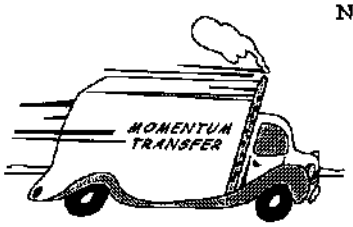
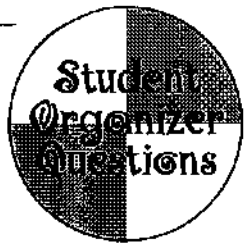


Name _____ Period _____ Date _____

"Understanding Car Crashes It's Basics Physics"

Video Concept Organizer



TIME
2:15
2:50
3:20
4:00
4:35

Running Time:
22 minutes

Directions:
To help you remember the key physics concepts discussed while viewing the video, fill in the blanks or circle the correct answer.

Video Scenes & Key Concepts

Test Track Laws

Why did the dummy get left behind? It's called _____ , the property of matter that causes it to _____.

Isaac Newton's (circle one) 1st 2nd 3rd Law of Motion states: A body at rest remains at _____ unless acted upon by an external _____ , and a body in _____ continues to move at a constant _____ in a straight line unless it is acted upon by an external force.

Crashing Dummies

Now watch what happens when the car crashes into a barrier. The front end of the car is crushing and absorbing _____ which slows down the rest of the car.

In this case, it is the steering wheel and windshield that applies the _____ that overcomes the dummy's _____

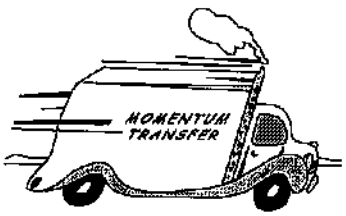
Crash-Barrier Chalkboard

Newton explained the relationship between crash forces and inertia in his (circle one) 1st 2nd 3rd Law of Motion.
(Fill in the blanks to explain what each letter in the formula represents.)

$F =$ _____ → $F = ma$ $m =$ _____ $a =$ _____

$F = \frac{m\Delta v}{t}$ $\Delta v =$ $t =$ _____

$Ft =$ _____ → $Ft = m\Delta v$ $m\Delta v =$ _____



"CRASH COURSE" ACTIVITY

"Understanding Car Crashes It's Basics Physics"

Video Concept Organizer

Student Organizer Questions

TIME
5:20
5:35
6:05
6:18
6:45
7:10
8:20
9:04
9:42
12:55
13:50
14:30

Surfers, Cheetahs, and Elephants ...oh my!

Momentum is _____ in motion. It is the product of an object's _____ and its _____.

Which has more momentum? An 80,000 pound big rig traveling 2 mph or a 4,000 pound SUV traveling 40 mph? (circle one) **Big Rig SUV same**

Soccer Kicks, Slap Shots, and Egg Toss

What is it that changes an object's momentum? _____. It is the product of _____ and the _____ for which it acts.

If the eggs are of equal mass and are thrown at the same velocity they will have the same _____. The wall and the sheet both apply equal _____.

The wall applies a _____ force over a _____ time, while the sheet applies a _____ force over a _____ time.

With panic braking the driver stops in less time or distance and experiences more _____.

Crashing and Smashing

The second animated vehicle's front end is less stiff so it crushes two feet instead of one, causing the deceleration to _____.

Extending the time of impact is the basis for many of the ideas about keeping people safe in crashes. List three applications in vehicle or highway safety.

1._____ 2._____ 3._____

Conserving Momentum and Energy–it's the Law!

In a collision of two cars of unequal mass, the occupants of the lighter car would experience much higher _____, hence much higher _____than the occupants of the heavier car.

Motion related energy is called _____. Energy due to an object's position or conditions is called _____.

At what point in the pendulum's swing is its potential energy equal to its kinetic energy? _____ When is its kinetic energy at its maximum? _____

(Circle) the correct formula for kinetic energy (KE).

KE = 1/2 m2v **KE = 1/2 2mv²** **KE = 1/2 mv²** **KE = 1/2 mv2**