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Crash Course Physics #16: Simple Harmonic Motion

Name: _____ Date: _____

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1. The swaying of the Millennium Bridge was an example of _____, or back-and-forth motion.
2. A specific kind of oscillation that follows a consistent pattern is called _____ motion.
3. The maximum distance an object moves from its equilibrium point during oscillation is the _____.
4. When a spring is either fully compressed or stretched, the object has maximum _____ energy.
5. At the equilibrium point, the object on the spring has maximum _____ energy.
6. The total energy of an object in simple harmonic motion is conserved and is the sum of kinetic and _____ energy.
7. The equation for the maximum velocity of an oscillating mass is amplitude times the square root of the spring constant divided by _____.
8. The time it takes for one complete cycle of motion is called the _____.
9. The number of cycles per second is known as the _____ of the motion.
10. The angular velocity of the object is equal to the square root of the spring constant divided by its _____.
11. The mathematical function used to model the position of an object in simple harmonic motion is the _____ function.
12. The equation for position over time in simple harmonic motion is $x = A \sin(\omega t)$.
13. The phenomenon that increases the amplitude of oscillation by applying force at just the right frequency is called _____.
14. The engineers of the Millennium Bridge accounted for vertical oscillations but overlooked _____ oscillations.
15. The graph of position versus time for simple harmonic motion forms a _____ pattern.

Crash Course Physics #16: Simple Harmonic Motion KEY

1. The swaying of the Millennium Bridge was an example of **oscillation**, or back-and-forth motion.
2. A specific kind of oscillation that follows a consistent pattern is called **simple harmonic** motion.
3. The maximum distance an object moves from its equilibrium point during oscillation is the **amplitude**.
4. When a spring is either fully compressed or stretched, the object has maximum **potential** energy.
5. At the equilibrium point, the object on the spring has maximum **kinetic** energy.
6. The total energy of an object in simple harmonic motion is conserved and is the sum of kinetic and **potential** energy.
7. The equation for the maximum velocity of an oscillating mass is amplitude times the square root of the spring constant divided by **mass**.
8. The time it takes for one complete cycle of motion is called the **period**.
9. The number of cycles per second is known as the **frequency** of the motion.
10. The angular velocity of the object is equal to the square root of the spring constant divided by its **mass**.
11. The mathematical function used to model the position of an object in simple harmonic motion is the **cosine** function.
12. The equation for position over time in simple harmonic motion is $x = A \cos(\omega t)$.
13. The phenomenon that increases the amplitude of oscillation by applying force at just the right frequency is called **resonance**.
14. The engineers of the Millennium Bridge accounted for vertical oscillations but overlooked **horizontal** oscillations.
15. The graph of position versus time for simple harmonic motion forms a **wave** pattern.

15 Questions

Answer Key Included

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