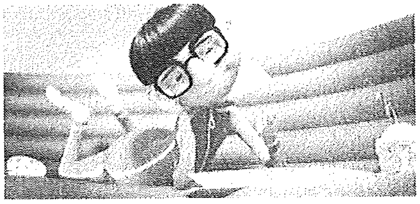
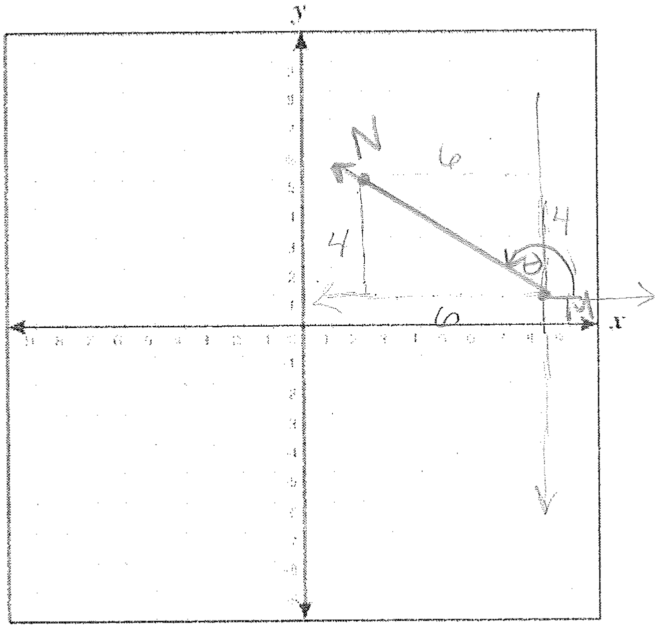


Name: ______________________________

Vector Practice

Find the component form, magnitude and direction for $\overrightarrow{MN}$.

1. M(8,1) and N(2,5)



Component Form:

$\langle 2-8, 5-1 \rangle = \langle -6, 4 \rangle$

Magnitude:

$6^2 + 4^2 = x^2$

$36 + 16 = x^2$

$52 = x^2$

$\sqrt{52}$

$\sqrt{4}\ \sqrt{13}$

2

$\boxed{x = 2\sqrt{13}}$

Direction:

$\theta + 90 =$ direction

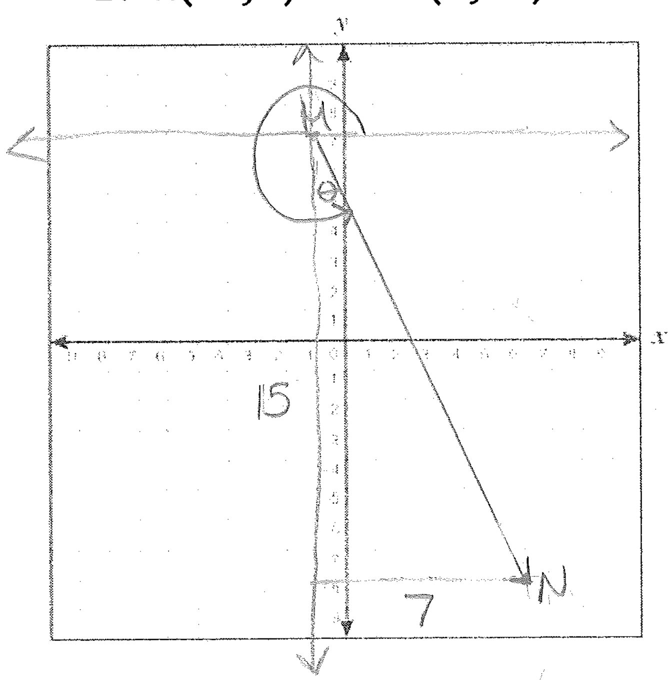
$\tan\theta = \frac{opp}{adj}$

$\tan\theta = \frac{6}{4}$

$\theta = \tan^{-1}\left(\frac{6}{4}\right) = 56.31$

$\boxed{146°}$

2. M(-1,7) and N(6,-8)



Component Form:

$\langle 6-(-1), -8-7 \rangle = \langle 6+1, -8-7 \rangle$

$= \langle 7, -15 \rangle$

Magnitude:

$15^2 + 7^2 = x^2$

$225 + 49 = x^2$

$274 = x^2$

$\sqrt{274}$

Direction:

