

Answers to Sample Quiz 3

1. $\frac{5}{2}r = h = 37.5 \text{ ft}$

2.

$$E_{\text{nucleus}} = E_0 \left(1 - \left(\frac{\frac{\sin \theta_2}{\cos \theta_2} \frac{\cos \theta_1}{\cos \theta_2} + \frac{1}{\cos \theta_2}}{\sin \theta_1 + \frac{\cos \theta_1}{\cos \theta_2} \sin \theta_2} \right)^2 - \left(\frac{\frac{\sin \theta_2}{\cos \theta_2}}{\sin \theta_1 + \frac{\cos \theta_1}{\cos \theta_2} \sin \theta_2} \right)^2 \right) = 0.77 \text{ MeV}$$

3. $m \frac{L^2 g}{2hd^2} = k$ where h is the height of the table, d is the distance the spring is compressed of the spring, and L is the distance the ball lands from the table along the floor.

Conceptual Questions

- | | |
|------|-------|
| 1. b | 6. a |
| 2. c | 7. a |
| 3. b | 8. c |
| 4. b | 9. a |
| 5. c | 10. b |