


### Circular Motion, Gravitation, and Planetary Motion Beliefs

Identify the following statement as being either true (T or t) or false (F or f).

(T = strongly agree, t = weakly agree; F = strongly disagree, f = weakly disagree)

- | T, t, f, F? | Statement   |   |
|-------------|---|---|
| _____       | 1. A ball is moving around a circular ring in a clockwise direction. A top view is shown. The ball will lose contact with the ring at A and regain contact at B.                                      |  |
| _____       | 2. On a roller coaster ride, a rider feels a weird sensation when moving fast over the crest of a hill. This is because there is a force trying to throw the rider and the car upwards off the track. |   |
| _____       | 3. An object moving with a constant speed in a circle has zero acceleration.  |   |
| _____       | 4. A car makes a left-hand turn. The front-seat passenger feels a sensation of being pushed outward. This is best explained by the presence of a centripetal force pushing the person "out the door." |   |
| _____       | 5. The direction of an object's acceleration is always in the direction that the object moves.  |   |
| _____       | 6. A net force will cause an acceleration. The direction of the acceleration could be different than the direction of the net force.  |   |
| _____       | 7. If an elevator were in free-fall from 10 stories high, then its occupants could jump up the moment before impact and be completely safe.   |   |
| _____       | 8. Suppose that a satellite is in orbit about the Earth. Objects that are present on the satellite do not weigh anything; they are weightless.  |   |
| _____       | 9. The Space Shuttle and its astronauts orbit the Earth. Being in gravity-free space, they weigh 0 Newtons.   |   |
| _____       | 10. Gravitational forces only act between large objects such as the sun, the planets, the moon, etc.  |   |
| _____       | 11. If the Earth was not spinning, then there wouldn't be any gravity.  |   |
| _____       | 12. The speed required for a satellite to orbit the Earth depends on its mass. A more massive satellite would require a greater orbital speed.  |   |