

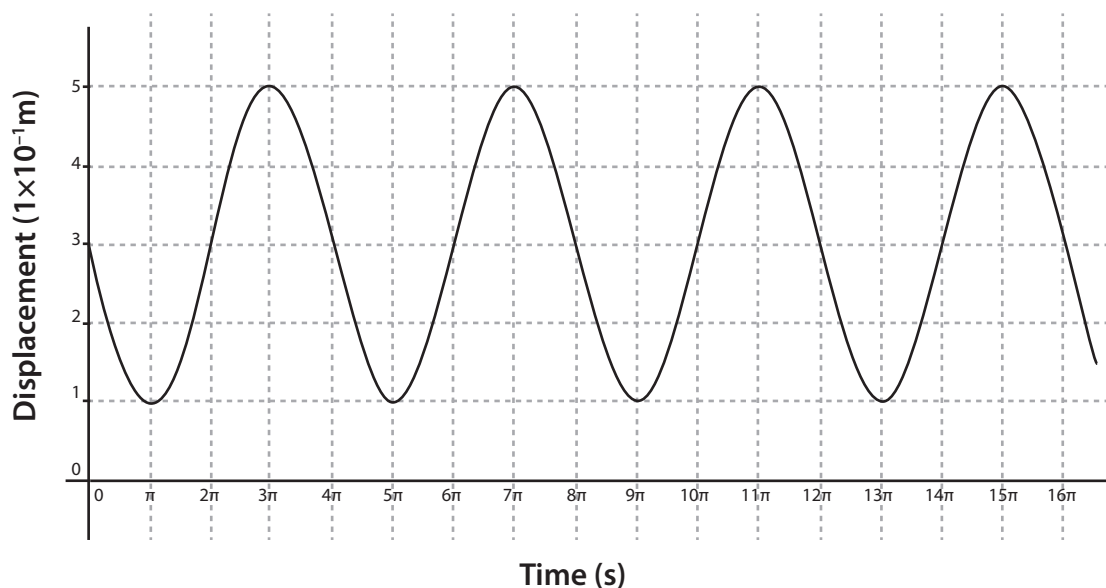
Checkout Questions**Lab 14. Simple Harmonic Motion and Springs: What Is the Mathematical Model of the Simple Harmonic Motion of a Mass Hanging From a Spring?**

In most physics textbooks, the position of an object in simple harmonic motion is described using the equation below:

$$x = A\cos(\omega t + \delta)$$

1. Given your model in terms of A , B , C , and D , define the parameters A , ω , and δ and discuss the meaning of each in terms of the position of the mass on a spring.

Use the graph below to answer questions 2 and 3.



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2. What are the parameters A , B , C , and D for the general model $\mathbf{s}(t) = \mathbf{C} + A\cos B(t - D)$?

3. What are the parameters for A , ω , and δ for the model $x = A\cos(\omega t + \delta)$?

4. Scientists do not need to be creative or have a good imagination.

- a. I agree with this statement.
- b. I disagree with this statement.

Explain your answer, using an example from your investigation about simple harmonic motion and springs.

5. It is important to understand what makes a system stable or unstable and what contributes to the rates of change in a system.
- I agree with this statement.
 - I disagree with this statement.

Explain your answer, using an example from your investigation about simple harmonic motion and springs.

6. Scientists use different methods to answer different types of questions. Explain how the type of question a scientist asks affects the methods he or she uses to answer those questions, using an example from your investigation about simple harmonic motion and springs.

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7. Scientists often look for and try to explain patterns in nature. Explain why it is useful to look for and explain patterns in nature, using an example from your investigation about simple harmonic motion and springs.

8. Models in science can be physical, conceptual, or mathematical. Explain the difference in these types of models and discuss the strengths and weaknesses of each type of model, using an example from your investigation about simple harmonic motion and springs.