# ***Understanding Car Crashes Video guide***

# ***www.highwaysafety.com***

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

As you view the following video clips, glean the important information by answering the questions below:

<http://www.youtube.com/watch?v=yUpiV2I_IRI&feature=relmfu>

1. Describe why the dummy was left behind when the truck moved.
2. Describe what happens to the dummy inside the car as it crashes into the wall.
3. How did Newton write his second law?
4. Define momentum. How can you calculate momentum?
5. What is impulse? Give an example.
6. What is meant by experiencing “G” forces?
7. Differentiate between the effect on a driver if the car crushes 1 ft with uniform deceleration and a car crushes 2 ft with uniform deceleration.
8. Why can one Nascar driver survive a crash whereas another can’t?
9. What is the Law of the conservation of Momentum?
10. Is momentum a vector or a scalar? Defend your answer.
11. Describe what happens to a passenger in collision involving a heavy car. How does this compare to a passenger in a collision involving a light car?
12. Weight is an advantage in what type of situation?
13. Size is an advantage in what type of situation?
14. Define Energy and list several forms of energy.
15. What type of energy is involved in car crashes?
16. Stored energy is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
17. What happens to kinetic energy when you double the speed? Why?
18. What is the major cause of crash injuries?
19. Why is crash worthiness a difficult concept? Give several examples of vehicles with good crash worthiness.

<http://www.youtube.com/watch?v=EtlUBAWHjKM>

1. What is injury biomechanics?
2. How has the study of injury biomechanics helped increase safety for race car drivers?
3. What are some of the technologies used to study the impact of a car crash on a human body?
4. What were the origins of injury biomechanics?
5. Why was it important for the airforce to start their studies on injury biomechanics?
6. What are the advantages of using crash test dummies
7. What is a CRABI?
8. What does CRABI stand for?
9. What is an accelerometer?
10. What is a load cell?
11. What is a potentiometer?
12. What does biofidelity mean?
13. What are the four levels in which the cells of a body are organized?
14. How are your organs protected?
15. How is your heart protected?
16. What are the three collisions that occur within a single car crash?
17. What happens to your brain during a car crash? Be detailed!
18. What happens to a fixed organ during a car crash?
19. Stress is a measure of \_\_\_\_\_\_\_\_\_\_.
20. Strain is a measure of \_\_\_\_\_\_\_\_\_\_.
21. What are the three types of stress?
22. What is the critical stress limit to a tissue or organ?
23. How do shock waves create injury?
24. What brain astaemia?
25. How can you reduce car injuries?
26. What safety improvements have been made as a result of having on board crash recorder instruments?