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PHYSICS

Motion

1. Newton's first law referred to as the law of **inertia**.
2. According to Newton, an object will only accelerate if there is a **net** or **unbalanced force acting upon it**.
3. Newton's second law states that the acceleration of an object is dependent upon two variables - the **net force acting upon the object** and the **mass of the object**. A force that will work against motion in every situation is **friction**
4. A rocket is traveling from Earth to Mars at 10,000 m/sec. If no outside force is applied to it, its speed over the course of the trip **stay constant**

5. When a car suddenly stops, the objects in the back seat are thrown forward. This is due to **inertia**

6. If the object is NOT moving, the acceleration coming from to cause the force to increase as the mass increases is **gravitational force**

7. Newton's Laws which describes the relationship between the mass and force is **Law of force and acceleration**

8. The tendency of an object to resist a change in motion is called **inertia.**

9. If an object has mass, it also has **inertia.**

10. An object with more mass has more **inertia**

11. My whole body doesn't sink into the sand because the sand is pushing back up against my foot. Newton's Third Law explains this situation.

12. Recoil of gun and motion of rocket are example of **Newton's third law**

13. **When two particles collide, each other** experience the same force, the same impulse, and same momentum change.

14. The impulse of a force **can be zero**, even if the force is **not zero**.

15. **Newton's law of universal gravitation** states that a [particle](#) attracts every other particle in the universe.

16. With a [force](#) which is [directly](#) proportional to the **product of their masses**

17. And this force is [inversely](#) proportional to the **square of the distance between their centres**.

18.

$$\mathbf{F} = \frac{Gm_1m_2}{r^2}$$
 in the given equation 'G' is called **Universal gravitational constant**

19. value of **Universal gravitational constant** in our world is

$$G=6.67 \times 10^{-11} \text{Nm}^2 / \text{Kg}^2$$

20. The direction of the force of gravity is in a **straight line** between two objects. **It is always attractive**

21. **Gravitational force that sun exerts on moon is twice more than that of earth exert on it.**

22. **Mass** is both a property of a physical body and a measure of its resistance to acceleration when a net force is applied

23. SI unit of mass is **Kilogram(kg)**.

24. **Mass** of the body **does not change**.

25. **weight** of an object is related to the amount of force acting on the object, either due to gravity or to a reaction force that holds it in place

26. **Mass** is not the same as weight .

27. SI unit of Weight is **Newton (N)**

28. The acceleration which is gained by an object because of gravitational

force is called its **acceleration due to gravity**.

29. SI unit of **acceleration due to gravity** is m/s^2

30. **Momentum** is the product of the mass and velocity of an object.

31. SI units, it is measured in kilogram meters per second ($\text{kg}\cdot\text{m/s}$)

32. According to law of conservation of momentum, **momentum before collision** is always **equal** to **momentum after collision**.

33. The force applied on a surface in a direction perpendicular or normal to the surface is called **thrust**.

34. Force, and thus thrust, is measured in the International System of Units (SI) as the newton (**symbol: N**).

35. **Pressure** (symbol: p or P) is the force applied **perpendicular** to the **surface** of an object per unit area over which that force is distributed.

36. Unit of pressure is **Pascal**.

37. **Momentum** is related to **Newton's 1st law**.

38. A person in car slides to the right when going through a very sharp left turn on the highway due to **inertia**.

39. The force of **gravity** exists between any two objects that have mass.

40. If the horse reared up on 2 legs it will exert twice the pressure it did before

41. The **deeper** you go under the sea, the **greater** the pressure of the water pushing down on you.

42. If we pull our diaphragm down, air goes into our lungs because the **volume increases** and so **pressure decreases**.

43. If we **double** the mass of one object, but don't change anything else, the gravitational force between two objects **doubles**.

44. As **distance** between two objects **increase** the pull of gravity **decreases**.

45. The measure of the pull of gravity on an object is called **weight**.

If lift is going up with acceleration, the apparent weight of a body is more than the true weight.

46. An **object** kept in a lift which falls **freely**, weighs **zero**.

47. **Pressure change** occurring anywhere in a confined incompressible fluid is transmitted throughout the fluid such that the **same change occurs everywhere**.

48. **Hydraulic lift** works under the principle of **Pascal's Law**.

49. **Jupiter** is the planet with largest value of gravitational force.

50. A body will have **maximum weight** in **Jupiter** (in the case of planets).

51. **Weight** of a body at **poles** will be **higher** than that at **equator**.

52. This is because **equator** will have **maximum** effect of **centripetal force**.

53. **Centripetal force** at **poles** are **zero**.

54. Wall of a **dam** is made **broader** at **bottom** to withstand the **pressure that increase with depth**.

55. **Mano meter** is used to measure **liquid pressure**.

56. A liquid exerts pressure in **all directions**.

57. If the **area** over which force acts is **decreased**, then the **pressure** is **increased**.

58. The acceleration due to gravity on the surface of the Moon is about **1.625 m/s²**, about **16.6%** that on **Earth's surface**.