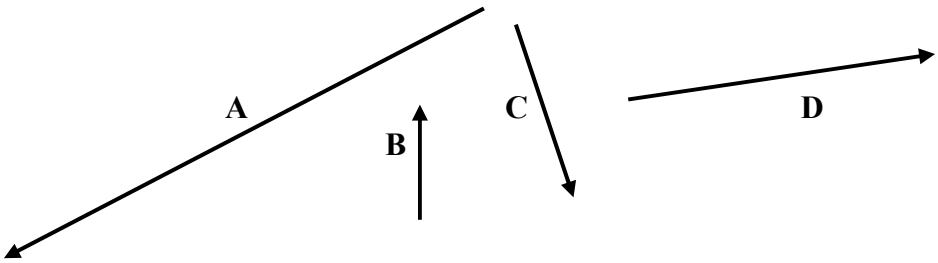
PHYSICS VECTORS WORKSHEET

1. Label each quantity as being **vector** or **scalar**: distance, time, mass, area, energy, impulse, temperature, displacement, volume, speed, acceleration, momentum, work, velocity, force.

2. Sketch the following vectors on a separate piece of paper and draw the resultant:
   a) C+A
   b) D-B
   c) A+D+B
   d) B-(C+D)
   e) C-2B
   f) 3C-2D+A



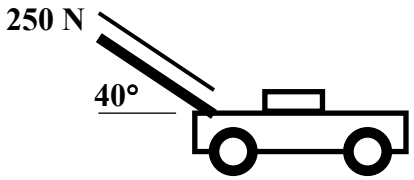
3. A jogger runs 300 m due west and then turns and runs 500 m due south.
   a) What is the total distance that she ran?
   b) What is her total displacement?
   c) If it takes her 135 s to complete the route, calculate her speed and velocity.

4. Two ropes are attached to a heavy object. The ropes are given to two strong physics students (is there any other kind?) with instructions for each to pull with 1000 N of force. Determine the resultant force if the two students pull:
   a) in the same direction east. b) in opposite directions. c) at right angles, south and east.

5. A force of 200 N due South and another force of 300 N due East each act on an object sinultaneously.
   a) Determine the resultant net force.
   b) A third force now acts on the object so that the net force is 0. Determine its magnitude and direction.

6. A pilot flies a plane 10 000 km in a direction 30° N of W. How much farther: a) north and b) west has he gone from his starting point?

7. An environmentally conscious physics student mows her lawn with a push mower, exerting a force of 250 N along the handle as shown. How much force is actually being used to push the mower along the ground?



1. s,s,s,s,s,v,s,v,s,s,v,v,s,v,v 2. check with wise and humble instructor 3. a) 800 m b) 583 m @ 59° S of W
c) 5.93 m/s, 4.32 m/s @ 59° S of W 4. a) 2.0×10^3 N, due E b) 0 N c) 1.4×10^3 N @ 45° S of E
5. a) 361 N @ 56.3° E of S b) 361 N @ 56.3° W of N (opposite direction to resultant) 6. a) 5000 km b) 8660 km
7. 192 N