

Worksheet 2
Adding and Subtracting Linear and Perpendicular Vectors

1. What is the opposite of the following directions?
A. [S 46° W] B. [E 60° N]
2. What is another way of expressing the following directions?
A. [N 35° E] B. 75° NW
3. Using a scale diagram, add the following vectors to determine the resultant displacement.

A. 3.0 m [E] and 5.0 m [N]
B. 15.0 m [S] and 20.0 m [W]
C. 8.0m [S] and 4.0 m [E]
D. 3.5 m [E] and 6.5 m [N] and 2.0 m [S]
F. 2.5 m [N], 5.0 m [S] and 5.0 m [E]
4. A person walks 5.8 km [N], 4.0 km [E] and finally 3.0 km [S] in 2.8 hours. Find the person's resultant displacement and average velocity. (Use Pythagorean Theorem and Trigonometry)
5. A. Find the displacement of an airplane that flies 340 km [W], then 120 km [S] and then 220 km [E] in 3.00 hours. Then find the plane's average speed and average velocity. (Use Pythagorean Theorem and Trigonometry)

B. What direction and distance would they have to fly in order to return where they started?
6. Determine the resultant of the following vectors: 12 km [N], 25 km [W] and 46 km [S]. (Use Pythagorean Theorem and Trigonometry)
7. Two displacement vectors are 30.0 m [S] and 30.0 m [E]. Compute the resultant vector. (Use Pythagorean Theorem and Right Triangle Trigonometry)
8. A hiker leaves camp, and using a compass, walks 4.0 km [E], 6.0 km [W], 3.0 km [E], 5.0 km [N], 10.0 km [W], 8.0 km [N] and 3.0 km [S]. At the end of 3 days, the hiker is lost. By drawing a diagram, compute how far the hiker is from camp and which direction should be taken to get back to camp. (Use Pythagorean Theorem and Right Triangle Trigonometry)
9. An explorer walks 13 km due east then 18 km [N] and finally 3 km [W] in 7.0 hours.
A) What is the resultant displacement of the explorer from the starting point?
B) What is the explorer's average speed?
C) What is his average velocity?