

Tests





Pretest

Amusement Park Physics With a NASA Twist

1. _____ True or False. Astronauts experience weightlessness because they are high enough where the Earth's gravity is extremely low, as in microgravity.
2. _____ True or False. There are microgravity research facilities at NASA where scientists drop their experiments to eliminate some of the effects of gravity.
3. _____ True or False. In the loop rides, where the riders experience circular motion, they also experience high gravity conditions.
4. _____ Newton's first law of motion states that objects tend to move in a straight line at a constant _____, unless acted upon by an outside force.
A. acceleration B. temperature C. speed D. speed and acceleration
5. _____ True or False. The horses located on the outer part of a carousel travel at a different speed than the horses located in the inner part.
6. _____ Given a normal walking stride, which value most nearly applies to pacing a distance of 30 meters.
A. 11 to 15 steps B. 18 to 25 steps C. 40 to 60 steps D. 100 to 110 steps
7. Place an "X" on the lines next to all the locations on a roller coaster hill where the rider might experience high-g loads while traveling at high speeds.
_____ at the top of a hill _____ at the bottom of a hill _____ going around a curve
8. Place an "X" on the lines next to all that are correct. A pendulum that moves freely back and forth will move faster if
_____ the string that supports it is shortened.
_____ the string that supports it is lengthened.
_____ the mass or bob at the end of the string is made heavier.
_____ the mass or bob at the end of the string is made lighter.
_____ the pendulum is moved to the International Space Station.
_____ the pendulum is moved inside a deep mine shaft that is closer to the center of Earth.
9. _____ True or False. When two identical marbles collide head-on and each marble rebounds at the same speed that it was initially traveling, we can say that momentum was conserved in the collision, but kinetic energy was not.
10. _____ True or False. In order for the roller coaster to take full advantage of the physical properties of the ride design, the first hill must be the highest hill.



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