

PreCalculus
 Vectors Quiz Review

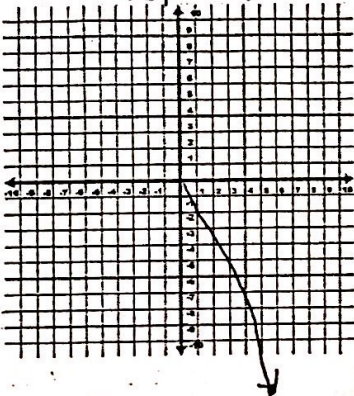
Name _____ Date _____

Draw the resultant vector with the given conditions.

$M = (-4, 6)$ $C = (2, -7)$ $H = (0, 6)$ $u = \langle -3, -1 \rangle$ $v = \langle 2, -8 \rangle$ $w = 4i + 8j$

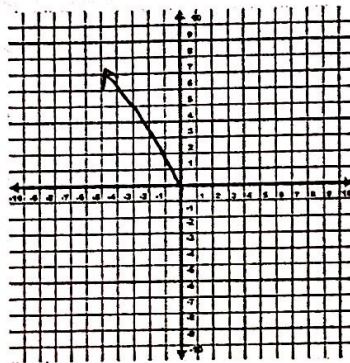
1. \overline{MC}

$\langle 2 - (-4), -7 - 6 \rangle$
 $\langle 6, -13 \rangle$



2. $u - v$

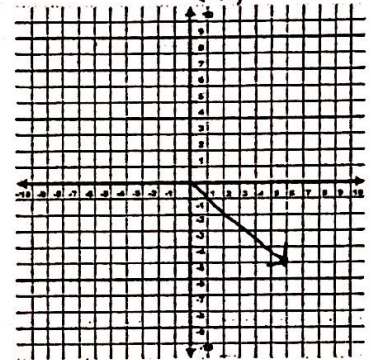
$\langle -3 - 2, -1 - (-8) \rangle$
 $\langle -5, 7 \rangle$



$\langle 2 - 0, -7 - 6 \rangle$

3. $\overline{HC} + w$

or
 $\langle 2, -13 \rangle + \langle 4, 8 \rangle$
 $\langle 6, -5 \rangle$



Determine the unit vector for the following vectors.

4. $v = \langle -5, 8 \rangle$ $\|v\| = \sqrt{89}$ 5. \overline{HM} where $H = (2, -2)$ and $M = (6, 1)$

$\|v\| = \sqrt{25 + 64} = \sqrt{89} = \frac{\sqrt{89}}{\sqrt{89}}$

$\langle 2 - 6, -2 - 1 \rangle$
 $\langle -4, -3 \rangle$ $\|HM\| = \sqrt{25} = 5$

$\langle -\frac{4}{5}, -\frac{3}{5} \rangle$

6. $w = 6i - 3j$

$\|w\| = 3\sqrt{5}$

$\langle \frac{2\sqrt{5}}{5}, \frac{\sqrt{5}}{5} \rangle$

Using the information provided, determine if the vectors are equal.

$v = 3j$ $w = 5i$ $P = (-1, 4)$ $Q = (6, 2)$ $R = (-3, 1)$ $S = (2, 4)$

7. $v + w$ and \overline{RS}

8. $u = \langle -7, 2 \rangle$ and \overline{PQ}

$5i + 3j$ $\langle 5, 3 \rangle$
 yes same mag
 + direction

no, diff directions

Determine each resultant using the following information: $u = \langle 2, 5 \rangle$ $v = \langle -1, 3 \rangle$ $w = \langle 9, -6 \rangle$

9. $u + v$

10. $\|w\|$

11. $u - 3w$

12. $(v - u) \cdot w$

$\langle 1, 8 \rangle$

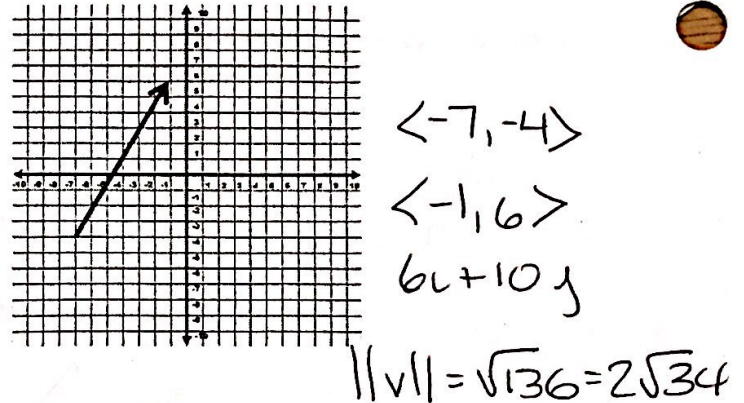
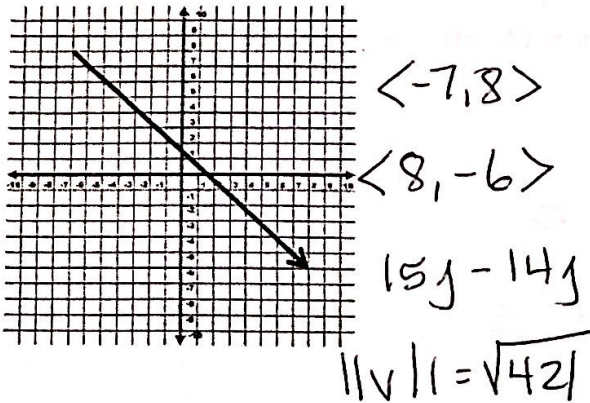
$\sqrt{117}$

$\langle -25, 23 \rangle$

$\langle -3, -2 \rangle \cdot \langle 9, -6 \rangle$

$= -15$

13. Write the graphed vector in $ai + bj$ form and determine its magnitude.



14. Determine $u \cdot v$ if $u = \langle 3, -4 \rangle$ and $v = \langle 6, 2 \rangle$.

10

15. Determine $v \cdot u$ if $u = \langle -1, 4 \rangle$ and $v = \langle 8, 2 \rangle$.

0

16. Determine the angle between the vectors if $u = \langle -7, 9 \rangle$ and $v = \langle 4, -5 \rangle$

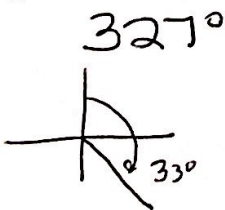
$\theta = \cos^{-1} \left(\frac{-73}{\sqrt{130} \cdot 41} \right)$ $\theta = 179.215^\circ$

17. Determine the angle between the vectors if $u = \langle 6, 0 \rangle$ and $v = \langle 0, -3 \rangle$

$\theta = \cos^{-1} \left(\frac{0}{36 \cdot 9} \right)$ $\theta = 90^\circ$

Write the angle in standard form

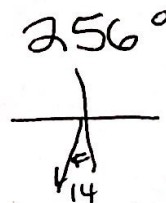
18. Bearing 123°



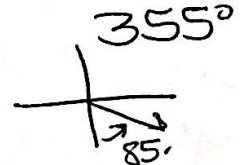
19. N48°W



20. S14°W



21. S85°E



Write each vector given its magnitude and direction in component ($ai + bj$) form.

22. speed = 39 m/s at 73° from the horizontal

23. speed = 39 m/s at N12°E

$V = 39 \cos 73^\circ i + 39 \sin 73^\circ j$

$V = 39 \cos 18^\circ i + 39 \sin 18^\circ j$