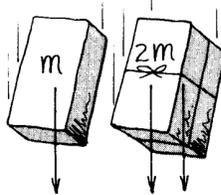


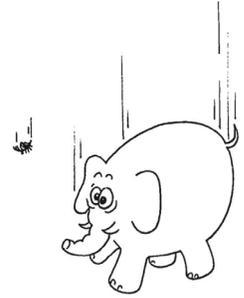
Physics Questionnaire

Answer the following questions giving careful thought to each question and write down your answer. You are not expected to know the answer, only have a hypothesis! There is no right or wrong at this point but throughout the year we will discuss each question.

1. Two bricks, one has twice the weight of the other, are dropped from a tall building. Which hits the ground first?

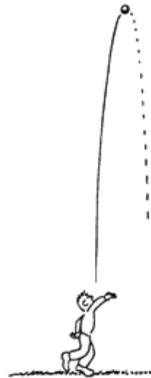


9. Which encounters the greater force of air resistance as it falls... a falling elephant or a falling feather?



2. Which hits the ground first, a bullet dropped, or a bullet fired horizontally from the same height?

3. What is the velocity of a rock that is thrown up into the air at the very top of its path?



10. Explain how a rocket works in space.

4. What is the acceleration of a rock thrown straight upward at the moment it reaches the top of its trajectory?

11. Can you ever tighten a tennis net so tight that it will not sag in the middle?

5. Which pulls harder on the Earth's oceans, the moon or the sun?

12. Can you ever prove that you are moving at constant speed in a room that has no windows?

6. Why do astronauts experience weightlessness?

13. Can a dog wag its tail without the tail in turn "wagging the dog"?

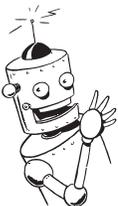
7. A jar is filled with a bunch of flies and is placed on a scale. Will the scale register more, less, or the same if the flies are in the air or sitting on the bottom of the jar?

14. If you are pointed forward on a bus moving at a constant speed and you drop a coin in the air above directly above your foot, Where will the coin land in reference to where you let go of it?

8. What keeps a satellite in orbit around the earth?

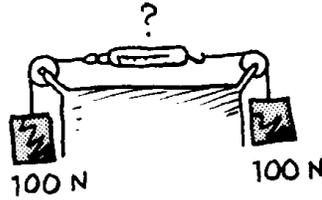
15. Would it be easier to push a car on the moon or earth?

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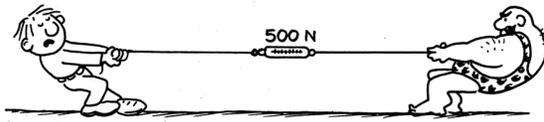


Chapter 1 Introduction

16. What would the scale read in this image below?

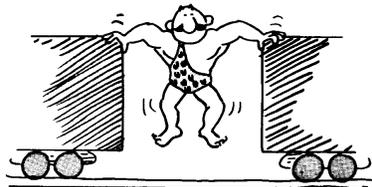


17. The strongman is about to win in a contest of tug-of-war, pulling Gus to the right, which individual is pulling the hardest?



18. If a Mack truck and Volkswagen have a head-on collision, which vehicle will experience the greater impact force?

19. The strong man will push the two initially stationary freight cars of equal mass apart before he himself drops to the ground. Is it possible for him to give either of the cars a greater speed than the other? Why or why not?



20. A ball is rolling across a table at a constant speed. There is no friction. Draw a diagram and identify all the forces that exist.

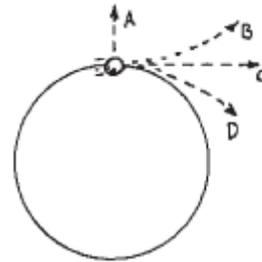
21. Which half of the broom weighs more, the bristle-end or the sawed-off handle?



22. Why does a ball roll down a hill?

23. On a car, do wider tires have more friction with the ground than narrow tires?

24. At amusement parks there is a spinning ride in which you are stuck to a wall. If the wall gave way, what direction would you travel?



25. If the sun suddenly collapsed and turned into a black hole, what would happen to the orbit of the earth?

26. Does gravity act on a space ship half way between the moon and Earth?

27. Do you weigh less at the North Pole or equator?

28. What effects the number of swings a pendulum makes in one minute? The mass of the pendulum, the angle of release, or the length of string?

