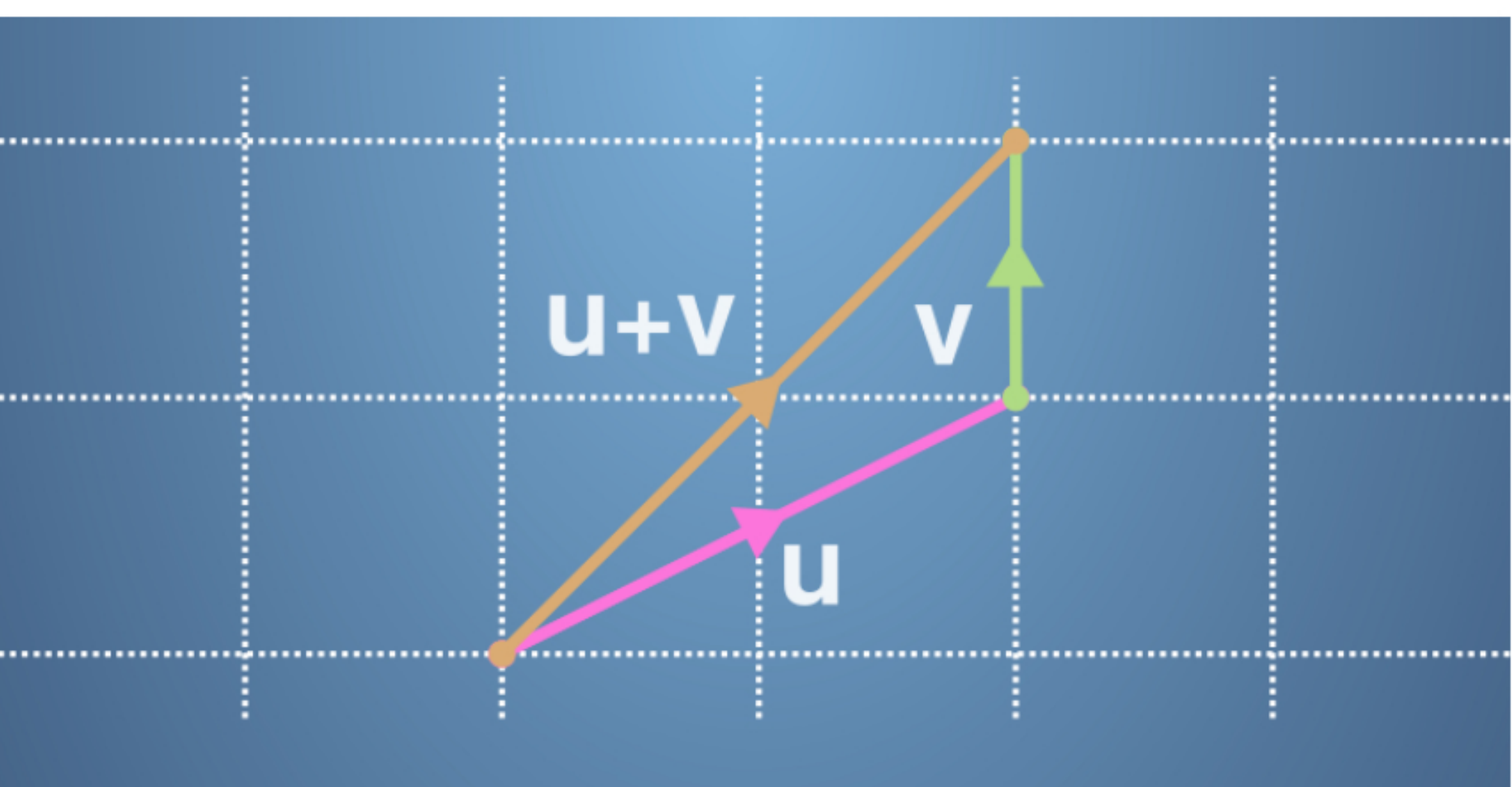
- ☒ $\begin{bmatrix} -1 \\ 2 \end{bmatrix}$

✔ Correct

A scalar multiple of a vector can be calculated by multiplying each component.

- ☐ $\begin{bmatrix} -2 \\ 1 \end{bmatrix}$

5. In the previous videos you saw that vectors can be added by placing them start-to-end. For example, the following diagram represents the sum of two new vectors, **u** + **v**:1 / 1 point



