1. Consider the following situations: 1) A boy kicks a football across a field. 2) A compass needle aligns itself with the Earth's magnetic field. 3) An object experiences air resistance as it falls. 4) An apple falls from a tree to the ground. Which of these situations primarily involve only non-contact forces?

2. Why does a mountaineer use ropes and special shoes with deep grooves and treads while climbing a steep mountain?

3. Imagine you are a scientist conducting an experiment on the Moon. You drop a feather and a hammer simultaneously from the same height. Describe what you would observe and provide a concise explanation for this observation, referencing the relevant force.

4. A cyclist stops pedaling on a level road. After some distance, the bicycle gradually slows down and comes to a halt. Explain the primary force responsible for this observation, and describe one practical method the cyclist could employ to temporarily reduce the effect of this force, allowing them to coast for a longer distance without pedaling.

5. A rectangular block of wood has dimensions 20 cm x 10 cm x 5 cm and a mass of 1 kg. If it is placed on a table such that its largest face (20 cm x 10 cm) is in contact with the table, and then re-placed such that its smallest face (10 cm x 5 cm) is in contact, what is the ratio of the pressure exerted in the first case to the pressure exerted in the second case? (Assume g = 10 m/s^2)

6. A heavy box is being pushed by two people in opposite directions. Person A pushes with a force of 200 N from the left, and Person B pushes with a force of 150 N from the right. If the frictional force opposing the potential motion of the box is 60 N, determine the net force acting on the box and whether the box will move.

7. A balloon filled with air is pressed between two hands. Explain two different effects of the applied force on the balloon.

8. An object is being pushed by two children in opposite directions. Child A applies a force of 70 N towards the east, and Child B applies a force of 50 N towards the west.

9. Compare and contrast the magnetic force and the electrostatic force based on two distinct properties for each, including the types of materials they act upon and whether they can attract or repel.

10. A sharp needle has a much smaller tip area compared to the flat head of a nail. When the same force is applied to both, why does the needle penetrate fabric easily while the nail might not?