

P2 – Forces Quiz

1. Explain why making a car more streamlined has an effect on its top speed.
2. What two forces cause a motor boat to move?
3. What is meant by the term resultant force?
4. When an aircraft moves along the runway to take off, its acceleration decreases although the push of the engine remains constant. Why?
5. When the motor inside a toy is switched off, the toy starts to accelerate downwards. What happens to the momentum of the toy and why?
6. Explain why a toy accelerates upwards when the fan inside the toy rotates faster.
7. Explain why objects are wrapped in polystyrene for protection.
8. How is velocity different from speed?
9. When a tube is filled with air, a coin inside the tube will fall faster than a piece of paper. Why?
10. The forward force on a tractor is exactly balanced by the resisting forces on the tractor. Describe the motion of the tractor.
11. Describe how the horizontal forces acting on a car change during the first 2 seconds of acceleration.

12. Using the idea of forces explain why a parachutist reaches terminal velocity.
13. Using the idea of forces explain what happens when a parachutist opens his parachute.
14. Define braking distance.
15. Name two resistive forces that act on a vehicle.
16. State factors that affect thinking distance.
17. State factors that affect braking distance.
18. Why does applying the brakes increase the temperature of the brakes?
19. State & explain the benefits of a regenerative braking system (system that slows car down and recharges the car battery in a hybrid car).
20. When you slide down a slide, your speed at the bottom of the slide is much less than the calculated value. Why?
21. Explain why the top speed of a car is higher than the top speed of a van.
22. How can the velocity of a car change although the speed remains constant?
23. During a collision the front end of a car becomes buckled. Why is such a collision described as inelastic?

24. A car cannot accelerate above a certain maximum speed. Why not?
25. In terms of force and deceleration, what would happen if a climber, who used a non- elastic rope, fell?
26. Define direct proportionality.
27. Which objects are storing elastic potential energy? A bent metal ruler, stretched elastic band, springs on a playground ride, moulded plastic model. Explain your answer.
28. How much momentum does a car have when it stops at a traffic light?
29. Crash test dummies are fitted with electronic sensors. Why?
30. What is meant by the phrase ' momentum is conserved'?
31. In a collision, momentum is not always conserved. Why?
32. Explain why air bags reduce the risk of the driver sustaining serious head injuries.
33. If the speed of a car doubles, the amount of energy transferred in a collision quadruples. Why?
34. Define momentum.
35. Why is it easier to drag an object up a ramp instead of lifting it?
36. Could a skydiver ever hover in calm weather conditions?