

Name: _____

Set# 3 Physics

1. What is displacement? Also, give the equation for displacement and label all the variables.
2. What is velocity? Also, give the equation for velocity and label all the variables.
3. What is acceleration? Also, give the equation for velocity and label all the variables.
4. What is the difference between distance and displacement? Velocity and speed?
5. What does the slope of a graph represent?
6. What does the slope of a position vs time graph represent? Velocity vs time?
7. What is constantly accelerated motion? Give the 4 equations that describe constantly accelerated motion and label all the variables.

8. Solve the following problem. A jet airplane starts from rest and begins to accelerate down the runway at a rate of 7.8m/s^2 . How fast is the jet moving after travelling 200m down the runway? How much time does it take to go the 200m?
9. Should a hammer and feather fall at the same rate? Explain.
10. What are Newton's 3 laws of motion?
11. What is required to change the state of motion of an object?
12. How is the direction of the net force on an object and its resulting acceleration related?
13. Describe the motion of an object that is in a state of equilibrium. What can be said about the sum of the forces that act on such an object?
14. A large truck collides head-on with a car. Compare the forces the truck and car experience as well as the accelerations they undergo.
15. What is Newton's Universal Law of Gravitation? Give the equation and label all the variables.

16. What would happen to the gravitational force between 2 objects if you double the original distance between them?

20. What is gravitational potential energy? Give the equation and label the variables.

17. What keeps the moon in orbit about the earth and prevents it from flying off into space?

21. What is mechanical energy?

18. Calculate the force of gravity between two 75kg people standing 3 meters apart.

22. What does the conservation of energy state?

19. What is kinetic energy? Give the equation and label the variables.

23. What effects do forces like friction and air-resistance have on the mechanical energy of system?

24. Describe what happens to the energy of a ball that is dropped from the top of a building as it falls towards the ground.

25. What is work and how is it related to the concept of energy?

30. Define: Period, frequency, wavelength and amplitude.

26. What is momentum? Give the equation and label the variables.

31. What is the mathematical relationship between the velocity, wavelength and frequency of a wave?

27. What does the conservation of momentum state?

32. What is the index of refraction? Give the equation and label the variables.

28. Describe what happens to the momentum and energy of a system in an elastic collision? A perfectly inelastic collision?

33. What happens to light when it enters one medium from another? (example: air to water)

29. What is a mechanical wave?

34. Give Snell's Law and label all the variables.