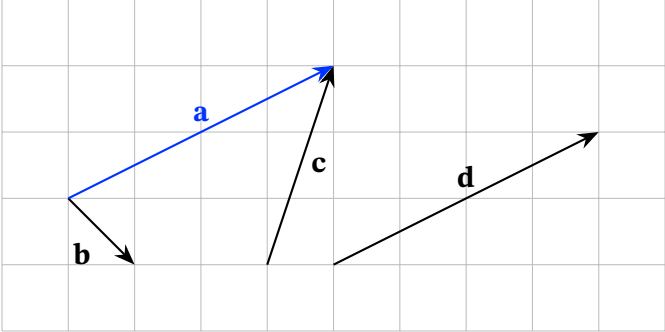


Worksheet: Scalars, Vectors, and Directed Line Segments



Q1: Which vector has the same direction as **a**?

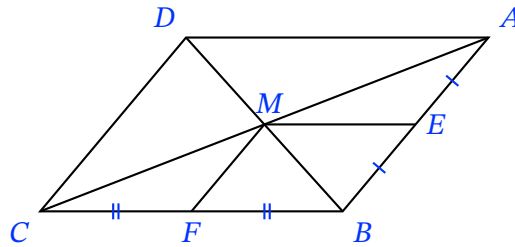


- A **d**
- B **c**
- C **b**

Q2: In the given parallelogram $ABCD$, $\overline{AC} \cap \overline{BD} = \{M\}$, E is the midpoint of \overline{AB} , and F is the midpoint of \overline{BC} . Complete the following: $\frac{1}{2}\overrightarrow{AC}$ is equivalent to ____.

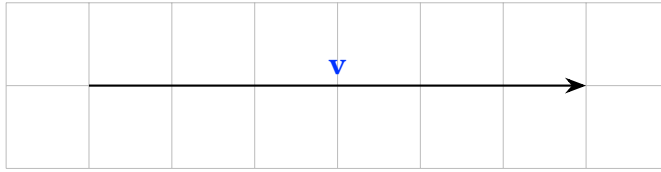


Question Video



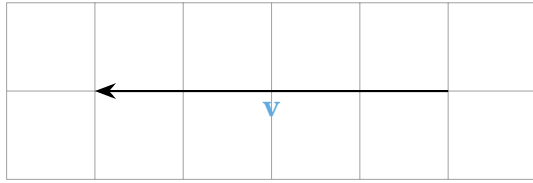
- A \overrightarrow{MA}
- B \overrightarrow{DM}
- C \overrightarrow{AM}
- D \overrightarrow{MD}

Q3: Find the components of the vector \mathbf{v} shown on the grid of unit squares below.



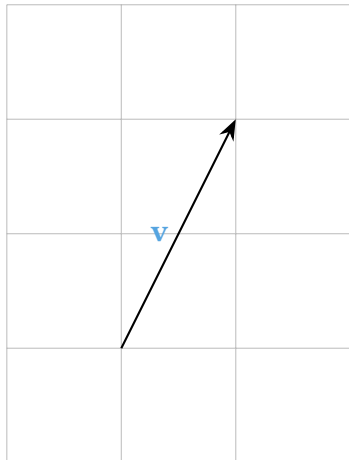
- A $\langle 0, 6 \rangle$
- B $\langle 0, -6 \rangle$
- C $\langle 6, 1 \rangle$
- D $\langle -6, 0 \rangle$
- E $\langle 6, 0 \rangle$

Q4: Find the magnitude of the vector \mathbf{v} shown on the grid of unit squares below.



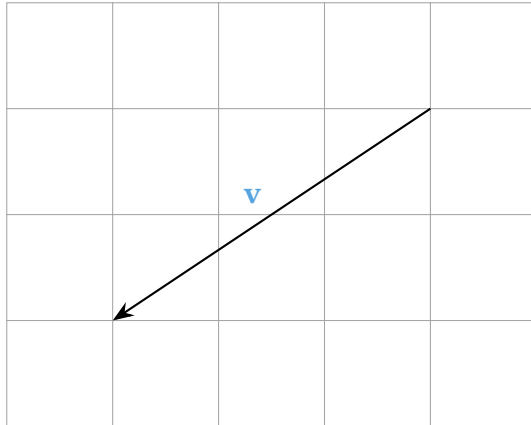
- A 8
- B 2
- C -4
- D 4
- E 16

Q5: Find the magnitude of the vector \mathbf{v} shown on the grid of unit squares below.



- A $\sqrt{2}$
- B $\sqrt{5}$
- C $\sqrt{3}$
- D 5
- E 9

Q6: Find the magnitude of the vector \mathbf{v} shown on the grid of unit squares below.

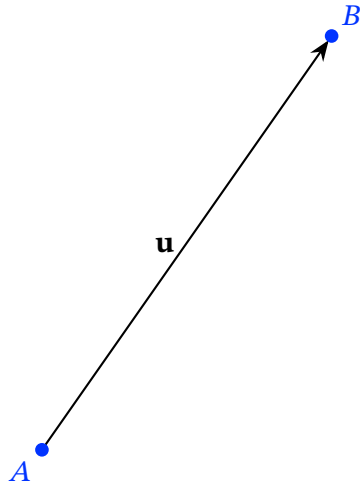


- A -2
- B $\sqrt{5}$
- C 13
- D $\sqrt{13}$
- E $\sqrt{3}$

Q7: Given that $ABCD$ is a square of side length 9 cm, determine the scalar product of $(2\overrightarrow{DB})$ and $(\frac{3}{5}\overrightarrow{BA})$.

