Scalars and Vectors

Finding resultant vectors

For each of the situations below, draw a diagram using arrows to show the vectors which are described in the question. Then use the methods you have been taught to calculate the magnitude of the resultant vector.

1. An astronaut walks 20 m north, stops, and then walks a further 60 m in the same direction.
2. A spacecraft on re-entry to the Earth is pulled down by a gravitational force of 20,000 N, but is slowed down with parachutes which produce a drag force at a particular moment of 16,000 N.
3. A sailor walks at 2 m/s towards the front of a ship which is travelling at 10 m/s.
4. A rocket travels to an altitude of 6 km and 4 km east of its launch site.
5. The space shuttle is gliding due south towards its landing strip at 50 m/s, but is blown to the west by wind blowing at 20 m/s.

Challenge - this one's more difficult...

An astronaut drives a lunar rover 200 m south to pick up a rock sample, and then 300 m east to place an experiment. It then drives 400 m north to observe a crater. How far does the rover need to drive to return to its start point?

Scalars and Vectors

Finding resultant vectors

For each of the situations below, draw a diagram using arrows to show the vectors which are described in the question. Then use the methods you have been taught to calculate the magnitude of the resultant vector.

1. 80 m
2. 4,000 N
3. 12 m/s
4. 7.2 km
5. 54 m/s

Challenge - this one's more difficult...

361 m