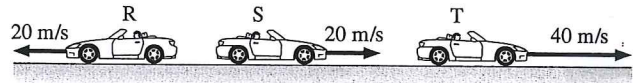
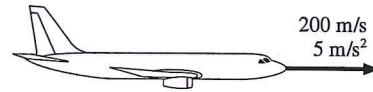


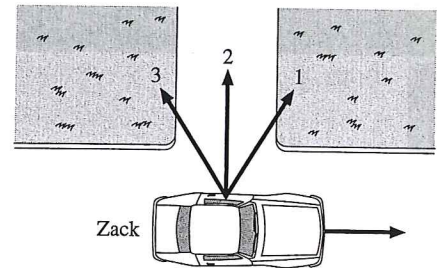
1) Ryan, Samantha, and Tomas are driving their convertibles. At the same instant, they each see a jet plane with an instantaneous velocity of 200 m/s and an acceleration of 5 m/s^2 .



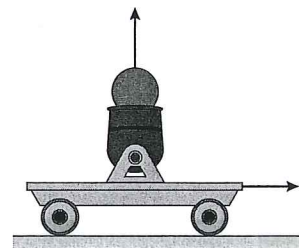
a. Rank in order, from largest to smallest, the jet's *speed* v_R , v_S , and v_T according to Ryan, Samantha, and Tomas. Explain.

b. Rank in order, from largest to smallest, the jet's *acceleration* a_R , a_S , and a_T according to Ryan, Samantha, and Tomas. Explain.

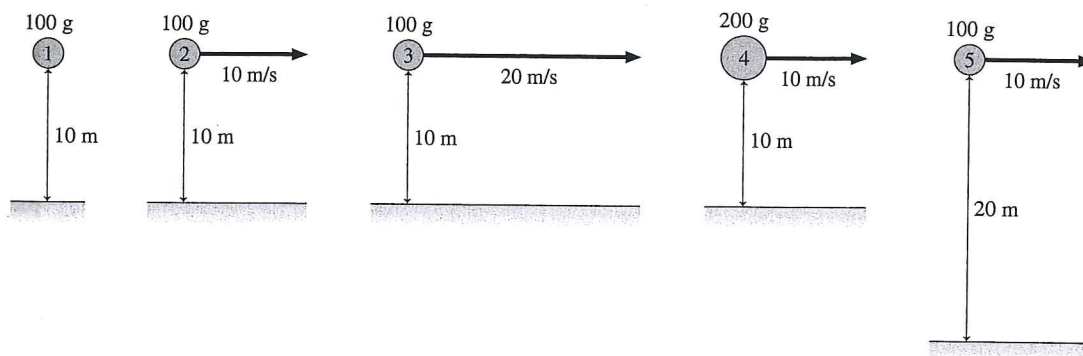
2) Zack is driving past his house. He wants to toss his physics book out the window and have it land in his driveway. If he lets go of the book exactly as he passes the end of the driveway, should he direct his throw outward and toward the front of the car (throw 1), straight outward (throw 2), or outward and toward the back of the car (throw 3)? Explain.



e) A cart that is rolling at constant velocity fires a ball straight up. When the ball comes back down, will it land in front of the launching tube, behind the launching tube, or directly in the tube? Explain.



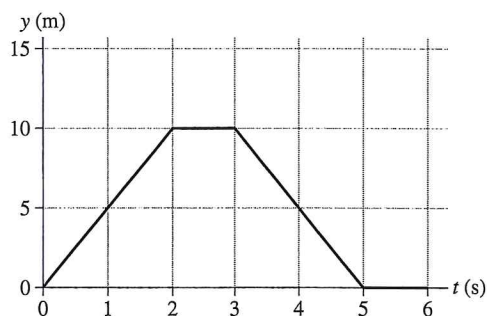
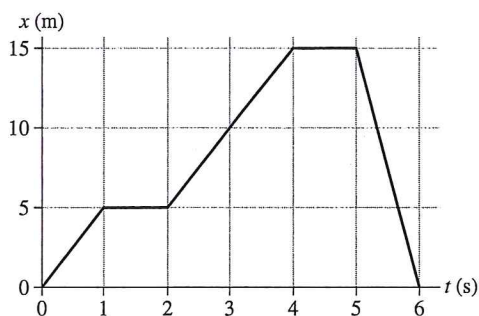
- 3) Rank in order, from shortest to longest, the amount of time it takes each of these projectiles to hit the ground. (Some may be simultaneous.)



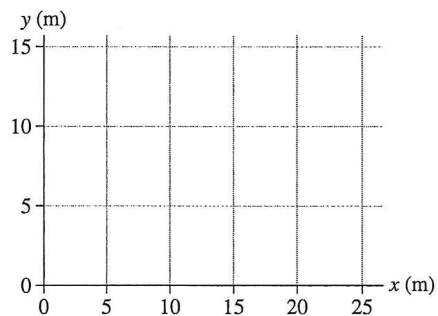
Order:

Explanation:

- 4) A particle moving along a trajectory in the xy -plane has the x -versus- t graph and the y -versus- t graph shown below.



- a. Use the grid below to draw a y -versus- x graph of the trajectory.



- b. Draw the particle's velocity vector at $t = 3.5$ s on your graph.