$270 + \theta$

$\tan\theta = \frac{7}{15}$

$\theta = \tan^{-1}\left(\frac{7}{15}\right) = 25°$

$\boxed{295°}$

3. Find the magnitude and the direction of $\vec{v} = \langle 12, -9 \rangle$

Magnitude:

$12^2 + (-9)^2 = x^2$

$144 + 81 = 225 = x^2$

$\boxed{x = 15}$

Direction: $270 + \theta$ b/c of negative 9 (y's go ↓)

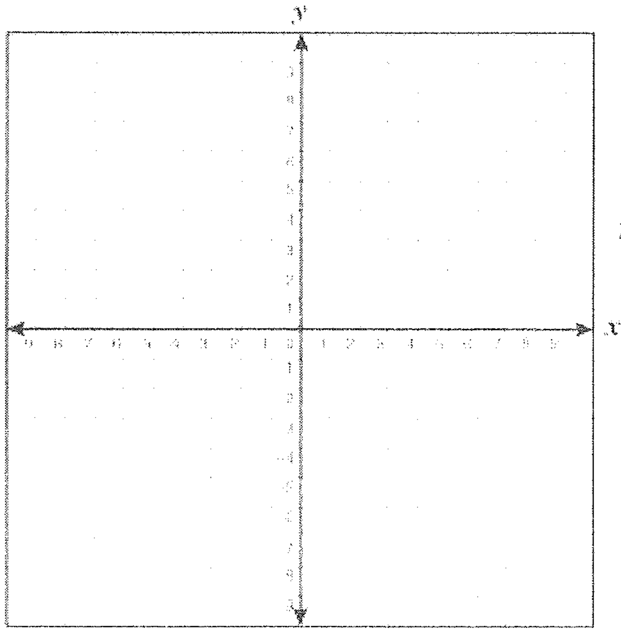
$\tan\theta = \frac{opp}{adj}$

$\theta = \tan^{-1}\left(\frac{12}{9}\right) = 53°$

$270 + 53 = \boxed{323°}$

No translations!

4. Graph ΔABC with vertices A(2,-1), B(-7,-2) and C(-2,8) under the translation $\vec{v} = \langle -1, -4 \rangle$. ***<u>This means:</u>***



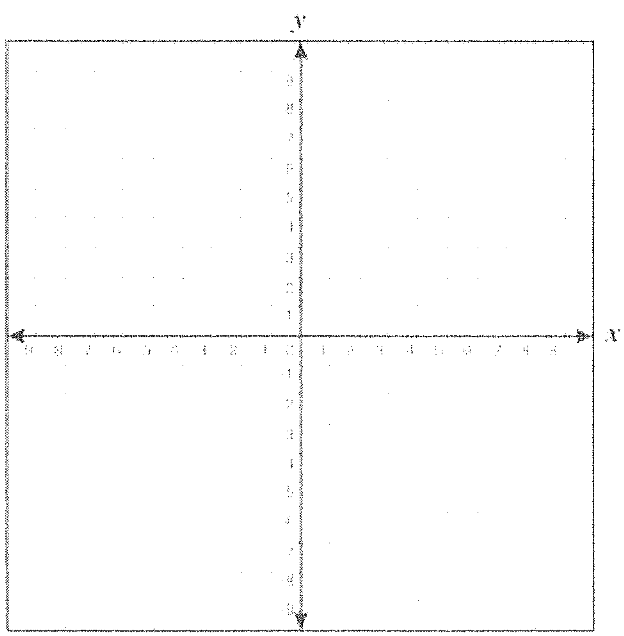
$(x, y) \rightarrow (x-1, y-4)$

$A(2,-1) \rightarrow A'(1,-5)$

$B(-7,-2) \rightarrow B'(-8,-6)$

$C(-2,8) \rightarrow C'(-3,4)$

5. Graph ΔXYZ with vertices X(2,5), Y(1,1) and Z(5,1) under the translation $\vec{v} = \langle 2, 3 \rangle$. ***<u>This means:</u>***



$(x, y) \rightarrow (x+2, y+3)$

$X(2,5) \rightarrow X'(4,8)$

$Y(1,1) \rightarrow Y'(3,4)$

$Z(5,1) \rightarrow Z'(7,4)$