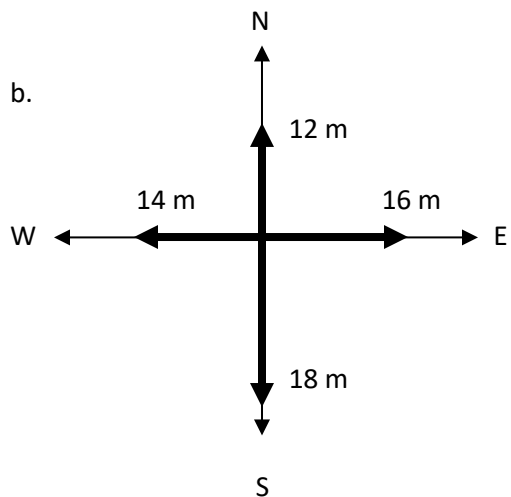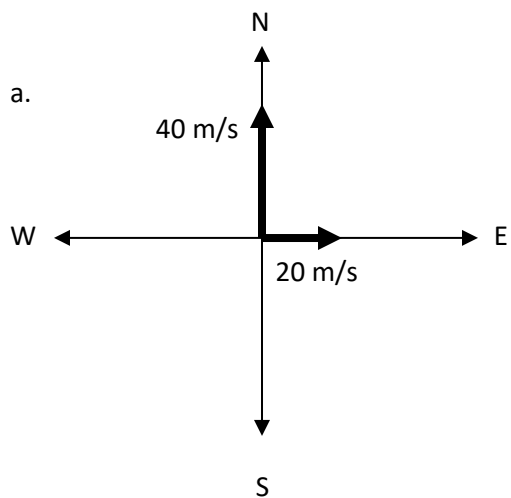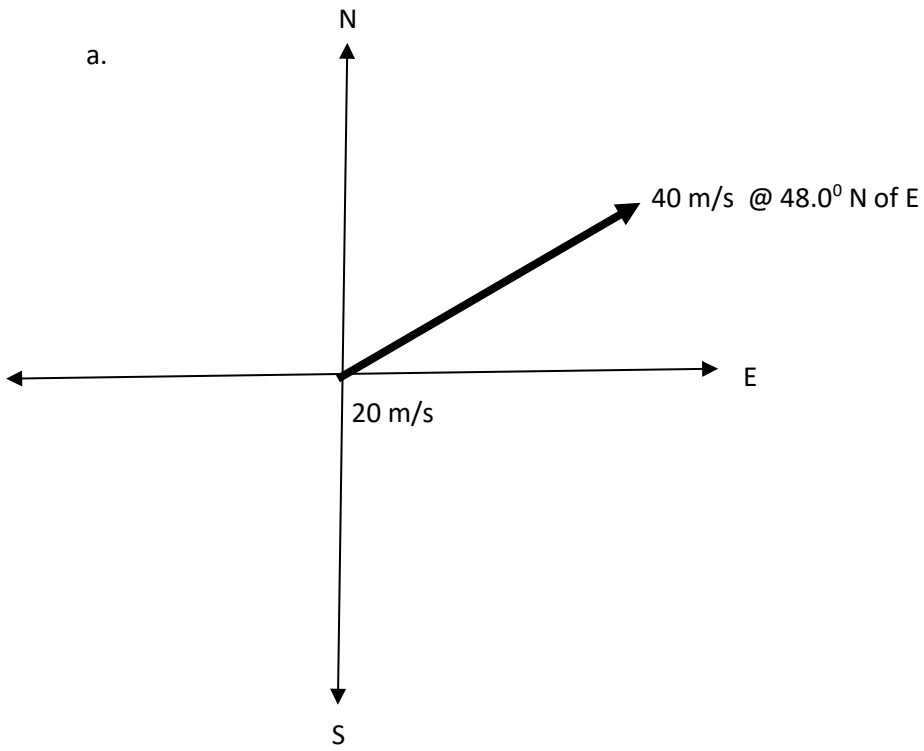1. Sketch (draw) the resultant in each of the following resultants AND calculate the <u>magnitude</u> and <u>direction </u>of the resultant. Circle your final answer. 4 pts each
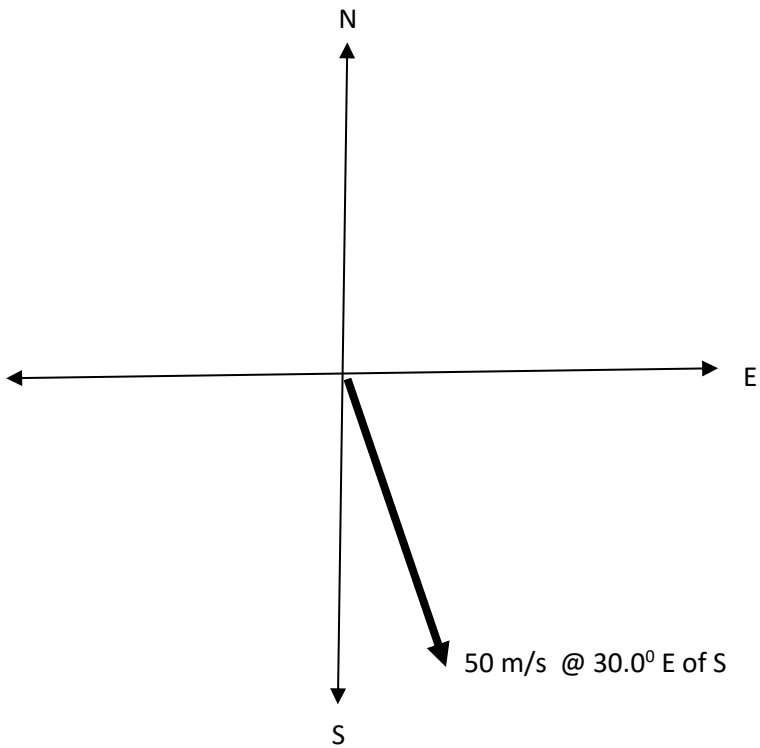
a.

40 m/s

20 m/s

b.

12 m

14 m

16 m

18 m

2. Calculate the "X" and "Y" components of each of the following, show your work!! Draw each of the components. 4 pts. each

a.

N

40 m/s @ 48.0^0 N of E
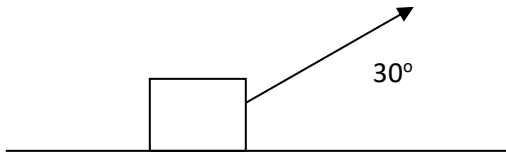
E

20 m/s

S

b.

N

E

50 m/s @ 30.0^0 E of S

S

3. A force of 500 Newtons (represented by the arrow coming from the box) is applied along a towrope held at 30 degrees above the horizontal to pull a box across a floor as shown below in the diagram.

    a. Draw the x and y components of the pull force on the diagram below. 1 pt

    b. Calculate the component of the force that actually causes the box to move (horizontal component)2pts

> 433 N

30°

4. A plane heads at an angle of 40° West of North at a speed of 150 m/s.

    a. Draw the vector representing the plane's flight and show the westward and northward components of it's velocity. 1 pt.

    b. Calculate the westward and northward components of the plane's velocity. 2 pts

> 96.4 m/s West

5. A rocket hits the ground at an angle of 60° from the horizontal at a speed of 300 m/s.

    a. Draw the vector representing the rocket's impact and show the westward and eastward components of it's velocity. 1 pt.

    b. Calculate the horizontal and vertical components of the rocket's impact velocity.2pts

> 150 m/s
> horizontal