Name _____ # ____ St. Mary's Physics

Final Review 1

1. A force of 12 N acts 35 degrees above the horizontal.

   Find the horizontal and

   vertical component

2. A vector is a quantity that includes _____ and _____

3. A scalar is a quantity that includes _____

4. A 10 N weight falls from a roof. How far will it fall in 2 seconds, if friction is negligible,

   How far will it take a 20 N weight fall in 2 sec?

5. A train travels 360 Km in 3.6×10^3 sec. What is the average speed in m/s?

6. What angle can you through a rock to get the greatest horizontal displacement?

   Greatest height? _____

7. All things being equal, which angle has the greatest horizontal component, 20 or 40 degrees? **Choose one**

8. $F=mv^2/r$ Which variables are direct? _____ Direct Squared? _____

   Inverse? _____ Inverse Squared? _____

9. The inertia of an object is directly related to its _____ Speed has no effect on inertia

10. Only a 10 N East force acts on an object that is moving. The object must be accelerating or moving at constant velocity? Pick one.

What force would have to be added to put the objects in a state of equilibrium.

At equilibrium, the object must be accelerating or moving at constant velocity? **Select One**

11. What is the weight of a 4.00 kg object?

12. The gravitational PE of an object on earth depends only on its_____ and _____

13. A ball is dropped. Its PE goes _____ and its KE goes _____ .
Its Total Mechanical energy _____

14. A spring has a spring constant of 2 N/m and has a force of 2.4 N applied to it. What is its PE?

15. The resistance in a wire is inversely proportional to it's a) length b) cross sectional area c) Resistivity **Show Equation**

16. A simple circuit has a 12 ohm resistor connected to a 6 V battery. What is the current?

17. A 200 watt lamp is connected to a 120 volt outlet. What is the total energy used in 60 sec?

18. Opposite charges _____ Like charges _____

Neutral charges are attracted to _____

19. What color of light has a wavelength of 7×10^{-7} m?

20. 3 examples of waves that can travel through a vacuum?

_____ _____ _____

A wave that can't travel through a vacuum? _____

21. A sound's amplitude is a measure of its _____

22. A sound has a frequency of 440 Hz. What is its wavelength?

23. When blue light in air enters diamond its speed _____

and its frequency _____

24. Constructive interference – when a crest meets a _____

and a trough meets a _____

25. Destructive interference – when a crest meets a _____

26. The charge on an electron is _____ Coulombs

(AKA the elementary charge) The proton - _____ C

27. When an female opera singer's voice shatters a wine glass, this is an

example of _____ Why can't a male opera singer do this?

28. Find 3 energies that an electron in the c state of mercury emit?

29. Name the 4 phenomena that prove light is a wave DDIP

30. If the distance between the earth and the moon were halved, the gravitational force would be _____

(_____ relationship)

31. The force that holds the nucleus together is called the nuclear force or the _____

32. A person weighs 785 N on earth and 298 N on Mars. What is the acceleration due to gravity on Mars (g)

33. Friction creates Internal Energy

34. Write Ohms Law. Solve for I. Show the shape of the plot of I vs R

35. In a series circuit all resistors have the same _____

36. In a parallel circuit all resistors have the same _____

37. The PE at the top of a slide equals the _____ at the bottom

38. If the velocity at the bottom of a slide is 4 m/s, what is the height of the slide?

39. A ball is thrown up with a speed of 40 m/s, what is the maximum height reached by the ball?

40. When a moving body is at a state of equilibrium it must be moving at

constant speed and not changing _____

41. A student applies a 30 N force on a 10 N sled. What force does the sled apply on the student?

42. A newton is about the weight of an _____

(_____lbs)

43. When a car with a KE of 6 J rolls to a stop, the KE turns to

_____ energy

44. The mathematical relationship between the force of gravity and the distance

between 2 objects is _____ _____

45. The mathematical relationship between the electrostatic force and the

distance between 2 objects is _____ _____

See reference table for equation _____

46. Draw the electrical field lines arrows around a) A positive spherical charge b) A negative spherical charge

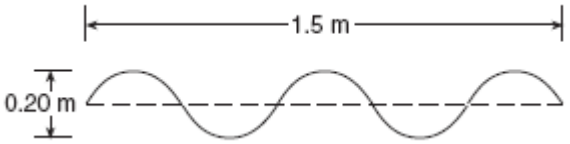
47. 240 coulombs of charge passes through a circuit in one minute. What is the current?

48. Draw the P vs V plot (Look up the equation on the ref)

49. Magnetic Fields are produced when charged particles _____

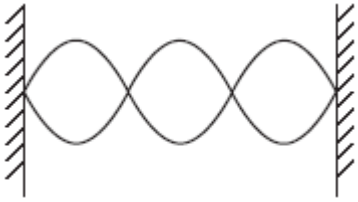
50. The energy of a WAVE is proportional to it's _____ (ie electric guitarist)

51. What is the wavelength _____ Amplitude _____

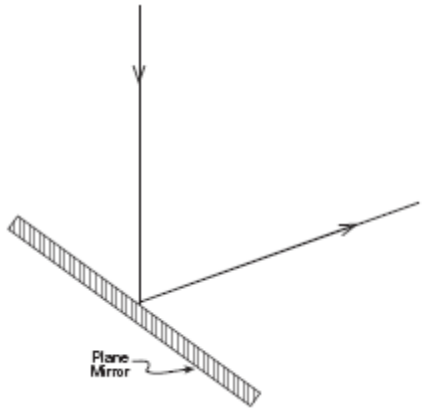


52. Doppler Effect - "Blue _____ Red _____"

53. How many NODES _____ Antinodes _____Wavelengths _____

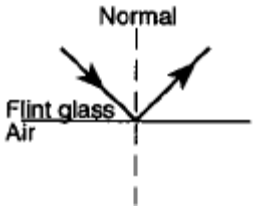


54. What is the angle of incidence?



55. A ray of monochromatic light is traveling in flint glass. The ray strikes the flint glass-air interface at an angle of incidence greater than the critical angle for flint glass. Which diagram best represents the path of this light ray?

a)



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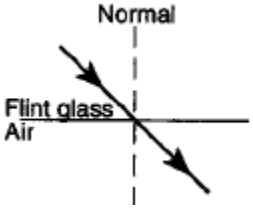

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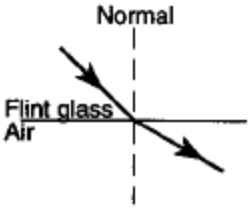

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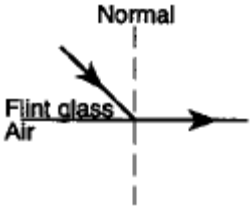
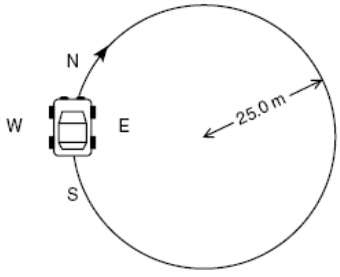


56. What is the speed of light in flint glass?

57. When the sound of a trumpet causes the vibration of a nearby drum, this phenomena is called _____

58. What total mass must be converted into energy to produce a photon of energy 1.03×10^{-13} J?

59. What is the charge and mass of an antiproton?



60. Draw the centripetal force and velocity on the car