

Name: _____
Mr. Willis
Conceptual Physics: _____
Date: _____

Unit III
Forces and Motion (Newton's Laws)
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A Crash Course in Safety

- _____ 1. Use the diagram on page 366 "Crash-Test Dummies" to explain what forces act on the crash-test dummy to slow its forward movement. _____

- _____ 2. Look at Figure 9 on page 362. What forces act on each of the falling balls? _____

- _____ 3. Figure 7 shows a rock that is balanced precariously on another rock. Because the boulder is at rest, what do you know about the net force acting on it?

- _____ 4. How does zero net force affect the motion of an object? _____

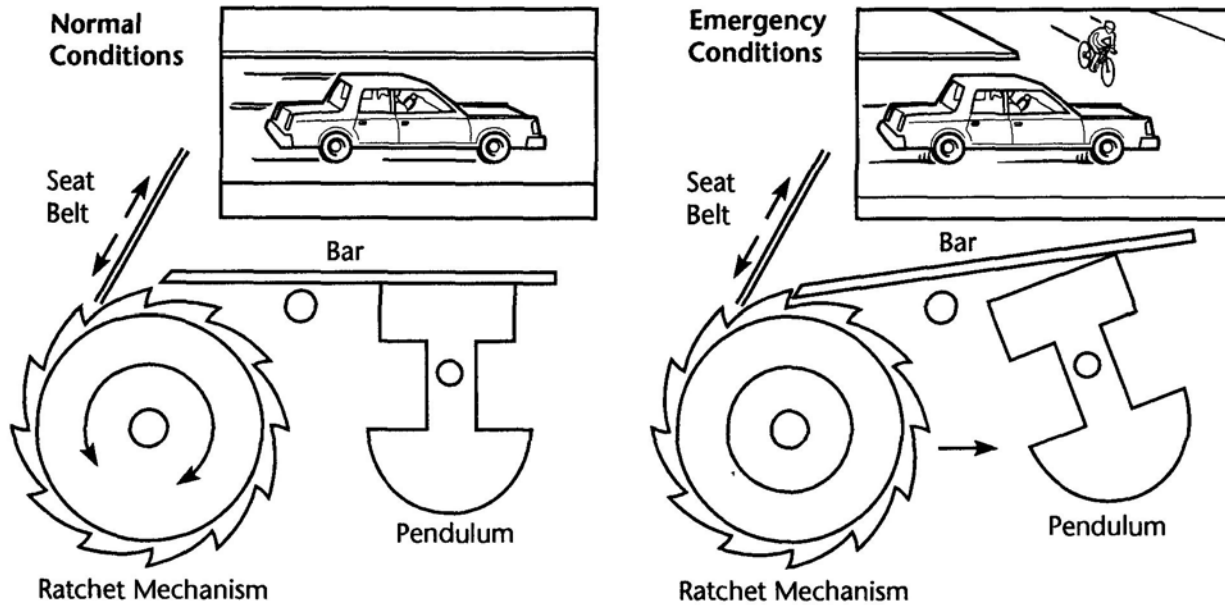
- _____ 5. Using Figure 14 on page 369 calculate how much an astronaut weighs on Mars if he weighs 863 N and has a mass 88 kg on Earth. _____

- _____ 6. During a test crash, an air bag inflates to stop a dummy's forward motion. The dummy's mass is 75kg. If the net force on the dummy is 825 N toward the rear of the car, what is the dummy's deceleration? _____

- _____ 7. What are two common examples of fluid friction? _____

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Use the diagrams below to answer question 1.



1. Why can you move freely in a seat belt under normal conditions but become “part” of the car upon collision? _____

Answer the following questions on the lines provided.

2. Inertia is the tendency of an object to resist any change in its motion. Explain how inertia affects a passenger in a head-on collision who is not wearing a seat belt.

3. Besides holding a person in place during a car collision, a seat belt serves another function. What is that function? _____