- A -97.2
- B 97.2
- C -21.6
- D 21.6

Q8: The vector \mathbf{u} describes a translation from point A to point B .



Q8: What is another way of writing the vector \mathbf{u} ?

A \overrightarrow{AB}

B \mathbf{B}

C $-\overrightarrow{AB}$

D \mathbf{A}

E \overrightarrow{BA}

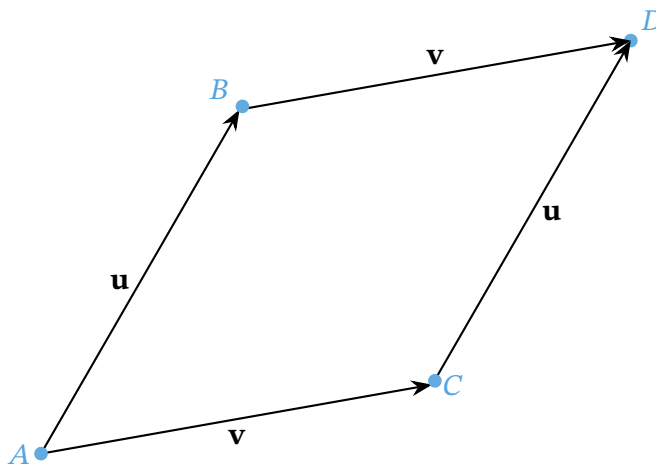
Q9: What is the terminal point of the vector \overrightarrow{AB} ?

- A $A + B$
- B A
- C $A - B$
- D $B - A$
- E B



Question Video

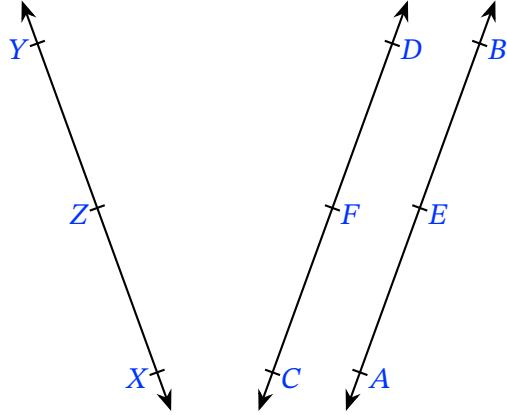
Q10: What shape is formed by these vectors?



Question Video

- A a square
- B a rhombus
- C a parallelogram
- D a kite
- E a rectangle

Q11: In the given figure, \overleftrightarrow{AB} and \overleftrightarrow{CD} are parallel lines; however, \overleftrightarrow{XY} is NOT parallel to either \overleftrightarrow{AB} or \overleftrightarrow{CD} . Given that $E \in \overleftrightarrow{AB}$, $F \in \overleftrightarrow{CD}$, and $Z \in \overleftrightarrow{XY}$, determine whether \overleftrightarrow{YZ} and \overleftrightarrow{XZ} are in the same, opposite, or different directions.

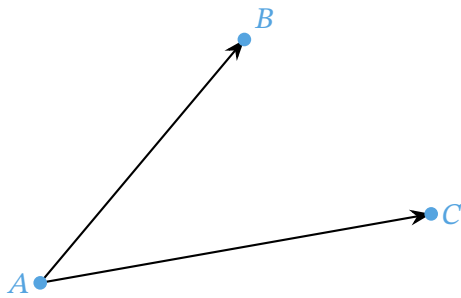


- A opposite
- B same
- C different

Q12: Given that $\mathbf{A} = \langle k, -4 \rangle$, $\mathbf{B} = \langle -4, m \rangle$, and $\mathbf{A} = 2\mathbf{B}$, determine the values of k and m .

- A $k = -8, m = 2$
- B $k = 8, m = 8$
- C $k = -8, m = -2$
- D $k = 8, m = -8$

Q13: The given diagram shows the vectors \overrightarrow{AB} and \overrightarrow{AC} .



Two more vectors are drawn: a vector equivalent to \overrightarrow{AC} with initial point B and a vector equivalent to \overrightarrow{AB} with initial point C .

What can you say about the terminal points of these vectors?

- A They lie on the angle bisector of $\angle BAC$.
- B They are the same distance from each other as B is from C .
- C They are the same point.
- D They are twice as far away from each other as B is from C .
- E They lie on the line \overleftrightarrow{BC} .

Q14: Select all the statements that must be true if \mathbf{u} and \mathbf{v} are equivalent vectors.

A The initial point of \mathbf{u} is the terminal point of \mathbf{v} .

B \mathbf{u} and \mathbf{v} have the same terminal point.

C \mathbf{u} and \mathbf{v} have the same initial point.

D The initial point of \mathbf{v} is the terminal point of \mathbf{u} .

E $|\mathbf{u}| = |\mathbf{v}|$