Physics

name _____ blk _____

Inv-2 Exploration Lab -- Free Fall

sheet # _____

1.) Write down the mass marked on the tennis ball and basketball:

Tennis ball: _____   Basketball: _____

Free Fall from a small height

2.) Have one member of your group get on top of one of a chair or table around the room and drop each sphere from the ceiling.

The tennis ball's center of mass will fall _____ meters   The basketball's center of mass will fall _____ meters

Drop each ball three times.	tennis ball		basketball	
1st trial	_____	sec	_____	sec
2nd trial	_____	sec	_____	sec
3rd trial	_____	sec	_____	sec
Average time -->	_____	sec	_____	sec

3.) Use one of the kinematic equations you have learned to determine the acceleration of each ball. First do it without taking accuracy (significant figures) into consideration. In other words, just use all the numbers on your calculator. Then determine their accelerations with significant figures.
Show work below:

4.) Determine the acceleration of each ball first without and then with significant figures:

Tennis ball's acceleration from the ceiling		Basketball's acceleration from the ceiling	
without sig figs	with sig figs	without sig figs	with sig figs
_____	_____	_____	_____

Free Fall from a large height

5.) First, we will use the chain to measure the height from the drop point at the top of the stadium to the ground.

height = _____ meters

6.) Now have one person take the tennis ball and the basketball to the top of the stands. One person will time the fall. One person will carry the balls to the top of the stadium.

Drop each ball three times.	tennis ball		basketball	
1st trial	_____	sec	_____	sec
2nd trial	_____	sec	_____	sec
3rd trial	_____	sec	_____	sec
Average time -->	_____	sec	_____	sec

7.) Repeat step 3 above for the balls dropping from the stadium.

Tennis ball's acceleration from the stadium		Basketball's acceleration from the stadium	
without sig figs	with sig figs	without sig figs	with sig figs
_____	_____	_____	_____

8.) Compare accelerations from a short height and a large height. Which one do you think is more accurate. Explain why this is: