Answers to Readiness Assessment Test (Lecture 12)

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Indicate whether each statement is TRUE or FALSE.

1. Linear momentum is a scalar quantity.               False

2. Linear momentum for a particle is defined as the product of its mass $m$ and speed $V$ squared, \( i.e. \) linear momentum = $mV^2$.       False

3. The standard unit of force in the SI system is the Newton.   True

4. The standard unit of force in the USCS system is the pound-force.   True

5. An object with a mass of 10 kg has a weight of 322 N on the surface of the earth. False

6. An object that weighs 10 lb$_f$ on the surface of the earth has a mass of 10 lb$_m$. True

7. When we say that “linear momentum is conserved”, we mean that the linear momentum of a system is a fixed and unchanging quantity, \( i.e. \) a constant. False

8. Linear momentum is an extensive property.               True

9. The acceleration of a particle is found by integrating its velocity with respect to time. False

10. Surface forces are interactions between a system and its surroundings that transmit linear momentum across the system boundary. True