

## **25 MORE PRACTICE PHYSICS SCENARIOS**

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). You may (**not required**) explain or justify the answer you selected (2-4 sentences). The physics unit final will be similar to this **third and final** review sheet. *Enjoy.*

1. After a big snow storm ski patrol at Mammoth Mountain goes out in the middle of the night with dynamite to start small avalanches. The snow does not want to fall and cause a small avalanche, but is forced to by the dynamite exploding. They do this because the snow accumulating at the top of the mountain has a lot of what?
2. Once the snow starts moving down the mountain it has a lot of what?
3. A pro surfer makes a sharper turn on a wave by pushing his board into the wave. The wave pushes back on the board forcing the surfer to turn back into the lip of the wave. What force does the wave apply to the surfer and the board?
4. Your parents take a sharp right turn as you round a corner. You feel like you are being pushed to the left against the door of the car (you really want to go straight, but are attached to the car with the seat belt so you do not go flying straight out of the car). What force caused you to be pushed against the door of the car when you went around the turn?
5. From the example above – What force does the seat belt apply to you as you go around the turn?
6. During the X Games they have a motocross race in the stadium. A few of the turns are banked so that the riders can go faster around the turns without falling off the track. What force do the bank turns supply to the motorcycle?
7. You drop a water balloon on the ground and it rolls away from where it landed. It starts to slow down and stop. What force caused it to slow down?
8. You drop a second water balloon, but this time it stops and explodes when it hits the ground. What concept explains why it stopped and popped when it hit the ground?
9. Flynn Rider (Disney's **Tangled**) is riding Maximus the horse when Maximus suddenly stops causing Flynn to fly off the front of the horse. What concept explains why Flynn went flying?
10. How can Sonic the Hedgehog defy gravity as he runs around loops and around curved walls?
11. In the Disney movie **Up**, the house is lifted up off the ground by many hundreds of thousands of balloons. As the house goes up what type of energy is increasing?
12. By adding more balloons to the house you are increase what type of energy?

13. Stunt men and women will often land on big air bags when they jump off of building. The air bag allows the stunt person to safely \_\_\_\_\_ over a great distance compared to hitting the ground without an air bag. This allows their force to be distributed over a larger distance and greater amount of time.
14. As a ski jumper goes down the 120 meter big hill ski jump her \_\_\_\_\_ is increasing and her \_\_\_\_\_ will decrease.
15. Indiana Jones is whirling his whip around and around. His hand applies an inward force to keep the whip from flying away while swinging it in a circle? What force is Indiana Jones applying to the whip?
16. Neil is trying to fly his kite on the moon. Every time he throws up his kite and starts to run the kite falls out of the sky and back down onto the ground. What force is causing the kite to fall each time he throws it up?
17. Neil realizes the kite will not work no matter how hard he tries or how fast he runs. Why? Does the moon have gravity? How do you know?
18. How could Neil make the kite stay up off the ground on the moon?
19. A man parked his stick shift car on a hill and went into his house for a nap. Ten minutes later the car starts to roll down the hill. The faster it goes down the hill, the harder it will be to stop. Why? What is increasing?
20. The next time the man parks the car he makes sure to turn the steering wheel so the front tire is resting against the curb. What does the curb have a lot of so that the car will not accidentally roll down the hill?
21. How are momentum and inertia different? In other words, in what situation can they not be used interchangeable to describe an object?
22. The Statue of Liberty did not move or get washed away during Hurricane Sandy. Why?
23. When water skiing you can make a big wide turn to the left or right and still stay up. What force keeps pulling you back towards the middle?
24. What force would force you outwards (in a straight line) when you let go of the rope when making a big turn while water skiing?
25. Amanda watches as a man on a motorcycle rides around and around and upside down in a big circular metal cage. She notices the motorcycle does not fall as it goes around the cage or upside down. What force pushes the rider out against the walls and keeps the rider from falling when upside down?