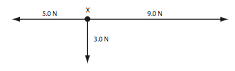
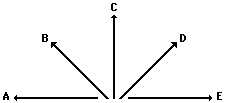
**Forces in**

Worksheet 2.2

1. A dancer does the following Physics Jig move: 3 steps north, 2 steps west, 5 steps east, and 7 steps south. What is his:
   1. resultant displacement?
   2. total distance traveled?
2. What is the magnitude of the resultant force of the three forces acting at point X? (Use compass coordinates)



1. Consider the following five force vectors.

Sketch the following and draw the resultant (R). Do not draw a scaled vector diagram; merely make a sketch. Label each vector. Clearly label the resultant (R).

i) B + D ii) E + B iii) A + C + D iv) B + E + D

78 N north

1. A 2.4 kg soccer ball is kicked by two players simultaneously as shown.  
   a. Find the force on the ball.   
   b. Find the ball’s acceleration.

42 N east

1. Two children pull a third child on a toboggan (shown from the top, assume up is north). Assuming that they pull on ropes that are parallel to the ground determine the magnitude of the force exerted on the toboggan.

66 N

130 N

33o

25o

1. A pack of five Artic wolves are exerting five different forces upon the carcass of a 500-kg dead polar bear. A top view showing the magnitude and direction of each of the five individual forces is shown in the diagram at the right.

20 N 90o

30 N 45o

25 N 0o

50 N 270o

20 N 225o

What is the resultant force?

1. A force of 100 N [N] and 200 [E] act on an object. Find the resultant (magnitude and direction).
2. A force of 120. N [30.0 degrees N of E] and 80.0 N [40 degrees S of E] act on an object.
3. Draw a vector diagram of the two original vectors
4. Find the resultant of the two vectors. (Trig or Component method)
5. What would a third force need to be to make the net force zero?

Worksheet 2.2 – Forces in 2D Answers

1. a. 5 steps 37O E of S b. 17 steps
2. 5 N 37o S of E
3. a. (89 N 28o E of N) b. (37 m/s2 28o E of N)
4. (174 N, 354o)
5. (39.4 N 35.6o S of E)
6. (224 N 63o E of N)
7. a. b. (165 N 3o N of E) c. (165 N 3o S of W)