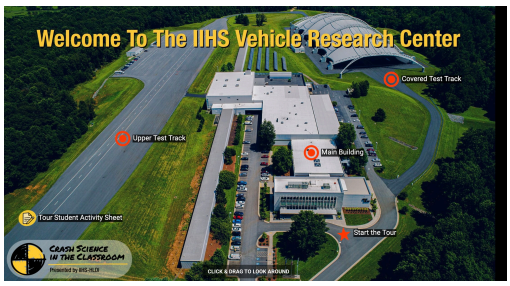
Name _____Class _____ Date_____

CRASH SCIENCE IN THE CLASSROOM

STUDENT ACTIVITY

Vehicle Research Center Virtual Field Trip



Key Questions

- Why are vehicles crash-tested?
- What types of testing occurs at the Vehicle Research Center (VRC)?
- How is science, technology, engineering and mathematics applied in vehicle testing?

Definitions

- **crash test dummy:** a sophisticated, re-usable device that simulates the height, weight, proportions, and major anatomical features of the human body
- **crashworthiness:** a measure of how well a vehicle protects occupants from serious injury or death in a crash.
- **crumple zones**: the parts of a vehicle designed to deform in a crash.
- **safety cage:** the occupant compartment of a vehicle. Limiting damage and intrusion into this part of the vehicle is critical to protecting people riding inside from serious injury.

Before the Tour: KWL (Know-Want-Learn) Questions

1. Before you explore the Tour, finish one (1) of the "starters" from the boxes below to answer the "K" and "W" questions.
   a. "K" —What I **Know** — Tell us what you already know (or think you know) about crash-testing or vehicle safety research.

• I already know that… • I've heard that… • One fact I think is true is…	• This reminds me of when… • I've seen a video/article about… • I think this connects to what we learned about _____ because…

_____

_____

   b. "W" — What I **Want** to Know — What are you curious about? What do you want to find out or see on our virtual field trip?

• I wonder why/how… • I'm curious about what happens when… • I want to know more about…	• I hope to find out if… • What causes _____ to happen? • How does _____ affect _____?

_____

_____

During the Tour:

Lobby of the Main Building – Look for the two crashed vehicles.

2. What is the year and model of each of the crashed vehicles?
   Older Car _____ Newer Car _____

Crash Test Dummy Calibration Lab

3. Dummies are repaired and recalibrated after every test to make sure they yield repeatable and _____ results every single time they are used.

Display Hall

4. IIHS conducts two types of 40-mph frontal offset crash tests: _____ and _____overlap.
5. _____ is a term used to describe the protection a vehicle offers occupants in a crash. It involves many aspects of vehicle design including the vehicle's structure and the restraint system.

Crash Hall

6. Engineers say "crash" not "accident because a crash is a physical event that follows the laws of physics and biology, so its causes and effects can be _____- and prevented.

Upper Test Track

7. Since 2016, IIHS has evaluated vehicle headlights on the upper test track, measuring how well low and high beams illuminate a straightway and two sets of curves. Points are deducted for excessive _____ that could temporarily blind oncoming drivers.

Covered Test Track

8. Crash avoidance sensors generate either _____ waves (e.g., radar, visible light, LIDAR waves) or ultrasonic sound waves to detect potential collisions and avoid accidents.

After the Tour: KWL (Know-Want-Learn) Question

9. "L" — What I **Learned** — After exploring the VRC, think about what stood out to you the most. Use the sentence starters in the boxes below to reflect on your learning.
   a. Write at least **two complete sentences** using different starters.

• One thing that surprised me was... • Now I understand how/why... • Crash testing is important because...	• I learned more about how... • I used to think ___, but now I think... • The most interesting thing I learned was...

_____

_____

_____

Reflection Challenge (Optional)

10. If you could design your own crash test, what would you test and why?

_____

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