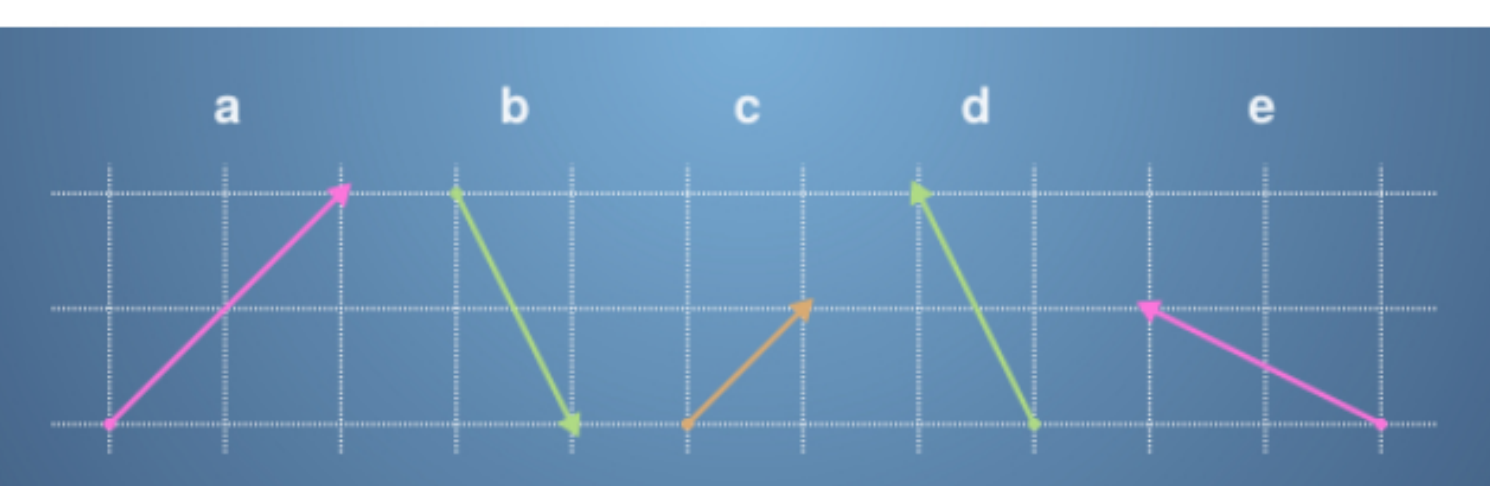
The sides of each square on the grid are still of length 1. Which of the following equations does the diagram represent?

- ☐ $\begin{bmatrix} 1 \\ 1 \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$
- ☒ $\begin{bmatrix} 2 \\ 1 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 2 \end{bmatrix} + \begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$

✔ Correct

We can see that summing the vectors by adding them start-to-end and adding up the individual components gives us the same answer.

