

Physics

name _____ period _____

Inv-2 Exploration Lab -- Free Fall

sheet # _____

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

Small ball: _____ Basketball: _____

Free Fall from a short 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. Askey will measure the height with the tape measure.

The small ball's center of mass will fall _____ m The basketball's center of mass will fall _____ m

Drop each ball three times.

	<u>small ball</u>		<u>basketball</u>	
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. Askey will review you on the rules of significant figures.

Show work below:

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

Small ball's acceleration from the ceiling		Basketball's acceleration from the ceiling	
<u>without sig figs</u>	<u>with sig figs</u>	<u>without sig figs</u>	<u>with sig figs</u>
_____	_____	_____	_____

Free Fall from a large height

5.) First, we will use the tape 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 small 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.

	<u>small ball</u>		<u>basketball</u>	
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.

Small ball's acceleration from the stadium		Basketball's acceleration from the stadium	
<u>without sig figs</u>	<u>with sig figs</u>	<u>without sig figs</u>	<u>with sig figs</u>
_____	_____	_____	_____

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