*You must show all work. I do not accept just numbers for answers; your answers must include diagrams, units and a direction for displacement.*

1. Alison is playing in front of her house. She skips forward 200 steps, skips back 300 steps and forward again 150 steps. Find the distance (in steps) that Alison moves and her displacement. Draw Alison’s motion. *(d=650 steps, ∆x=50 steps forward)*
2. Peter bikes 10 blocks north, takes a turn and bikes an additional 15 blocks west. Find the distance covered by Peter, and his displacement. *(d=25 blocks , ∆x=18.03 blocks @56.30 West of North )*
3. A ball rolls uphill 15 yards and then downhill 25 yards. Find the distance the ball rolls and its displacement. *(d=40 yards , ∆x=10 yards downhill )*
4. During an Indy 500 race, the Formula One racecars complete 200 laps of the track. Each lap is 2.5 miles long. What is the distance covered by the cars? What is their displacement? *(d=500 miles, ∆x=0 miles)*
5. ***Challenge Problem:*** Alyssa explores Paris, and walks 3km north, then 4 km East, then 2km south and finally, 1 km west. Find the distance she walks, and her displacement. *(d=10 km, ∆x=3.16 km @ 71.60 E of N)*