Lesson 6-5 Projectile Motion

1- identify the initial conditions $y(0)$ and $y'(0)$.
An object is dropped from a height of 80 ft.

A- $y(0) = 80$ & $y'(0) = 0$.

B- $y(0) = 0$ & $y'(0) = 80$

C- $y(0) = 80$ & $y'(0) = -9.8$

D- $y(0) = 0$ & $y'(0) = 0$

2- identify the initial conditions $y(0)$ and $y'(0)$.
An object is released from a height of 60 ft with an upward velocity of 10 ft/s.

A- $y(0) = 60$ & $y'(0) = -9.8$

B- $y(0) = 0$ & $y'(0) = 10$

C- $y(0) = 60$ & $y'(0) = 10$

D- $y(0) = 0$ & $y'(0) = 0$

3- A diver drops from 30 ft above the water (about the height of an Olympic platform dive).What is the diver's velocity at impact?

A- $y = -16t^2 + 30, y'(\sqrt{\frac{15}{8}}) \approx -43.8ft/s$

B- $y = -32t^2 + 30, y'(\sqrt{\frac{15}{16}}) \approx -43.8ft/s$

C- $y = -4.9t^2 + 30, y'(\sqrt{\frac{300}{94}}) \approx -43.8ft/s$

D- $y = -9.8t^2 + 30, y'(\sqrt{\frac{150}{49}}) \approx -43.8ft/s$

4- A diver drops from 120 ft above the water (about the height of divers at the Acapulco Cliff Diving competition). What is the diver's velocity at impact?

A- $y = -32t^2 + 120\,, y'(\sqrt{\frac{15}{4}}) \approx -87.64ft/s$

B- $y = -16t^2 + 120\,, y'(\sqrt{\frac{15}{2}}) \approx -87.64ft/s$

C- $y = -4.9t^2 + 120\,, y'(\sqrt{24.48}) \approx 87.64ft/s$

D- $y = -9.8t^2 + 120\,, y'(\sqrt{13.48}) \approx 87.64ft/s$

5- The Washington Monument is 555 ft and, $5\frac{1}{8}$in high. In a famous experiment, a baseball was dropped from the top of the monument to see if a player could catch it. How fast would the ball be going?

A- $y = -16t^2 + 555.16\,, y'(5.86) \approx -93.75ft/s.$ (If you assume the ball is caught at ground level, the ball will be going 94.27 ft/sec.)

B- $y = 16t^2 - 555.427\,, y'(5.86) \approx -93.75ft/s.$ (If you assume the ball is caught at ground level, the ball will be going 94.27 ft/sec.)

C- $y = 16t^2 - 555.16\,, y'(5.86) \approx -93.75ft/s.$ (If you assume the ball is caught at ground level, the ball will be going 94.27 ft/sec.)

D- $y = -16t^2 + 555.427\,, y'(5.86) \approx -93.75ft/s.$ (If you assume the ball is caught at ground level, the ball will be going 94.27 ft/sec.)