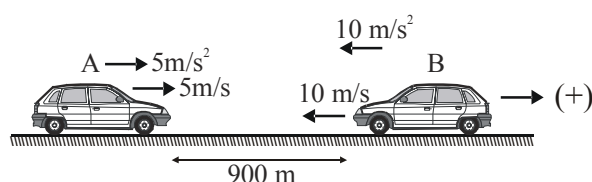


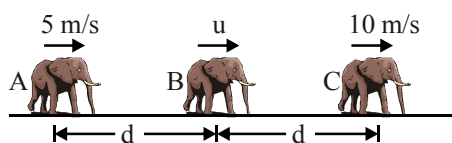
**RACE # 23**

**PHYSICS**

- Two cars are moving towards each other with velocity 4 m/s & 8 m/s respectively from two different points in straight line, 1200 m apart simultaneously, find time after which both cars meet :-  
(A) 300 sec (B) 150 sec (C) 100 sec (D) None of these
- Two cars A & B start from rest (from the same point) in same direction with acceleration 8 m/s<sup>2</sup> & 4 m/s<sup>2</sup> respectively then acceleration of car B in frame of A (Take direction of motion of car is positive):-  
(A) 4 m/s<sup>2</sup> (B) - 4 m/s<sup>2</sup> (C) 12 m/s<sup>2</sup> (D) None of these
- In the previous question when distance between both cars becomes 200 m, find distance travelled by the car A in ground frame :-  
(A) 200 m (B) 600 m (C) 800 m (D) 400 m
- Velocity and acceleration of both the cars is given in the figure find sum of displacement of each car in ground frame when they finally meet :-



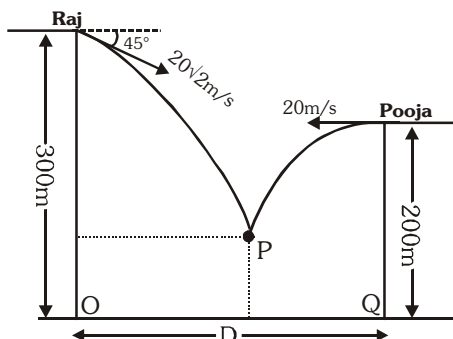
- (A) -300 m (B) 300 m (C) 600 m (D) -600 m
- A lift is moving downwards with constant velocity 5 m/s. A coin is dropped from the lift, find velocity of coin at the same instant when it is dropped in frame of lift and in frame of ground :-  
(A) 5 m/s (downward), & 0 (B) 0 & 5 m/s (downward)  
(C) 5 m/s (upward) & 0 (D) 0 & 5 m/s (upward)
- A lift is moving downward with constant velocity 10 m/s. A coin is dropped at height 5m from the floor of lift, find the time taken by coin to reach the floor :-  
(A) 1 s (B) 0.5 s (C) 2 s (D) 1.5 s
- In the previous question, find distance travelled by coin in ground frame :-  
(A) 10m (B) 5 m (C) 20 m (D) 15 m
- Three elephants A, B and C are moving along a straight line with constant speed in same direction as shown in figure. Speed of A is 5 m/s and speed of C is 10 m/s. Initially separation between A and B is 'd' and between B and C is also d. When 'B' catches 'C' separation between A and C becomes 3d. Then the speed of B will be



- (A) 15 m/s (B) 7.5 m/s (C) 20 m/s (D) 5 m/s

**Paragraph for Question Nos. 9 to 11**

Two friends Raj & Pooja playing a game of collision of balls and throwing balls A and B from the top of the tower simultaneously as shown in the figure respectively. If the balls collide in air at point P and point O is treated as origin ( $g = 10 \text{ m/s}^2$ )



9. Distance D between the towers is -  
 (A) 100 m                      (B) 200 m                      (C) 400 m                      (D) 800 m
10. Co-ordinate of point P is-  
 (A) (100,75)                      (B) (100,125)                      (C) (75,100)                      (D) (175,100)
11. Select the correct statement :  
 (A) Velocity of ball A as seen from ball B is  $40\hat{i} - 20\hat{j} \text{ m/s}$ .  
 (B) Acceleration of ball 'A' w.r.t. ball 'B' is zero.  
 (C) Position of Pooja as seen by Raj is  $2000\hat{i} - 100\hat{j}$ .  
 (D) Path of A as seen from B is straight line.

**N\_Race # 23****ANSWER KEY**

<b>1. Ans. (C)</b>	<b>2. Ans. (B)</b>	<b>3. Ans. (D)</b>	<b>4. Ans. (A)</b>	<b>5. Ans. (B)</b>	<b>6. Ans. (A)</b>
<b>7. Ans. (D)</b>	<b>8. Ans. (A)</b>	<b>9. Ans. (B)</b>	<b>10. Ans. (A)</b>	<b>11. Ans. (A,B,C,D)</b>	