

Vectors in the Plane and in Space

Vector operations, vectors in space, and geometric interpretation.

Name _____ Date _____

32 main 2-up grid 2 pages

Completion Reward



Shown here as a small pack artifact, not a preview destination.

1. What information does a vector represent?

- A. Area and perimeter
- B. Magnitude and direction
- C. Angle only
- D. Slope only

2. What does the vector (3, -2) mean in the plane?

- A. 3 units right and 2 units down
- B. 2 units right and 3 units down
- C. 3 units left and 2 units up
- D. A point on the unit circle

3. How do you add vectors in component form?

- A. Add corresponding components
- B. Multiply corresponding components
- C. Add only the first components
- D. Average the components

4. What does multiplying a vector by 3 do?

- A. Adds 3 to each component
- B. Triples its components
- C. Changes only the direction but not the length
- D. Rotates it by 3 radians

5. What is special about a unit vector?

- A. Its components are always positive
- B. Its magnitude is 1
- C. It has no direction
- D. Its slope is 1

6. Which vector is i in the plane?

- A. (0, 1)
- B. (-1, 0)
- C. (0, -1)
- D. (1, 0)

7. Which vector is j in the plane?

- A. (1, 0)
- B. (0, 1)
- C. (0, -1)
- D. (-1, 0)

8. What is the position vector of the point (4, -3)?

- A. (4, -3)
- B. (1, 1)
- C. (-4, 3)
- D. (4, 3)

9. To find the magnitude of (3, 4), what is the best first step?

- A. Compute $3 + 4$
- B. Use $\sqrt{3^2 + 4^2}$
- C. Compute $3^2 + 4^2$ and stop there
- D. Average the two components

10. To find the vector from A(2, 1) to B(7, 5), what is the best first step?

- A. Subtract A from B coordinate by coordinate
- B. Add the coordinates
- C. Find the midpoint
- D. Convert to polar form first

11. A student says $(2, 3) + (4, -1) = (6, -3)$. What is wrong?

- A. They should multiply instead of add
- B. They added the second components incorrectly
- C. The first component should be 8
- D. Nothing is wrong

12. A student says $2(3, -4) = (5, -2)$. What is wrong?

- A. Only the first component should change
- B. The vector should be unchanged
- C. The sign should always become positive
- D. Each component should be multiplied by 2

13. Find the sum of (3, -2) and (4, 5). What is the first component of the result? Answer with a number.

14. Find the sum of (3, -2) and (4, 5). What is the second component of the result? Answer with a number.

15. Find the magnitude of (3, 4). Answer with a number.

16. Find the magnitude of (5, 12). Answer with a number.

17. Find the vector from (2, 1) to (7, 5). What is the first component? Answer with a number.

18. Find the vector from (2, 1) to (7, 5). What is the second component? Answer with a number.

19. For $3(2, -5)$, what is the second component? Answer with a number.

20. Find the magnitude of (2, 3, 6). Answer with a number.

21. Find the magnitude of (1, 2, 2). Answer with a number.

22. Find $(6, 1) - (2, 5)$. What is the first component? Answer with a number.

23. Find $(6, 1) - (2, 5)$. What is the second component? Answer with a number.

24. Find the x-coordinate of the midpoint of (2, 1) and (8, 5). Answer with a number.

25. Write $(2, 3) + (4, -1)$. Answer as an equation.

26. Write $(5, 1) - (2, 4)$. Answer as an equation.

27. Write $-2(3, -4)$. Answer as an equation.

28. Write the vector from $(1, 2)$ to $(6, 7)$. Answer as an equation.

29. Write $(1, 2, 3) + (4, -1, 5)$. Answer as an equation.

30. Write $3i - 2j$ in component form. Answer as an equation.

31. Which vector goes from $(1, 2)$ to $(5, -1)$?

- A. $(4, -3)$
- B. $(6, 1)$
- C. $(-4, 3)$
- D. $(5, -1)$

32. Which vector equals $-2(3, -1)$?

- A. $(6, -2)$
- B. $(-6, 2)$
- C. $(-1, 3)$
- D. $(1, -3)$