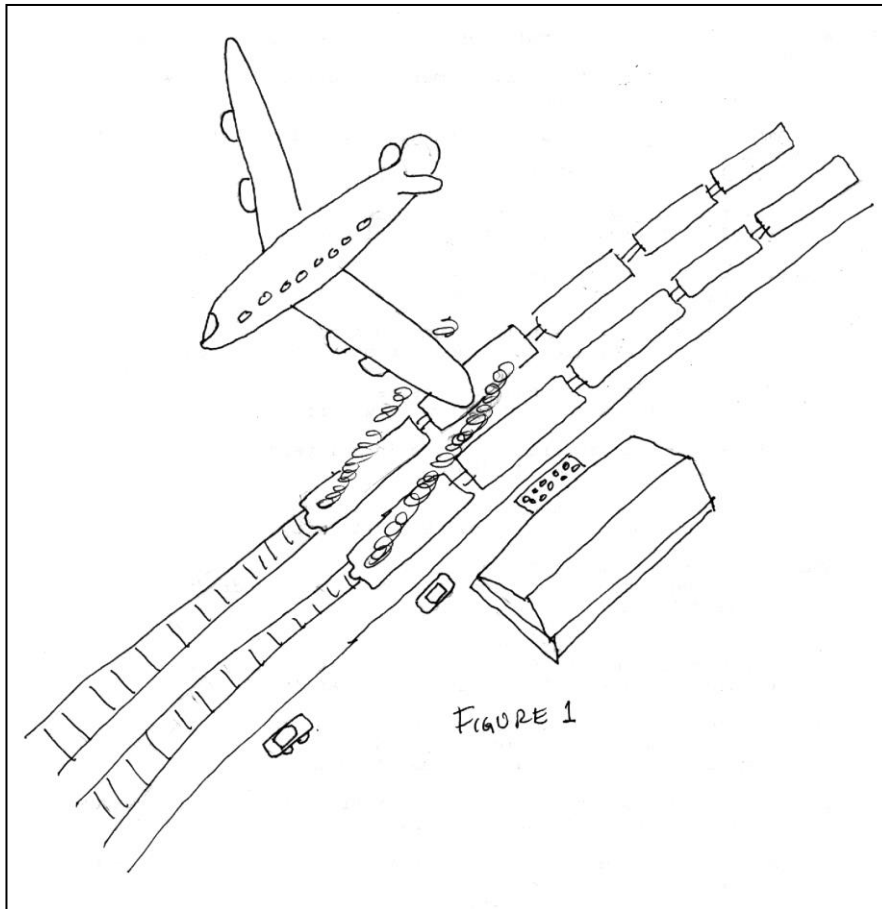


## Frames of Reference Worksheet

In Figure 1 below two trains are speeding past a train station with people waiting on the platform. Both trains are travelling at 75 miles per hour. The plane flying over is travelling at 300 miles per hour. The two cars leaving the station are travelling at different speeds. The first car is travelling 30 miles per hour, while the second car is travelling at 45 miles per hour. All of the moving objects are traveling towards the positive direction.

Answer the questions below on a separate sheet of paper.



1. At what speed and direction is the plane moving, if the frame of reference is (a) the earth? (b) train#1? (c) the people on the platform?
2. At what speed and direction is train#1 moving, if the frame of reference is (a) train#2? (b) the second car? (c) the earth? (d) the plane?
3. At what speed and direction is the first car moving, if the frame of reference is (a) the second car? (b) the train#2? (c) the people on the platform? (d) the earth? (e) the airplane?
4. At what speed and direction is train#2 moving, if the frame of reference is (a) the other train? (b) the airplane? (c) the first car? (d) the platform?