Understanding Normal Force

Physics · Practice Test · 15 Questions

1. What is the normal force?

A) A force that acts parallel to a surface.
B) A force that acts perpendicular to a surface.
C) The force of gravity acting on an object.
D) The applied force on an object.

2. When is the normal force equal to the gravitational force?

A) When an object is on an inclined surface.
B) When an object is in free fall.
C) When an object is at rest on a horizontal surface.
D) When an object is being pushed at an angle.

3. What is the formula for normal force in equilibrium on a horizontal surface?

A) Normal Force = Applied Force
B) Normal Force = Gravitational Force
C) Normal Force = Gravitational Force + Applied Force
D) Normal Force = Gravitational Force - Applied Force

4. When an object is on an inclined surface, how does the normal force relate to the gravitational force?

A) Normal force is greater than the gravitational force.
B) Normal force is equal to the gravitational force.
C) Normal force is less than the gravitational force.
D) Normal force is zero.

5. What component of gravity acts perpendicular to an inclined surface?

A) mg sin(theta)
B) mg cos(theta)
C) mg tan(theta)
D) mg

6. If an applied force is at an angle to the surface, how does it affect the normal force?

A) It increases the normal force.
B) It decreases the normal force.
C) It has no effect on the normal force.
D) It makes the normal force zero.

7. What does 'equilibrium' mean in the context of forces?

A) The object is accelerating rapidly.
B) The net force acting on the object is zero.
C) The object is moving at a constant velocity.
D) The object is at rest.

8. How many vectors are typically acting on an object on a flat surface in equilibrium?

A) One
B) Two
C) Three
D) Four

9. In the diagram provided (implied), 'Fg' represents:

A) Applied Force
B) Normal Force
C) Gravitational Force
D) Friction Force

10. Which of the following is NOT a way to find the normal force?

A) Object on a flat surface.
B) Object on an inclined surface.
C) Object in free fall.
D) Applied force at an angle.

11. When is the normal force calculated as N = mg cos(theta)?

A) On a horizontal surface with no applied force.
B) On an inclined surface with an applied force pulling upwards.
C) On an inclined surface with an applied force pushing downwards.
D) On an inclined surface where the applied force is parallel to the incline.

12. What does 'mg' represent in physics formulas?

A) Mass times acceleration.
B) Momentum times gravity.
C) Gravitational force (weight).
D) Mass times velocity.

13. If an object is on a horizontal surface and a downward force is applied, what happens to the normal force?

A) It decreases.
B) It stays the same.
C) It increases.
D) It becomes zero.

14. What is the direction of the normal force relative to the surface?

A) Parallel
B) Perpendicular
C) At a 45-degree angle
D) Opposite to gravity

15. In the context of equilibrium, if the normal force is N and the vertical component of gravity is 'y', and an upward applied force is 'Fy', what is the relationship?

A) N + y = Fy
B) N = y - Fy
C) N + Fy = y
D) N = y + Fy