6. Let's return to our vectors defined by the diagram below:1 / 1 point

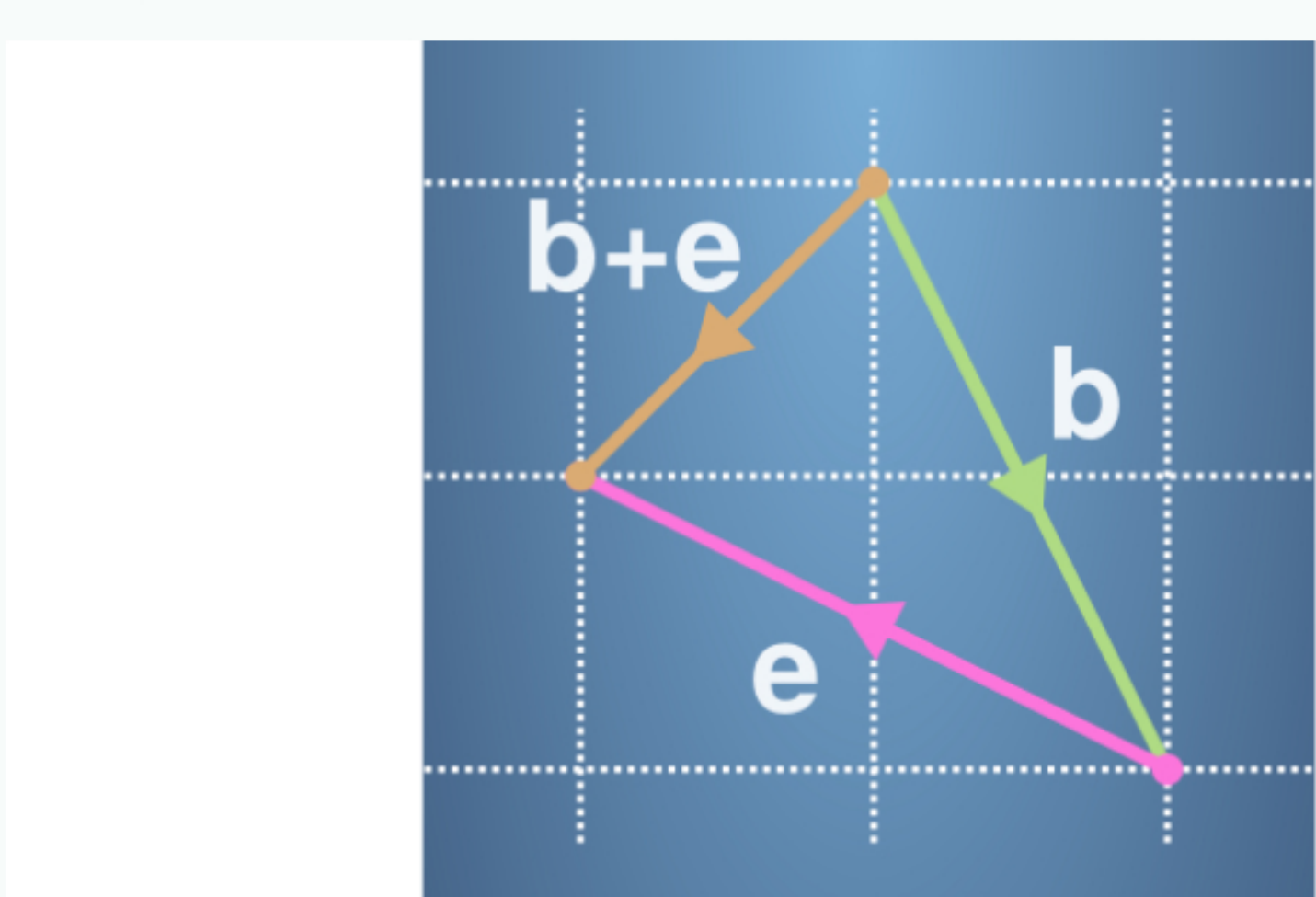


What is the vector $\mathbf{b} + \mathbf{e}$?

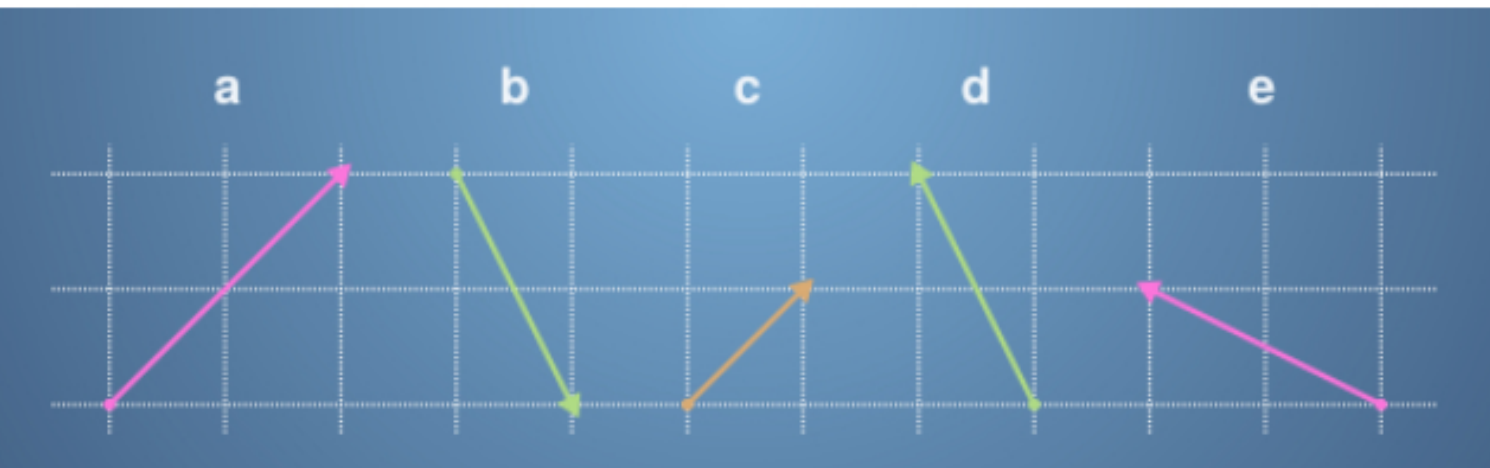
- ☐ $\begin{bmatrix} 2 \\ -1 \end{bmatrix}$
- ☐ $\begin{bmatrix} -1 \\ 2 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 3 \end{bmatrix}$
- ☒ $\begin{bmatrix} -1 \\ -1 \end{bmatrix}$

✔ Correct

Vectors are added together entry by entry. They can also be thought of as adding start to end, like in the following diagram:



7.1 / 1 point



What is the vector $\mathbf{d} - \mathbf{b}$?

- ☒ $\begin{bmatrix} -2 \\ 4 \end{bmatrix}$
- ☐ $\begin{bmatrix} 4 \\ -2 \end{bmatrix}$
- ☐ $\begin{bmatrix} -4 \\ 2 \end{bmatrix}$
- ☐ $\begin{bmatrix} 2 \\ -4 \end{bmatrix}$

✔ Correct

Remember that vectors add by attaching the end of one to the start of the other, and that multiplying by a negative number points the vector in the opposite direction.

