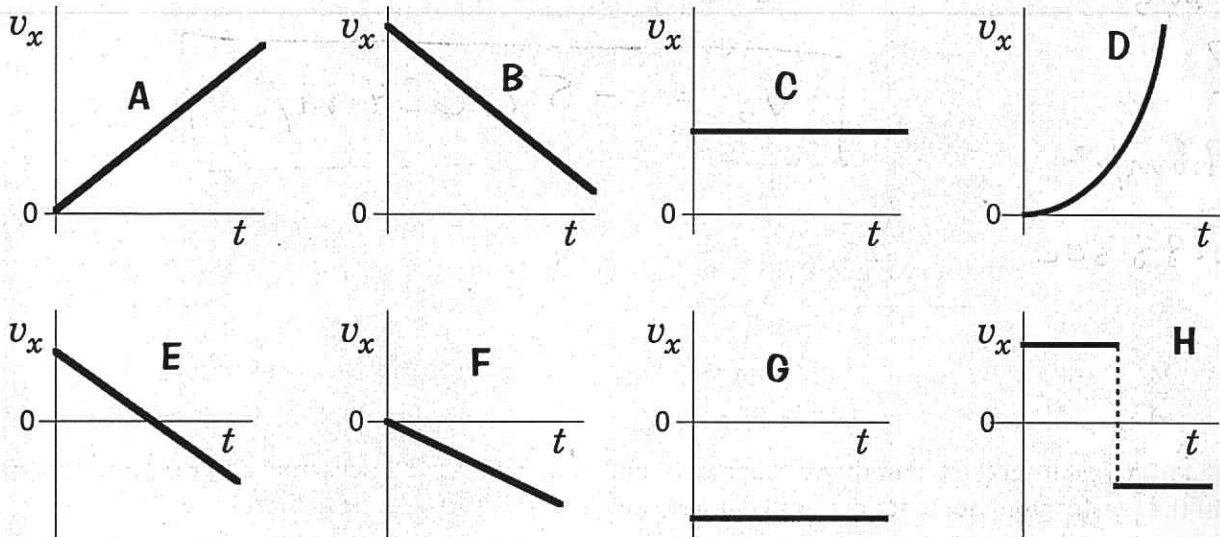Name: ___Answer Key___ Period: _____ Date: _____

HS.P.D.17, HS.P.D.18, HS.P.D.19 Assessment

1. Consider the following velocity vs time graphs:

Which graph(s) represent an object experiencing a negative acceleration? P.D.17 __B, E, F__

Which graph(s) represent an object experiencing a positive acceleration? P.D.17 __A, D__

For questions 2-6 use the velocity vs time graphs above match the description with the correct graph. P.D.18

(2) A block is dropped from rest with a height of 1 meter above the floor.

(3) A car starts at rest and accelerates in the positive direction.

(4) A ball is thrown straight up into the air.

(5) A ball rolls along a horizontal surface without changing speed in the negative direction.

(6) A marble rolls on to a piece of felt, eventually stopping.

Graph Letter	
2)	F
3)	A
4)	E
5)	G
6)	B

P.D.17			**P.D.18**	

7. A pumpkin is dropped from rest from the top of the Washington Monument. It takes 5.88 seconds to hit the ground. What will the pumpkin's final velocity be just before it hits the ground below? Neglect air resistance. Show all of your work for full credit. P.D.19

$X_1 = 0 \text{ m}$

$X_2 =$

$V_1 = 0 \text{ m/s}$

$V_2 = ?$

$a = -9.8 \text{ m/s}^2$

$t = 5.88 \text{ sec}$

$V_2 = V_1 + a t$

$V_2 = 0 + (-9.8)(5.88)$

$$\boxed{V_2 = -57.624 \text{ m/s}}$$

8. A pumpkin is dropped from rest from the top of the Washington Monument. It takes 5.88 seconds to hit the ground. What is the height of the Washington Monument? Neglect air resistance. Show all of your work for full credit. P.D.19

$X_1 = 0 \text{ m}$

$X_2 = ?$

$V_1 = 0 \text{ m/s}$

$V_2 = -57.624 \text{ m/s}$

$a = -9.8 \text{ m/s}^2$

$t = 5.88 \text{ sec}$

Value from previous problem.

$X_2 = X_1 + V_1 t + \frac{1}{2} a t^2$

$X_2 = 0 + (0)(5.88) + \frac{1}{2}(-9.8)(5.88)^2$

$X_2 = -169.41 \text{ m}$ ← how far the pumpkin dropped.

$\boxed{169.41 \text{ m}}$ ← how tall the Washington Monument is.

Alternate Solution

$V_2^2 = V_1^2 + 2a(X_2 - X_1)$

$(-57.624)^2 = 0^2 + 2(-9.8)(X_2 - 0)$

$3320.525 = -19.6 \, X_2$

P.D.19

$-169.41 \text{ m} = X_2$ ← how far the pumpkin dropped.

$\boxed{169.41 \text{ m}}$ ← how tall the Washington Monument is