Linear Motion Review 2019

Stuff you should have in your linear motion portfolio 2019

1. how fast do you walk
2. hang time
3. 1d walking tour
4. Linear Motion Review

Best video review ever!

<https://www.youtube.com/watch?v=69bUZbxY1d4&t=263s>

1. Definition of speed vs. Velocity
2. Units and equations for speed and velocity (non-accelerated)
3. Instantaneous speed versus average speed
4. Definition and examples of Acceleration
5. A turtle going at a constant speed of 4 meters per second, that’s a damn fast turtle, what’s its speed at one sec? Five seconds? An hour?

5. b How far would that same turtle go after one second? Two seconds? Three seconds?

1. The turtle falls into a hole towards turtle hell, how fast would it be falling at one second? Two seconds? Three seconds?

6. b How far does the falling turtle fall from the top of the hole at one second. Two seconds? Three seconds?

7. Describe the acceleration and velocity as an object falls (constant, increasing, decreasing, blah blah blah)

8. Hammer and feather video demonstrates what (or bowling ball) <https://www.youtube.com/watch?v=E43-CfukEgs>

9. What would happen in the video if there were air on the moon/in the room?

10. Reproduce the chicken and cheetah diagram from memory, include distance and velocity.

11. How high would you need to jump to get a four second hang time?

12. Draw a picture of a projectile and indicate the speed at the top where the speed is maximum, minimum.

13. At the top of a projectile’s path, the velocity is \_\_\_\_\_\_and the acceleration is\_\_\_\_\_ in the y-direction. What are they in the X-direction?

14. Hang time (when do you double time and when do you cut it in half.

1. find hang time given max height
2. Find max height given hang time

PART II linear motion review

1. A) True B) False Consider a car that travels between points A and B. The car's average speed can be greater than the magnitude of its velocity, but the magnitude of its velocity can never be greater than its average speed.

2) Which of the following quantities has units of a velocity?

A) 186,000 mi

B) 120 m/s

C) 9.8 m/s2 downward

D) 40 km southwest

E) 9.8 m/s downward

1. When is the velocity of an object equal to the instantaneous velocity?

*TWO correct answers, but one is better than the other.*

A) only when the velocity is decreasing at a constant rate

B) never

C) always

D) sometimes

E) only when the velocity is increasing at a constant rate

F) only when the velocity is constant

4) You drive 6.0 km at 50 km/h and then another 6.0 km at 90 km/h. Your average speed over the 12 km drive will be

A) greater than 70 km/h.

B) equal to 70 km/h.

C) exactly 38 km/h.

D) less than 70 km/h.

5) If the velocity of an object is zero at some point, then its acceleration must also be zero at that point.

A) True B) False

6) Which of the following situations is impossible?

A) An object has constant non-zero acceleration and changing velocity.

B) An object has constant non-zero velocity and changing acceleration.

C) An object has velocity directed east and acceleration directed west.

D) An object has zero velocity but non-zero acceleration.

E) An object has velocity directed east and acceleration directed east.

7) If the acceleration of an object is zero, then that object cannot be moving.

A) True B) False

8) Suppose that an object is moving with a constant velocity. Which statement concerning its acceleration must be correct?

A) The acceleration is a constant non-zero value.

B) The acceleration is equal to zero.

C) The acceleration is constantly increasing.

D) The acceleration is constantly decreasing.

9. Police chase question:

A bus is traveling at a constant speed of 30 m/s. It passes a police car that is initially at rest but begins to accelerate at 2.4 m/s^2. How long will it take the police car to catch up to the bus? How far will the car travel during this time?

10. Grandpa’s well