

# WHAT'S YOUR MOTION & FORCES IQ?

## ANSWERS

Read each scenario below and select **one** of the physics concepts that best explains it (there might be **more** than one right answer for some and choices can be used **once, more than once or not at all**). You must also explain or justify the answer you selected (2-4 sentences in your notebook). The physics unit final will be similar to this **second** review sheet. *Enjoy.*

Here are the words you can use:

Velocity	Inertia	Centripetal force	Centrifugal force	Air Resistance	Gravity
Distance	Friction	Kinetic Energy	Potential Energy	Momentum	Accelerate

1. A car hit a tree and **doesn't stop**, but keeps going until it's severely damaged. Why? **Inertia/Momentum.**
2. When a space capsule returns to Earth after a mission, it glows red-hot as it enters the atmosphere because of **Friction/Air Resistance.**
3. Mark and his friends love the Terminator roller coaster because of its massive 360° loop. Nobody falls out when the cars are upside-down because of **Centrifugal force.**
4. Rain falls from the sky to the ground. **Gravity**
5. The blade of an ice skate melts the ice beneath it and reduces **Friction.**
6. Joan throws a Frisbee to a friend 30 feet away. It hits the ground before reaching her friend. What force caused this to happen? **Gravity**
7. The sleek shape of a bobsled reduces **Friction or Air Resistance** and allows greater speeds.
8. A pool player hits the cue ball and it hits the eight ball which was at rest. Now the eight ball starts moving towards the corner pocket for the big win in the pool game he is playing with his friends for fun and not money or fame or fortune. What concept explains why the cue ball stopped after hitting the eight ball? **Inertia**
9. Scott cannot listen to his IPODE because the batteries are dead. What type of energy does he need so he can tune in, and tune out while listening to some tasty tunes? **Potential Energy**
10. A snowboard sits at the bottom of the hill, not moving, until Andrea gets on it and pushes it along, **Inertia** kept it from moving.
11. Jim's little sister isn't swinging very fast, so he gives her a huge push to get her moving faster. This shows an increase in **Kinetic energy.**
12. A Hot wheels car goes around the big loop at the end of the track and falls from the top and explodes in a fiery crash. It seems the car was not going fast enough to make it through the loop. It needs more speed so it will have enough **Momentum or Inertia or Centrifugal Force** to make it through the loop safely.
13. A super pro skater skates on a ramp. Each time he goes down the ramp he accelerates and gains speed. Each time he goes back up the other side of the ramp he accelerates and loses speed. When he goes up the ramp what is the **main** reason he slows down so fast? **Gravity**
14. This same pro skater **refused to buckle** his helmet when he skated because he thought he was **so good** and would **never** fall. One day, while listening to his IPODE and eating candy he got from Halloween, he fell off his board when a small black cat jumped in front of him. He hit the ground, but his helmet fell off and his head hit the sidewalk really hard. What physics concept explains **why his helmet flew off his head** even though he had it on his head before he fell? **Inertia or Momentum**
15. Lucky works in the casino rolling the ball for the roulette table. He takes the ball and rolls it along the wheel. It stays on the outside of wheel until it finally slows down and falls onto a number in the middle of the wheel. What force causes the ball to stay towards the outside of the wheel while it goes around and around? **Centrifugal**

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**Bonus:** Which has more PE? **A car parked on the top of the hill, a person on top of the hill sitting down eating a sandwich, or a man running fast at the bottom of the same hill?** Which of the 3 has the most KE? **Man Running**