

Name: _____ Per: _____ Date Due: _____ EN _____
HANG TIME

Have you ever watched an NBA game and been totally amazed at how long the players are able to “hang” suspended in the air? Because all objects fall at the same rate (disregarding friction) then really, the only thing that determines Michael Jordan’s (or anyone else’s) hang time is:

Since we know that _____ $d =$ _____ and therefore,
 $t =$ _____

In order to figure out one’s hang time, you would have to know how high a person can _____ and then the _____ they travel when they jump up from that point.

Once you plug in the information and determine “ t ”, then you have to _____ “ t ” to get your actual hang time because it takes you the same amount of time to travel _____ and then _____.

Directions:

1. Determine what variable you want to test.
2. **Write your hypothesis here:**

3. Make a data table to record the data for each group
4. Record necessary data to calculate hang time for members of the class
5. Analyze and graph your data

Questions:

1. Show the calculation for your personal hang time.

2. According to your data, which group of people recorded the longest hang time? Comment on your hypothesis.

3. As you jump up, what is happening to your velocity? Why?

4. What are some of the things that basketball players can do to make it seem like they are hanging in the air longer?

5. If you were on another planet, what pieces of information would you need to know if you wanted to determine hang time?

Notes to teacher:

Have students generate a list of variables that might affect one's hang time. For instance: height, athletic ability, jumping vs. nonjumping sports, gender, ethnicity

Sample Data Table:

Name	Distance	Time	Total Hangtime

What's Going On?

You probably noticed that taller kids didn't necessarily have higher jumps. Remember, you measured the jump height from your reach and not the ground. The best jumpers in the world can clear heights up to 2.4 meters (8 feet), but they only lift their center of mass considerably less than that.

Did you have a hard time measuring your time in the air? You're not alone. Even the best jumper remains airborne for less than one second. Still, you can compare your airborne time with those of your friends by using the table below. Look down the first column for your jump height and read across to find your time.

Jump Height

Time in Air

(centimeters)/ (inches) (seconds)

25 10 0.4

50 20 0.6

75 30 0.8

100 39 0.9