

Chapter 1 Linear Motion

Example Problems

2.1 Resultant of Vectors

E1. A car is driven 125 km due west, then 65 km due south. Calculate is the magnitude of its displacement in kilometers.

Draw a picture

Show your work

a) _____ ← units

E2. An airplane flies due south at 175 km/h with respect to the air. There is a wind blowing at 85 km/h to the east relative to the ground. What are the plane’s speed with respect to the ground in kilometers per hour?

Draw a picture

Show your work

a) _____ ← units

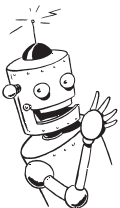
E3. You row a boat perpendicular to the shore of a river that flows at 3.0 m/s. The Velocity of your boat is 4.0 m/s relative to the water. Calculate the velocity of your boat relative to the shore.

Draw a picture

Show your work

a) _____ ← units

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E4. A motorboat heads across a river at 10 m/s relative to the water. The river is flowing north at 6.0 m/s. Calculate the velocity of the motorboat with respect to the shore.

Draw a picture

Show your work

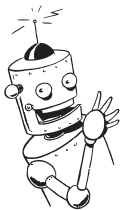
a) _____ ← units

E5. A monkey walks 150 meters due east and then walks 30 meters due west. The entire trip takes the monkey 10 minutes. Determine the magnitude of the average velocity of the monkey during this 10 minutes interval

Draw a picture

Show your work

a) _____ ← units



Chapter 1 Linear Motion

Student Problems

2.1 Resultant of Vectors

1. A monkey drives 68.0 km due west, then turns and travels 127.0 km due south. What is the magnitude of its displacement in kilometers?

Draw a picture

Show your work

a) _____ ← units

2. An airplane flies due north at 350 km/h relative to the air. There is a wind blowing at 27 km/h to the east relative to the ground. What is the plane's speed relative to the ground in kilometers per hour?

Draw a picture

Show your work

a) _____ ← units

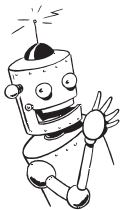
3. A powerboat heads due west at 13 m/s relative to the water that flows due south at 5.0 m/s. What is the boats velocity relative to the shore?

Draw a picture

Show your work

a) _____ ← units

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4. You are running in the rain. The rain is falling at a speed of 10 m/s and you are running at a rate of 4 m/s. Calculate the speed of raindrops as it is hitting your face.

Draw a picture

Show your work

a) _____ ← units

5. A car travels 90 meters due north in 15 seconds. Then the car turns around and travels 40 meters due south in 5.0 seconds. What is the magnitude of the average velocity of the car during this 20 second interval?

Draw a picture

Show your work

a) _____ ← units

6. A car is driven 15 miles due west, then 6 miles due south in 35 minutes. Calculate the magnitude of the car's average velocity during this 35 minutes interval.

Draw a picture

Show your work

a) _____ ← units

