WORKSHEET: DISTANCE & DISPLACEMENT

REMEMBER: All vector answers should contain 2 parts: a number and a direction!!

1. During a ride in a hot air balloon, a group of people are carried 50m [N], 625m [W] and then 50 m [S].

    a) Calculate the total distance covered by the balloon.

    b) Calculate the total displacement of the balloon.

2. A physics student went on a vacation last summer to the Black Hills in South Dakota. They travelled 1000 km [S] from Winnipeg to the hills, saw the sights and made the 1000 km [N] return trip home a week later. Upon their arrival back home they discovered that they left their suitcase in a hotel at Sturgis while on their way home (located 750km [S] of Winnipeg).

    a) Calculate the distance and displacement experienced by the student

    b) Calculate the distance and displacement experienced by the suitcase

3. During an exceptional round of golf, a player drives their ball 100 m [N] down the 7th fairway. The player then hits a 75 m, 6-iron approach shot (also north) that flies over the green. Amazingly the player holes a 5 m chip shot (south) to birdie the par 4 hole. What a play!

    a) Calculate the distance and displacement experienced by the ball

4. During a tennis rally the ball crosses the net 13 times. The court is 30m long, faces east-to-west and the person in the western court served the ball.

       a) Determine who won the rally

       b) What is the total distance covered by the ball?

       c) What displacement does the ball experience?

5. During a Kodiak football game, the quarterback throws a 'long bomb' to a wide receiver. During its flight, the ball reached a maximum height of 15 m [U] before it started falling back down, and during this time flew 30m [E], where it was caught. The receiver then ran it another 15 m [E] for a touchdown.

       a) Determine the distance and displacement experienced in the up-down dimension by the ball

       b) Determine the distance and displacement experienced by the ball in the east-west dimension.