More Vector Review

1.) Add the following vectors:

a.) $20\frac{m}{s}$ at 40° S of E and $15\frac{m}{s}$ at 30° N of E

b.) 15 N at 30° W of N and 24 N at 12° E of S.

2.) A boat crosses a 100 m wide river flowing East at $5.0\frac{m}{s}$. If the boat is aimed due north and its motor can achieve a speed of $8.0\frac{m}{s}$ in still water, determine the velocity as viewed from shore, and distance downstream the boat is when it reaches the other bank.

3.) A plane is seen from the ground to be traveling at $120\frac{m}{s}$ and 30° N of E. If the wind is measured to be $30\frac{m}{s}$ at 70° E of S then find the aircraft's heading and speed in the air.

4.) **A change in any vector is a vector subtraction**. If a car is seen traveling north at $10\frac{m}{s}$ and later viewed going east at $12\frac{m}{s}$ what was the change in its velocity?

Answers – 1a.) $28.8\frac{m}{s}$ at 11° S of E   1b.) 10.6 N at 76.6° S of W   2.) $9.4\frac{m}{s}$ at 32° E of N and the boat arrives 62.5 m downstream [east]
    3.) $103\frac{m}{s}$ at 47° E of N   4.) $15.62\frac{m}{s}$ at 40° S of E