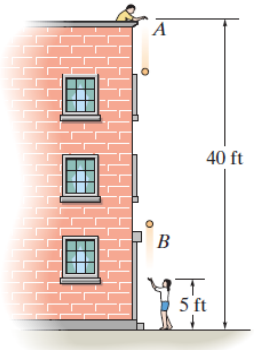
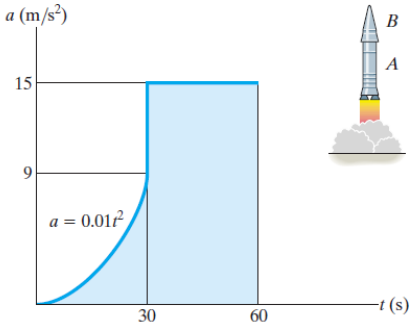
	Alexandria Higher Institute of Engineering & Technology (AIET)		
	General		Preparatory Year
	ME001	Mechanics II	Mid Term, May,10 ,2010
	Examiners:	Prof. Dr. Abd ElNaser Zayed and Dr. Rola Afify	Time: 1.5 hour

Answer the following questions:

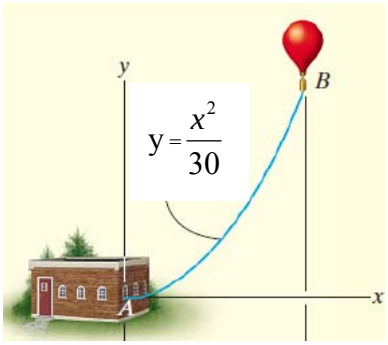
1- Ball A is released from rest at a height 12 m at the same time that a second ball B is thrown upward 1.5 m from ground. If the balls pass one another at a height of 6m, determine the speed at which ball B was thrown upward.





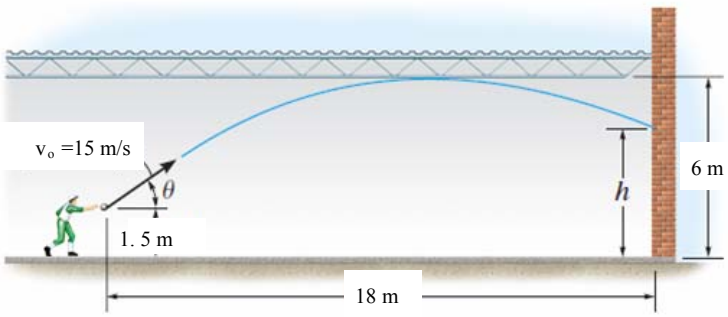
2- A two stages rocket is fired vertically from rest at s = 0 with an acceleration as shown in figure. After 30 seconds, the first stage A burns out and the second stage B ignites. Plot the v-t and s-t graphs which describe the motion of the second stage for $0 \le t \le 60$s.

3- At any instant the horizontal position of the weather balloon, shown in figure, is defined by x = 9t, where x is given in meters and t is in seconds. If the equation of the path is $y = \frac{x^2}{30}$, determine at t = 2s



a) The distance of the balloon from the station A.
b) The balloon's velocity and acceleration.

4- The man stands 18 m away from the wall and throws a ball at it with a speed v_o = 15 m/s. Determine the angle θ at which he should release the ball so that it strikes the wall as shown in the figure. The room has a ceiling height of 6m. Calculate the height (h).



Good Luck