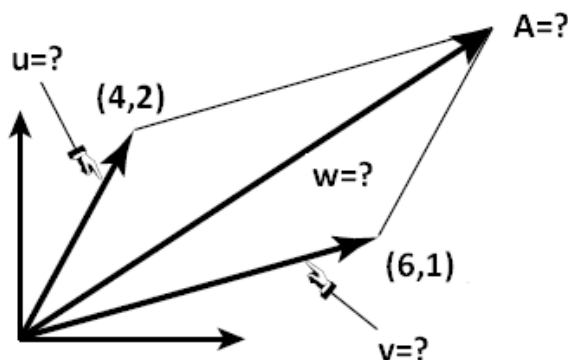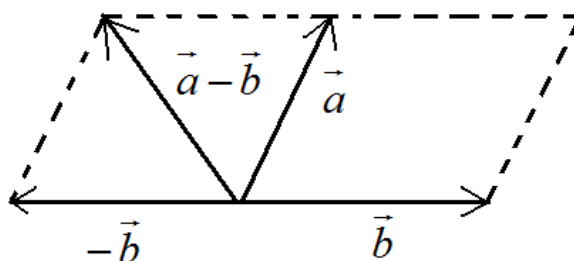**Name:** _____

Vectors in the Plane

Exercise 1: Given the two points (4,2) and (6,1), answer the questions below:

1. Find the component form and length of a vector v
2. Find the component form and length of a vector u
3. Find the component form and length of a vector w
4. Find the coordinates of the point A.

Exercise 2: Given the diagram below with $\vec{a}\langle 4,10\rangle, -\vec{b}\langle -8,4\rangle$

1) Find $\vec{a} - \vec{b}$
2) Find $\vec{b}$
3) Find $\vec{a} + \vec{b}$
4) Is it true that $\vec{a} + \vec{b} = -\left(\vec{a} + \vec{b}\right)$
5) Is it true that the difference $\vec{b} - \vec{a}$ could be introduced as the sum of $\vec{b} + (-\vec{a})$

Exercise 3: Find the component form of v where $u = 2i - j$ and $w = i + 2j$:

1) $v = \dfrac{3}{2}u$

2) $v = \dfrac{3}{4}w$

3) $v = u + 3w$

4) $v = -u + w$

5) $v = u - 3w$

6) $v = -2u - 5w$

7) $v = \dfrac{1}{2}\left(3u + w\right)$

8) $v = \dfrac{1}{3}\left(4u + 5w\right)$

Grade 10