

1. a)

$$\vec{v} = 15 \text{ m/s @ } 100^\circ$$

$$-2.5 \vec{v} = -37.5 \text{ m/s @ } 100^\circ$$

$$= 37.5 \text{ m/s @ } 280^\circ$$

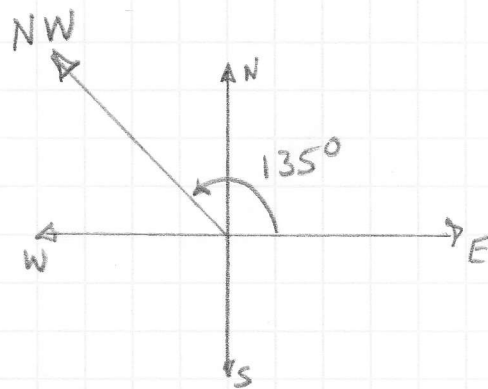
$$\boxed{\vec{b}}$$

$$b) \vec{F} = 11.27 \text{ N NW}$$

$$8\vec{F} = 90.16 \text{ N NW}$$

$$= 90.16 \text{ N @ } 135^\circ$$

$$\boxed{\vec{a}}$$



$$2. \vec{v} = (-4 \text{ km/h}, 7 \text{ km/h})$$

$$v_x = -4 \text{ km/h} \quad v_y = 7 \text{ km/h}$$

$$a) \vec{v}' = 1.5 \vec{v}$$

$$v'_x = 1.5(-4 \text{ km/h}) = -6 \text{ km/h}$$

$$v'_y = 1.5(7 \text{ km/h}) = 10.5 \text{ km/h}$$

$$\boxed{v'_x = -6 \text{ km/h}}$$

$$\boxed{v'_y = 10.5 \text{ km/h}}$$

$$b) \vec{v}' = -0.8 \vec{v}$$

$$v'_x = -0.8(-4 \text{ km/h}) = 3.2 \text{ km/h}$$

$$v'_y = -0.8(7 \text{ km/h}) = -5.6 \text{ km/h}$$

$$\boxed{v'_x = 3.2 \text{ km/h}}$$

$$\boxed{v'_y = -5.6 \text{ km/h}}$$

$$c) \vec{v}' = \left(\frac{3}{5}\right) \vec{v}$$

$$v'_x = \left(\frac{3}{5}\right)(-4 \text{ km/h}) = -2.4 \text{ km/h}$$

$$v'_y = \left(\frac{3}{5}\right)(7 \text{ km/h}) = 4.2 \text{ km/h}$$

$$\boxed{v'_x = -2.4 \text{ km/h}}$$

$$\boxed{v'_y = 4.2 \text{ km/h}}$$