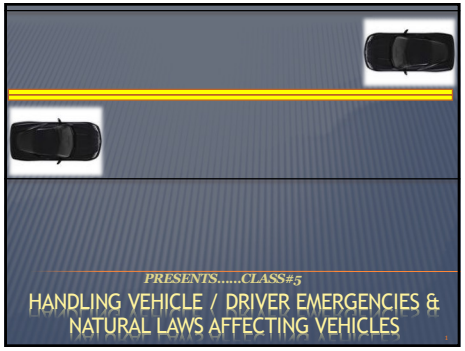
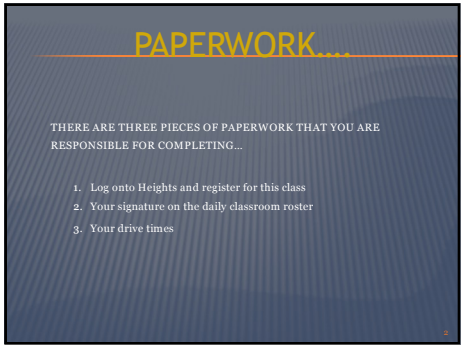
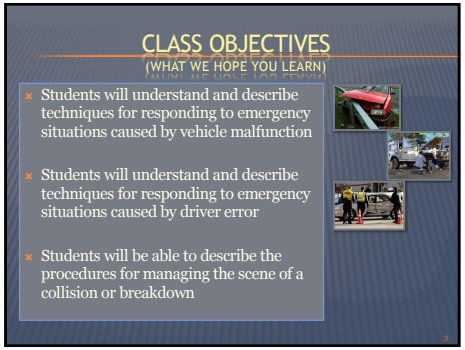

PRESENTS……CLASS#5
HANDLING VEHICLE / DRIVER EMERGENCIES & NATURAL LAWS AFFECTING VEHICLES

1


PAPERWORK….
THERE ARE THREE PIECES OF PAPERWORK THAT YOU ARE RESPONSIBLE FOR COMPLETING…
1. Log onto Heights and register for this class
2. Your signature on the daily classroom roster
3. Your drive times

2


CLASS OBJECTIVES
(WHAT WE HOPE YOU LEARN)
Students will understand and describe techniques for responding to emergency situations caused by vehicle malfunction
Students will understand and describe techniques for responding to emergency situations caused by driver error
Students will be able to describe the procedures for managing the scene of a collision or breakdown

3

VEHICLE EMERGENCIES

EMERGENCY SITUATIONS CAUSED BY A VEHICLE MALFUNCTION

- Brake Failure
- Steering Failure
- Loss of forward vision
- Tire Failure
- Changing a tire
- Stuck accelerator
- Car Fire
- Engine Failure (stalls)
- Flooded Engine
- Overheating Engine
- Car stalls on railroad tracks
- Headlight failure
- Dead Battery

4

4

CAN'T STOP I AINT GOT NO BRAKES.... WHAT DO I DO?

OTHER BRAKE PROBLEMS...

•Brake "fade" – brakes become hot, pedal becomes squishy
- *Stop and allow brakes to cool*

•Wet Brakes
- *Dry the brakes by putting your left foot gently on the brake pedal and your right foot on the accelerator. Travel slowly for 5-10 seconds, then test brakes*

Vehicle Emergencies

Brake Failure
- •Pedal is spongy or goes to the floor
- •Brake warning light comes on

Brake goes to floor!

Transparency 7.1

Procedure
- •Rapidly pump the brakes
- •Shift to a lower gear
- •Use parking brake
  - >Left hand steers
  - >Right hand applies hand brake with thumb depressing button or left foot depress parking brake pedal while left hand pulls out release arm
- •Last resort - "soft" crash area (bushes, shrubs, sideswipes)
  - >Steer uphill

5

5

I GOT A WHEEL BUT I JUST CAN'T STEER...

POSSIBLE CAUSES:

Total Steering Failure
- •Broken tie rod ends
- •Steering stem gear broken

Power Steering Failure
- •Loss of fluid
- •Power steering pump broken
- •Serpentine Belt broken

Steering Failure

Total Steering Failure

•Stop the car quickly using the parking brake method

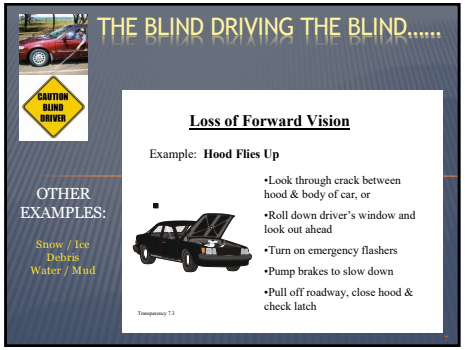
•Foot Brake usage could create a swerve

Transparency 7.2

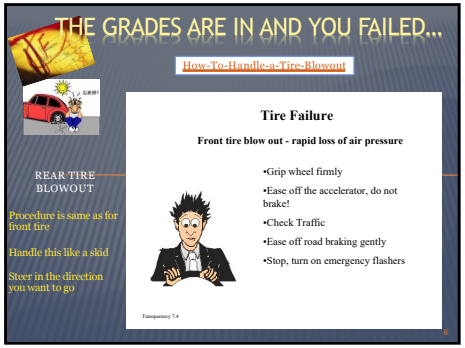
Power Steering Failure - (Car can still be steered)
- Grip wheel firmly
- Steer with more force
- Pull off the roadway to a safe location

6

6


THE BLIND DRIVING THE BLIND.....
CAUTION BLIND DRIVER
OTHER EXAMPLES:
Snow / Ice
Debris
Water / Mud
Loss of Forward Vision
Example: Hood Flies Up
•Look through crack between hood & body of car, or
•Roll down driver's window and look out ahead
•Turn on emergency flashers
•Pump brakes to slow down
•Pull off roadway, close hood & check latch
Transparency 7.3

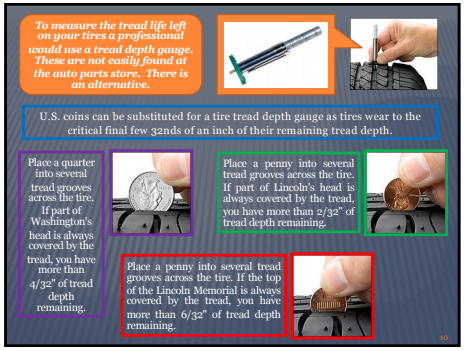
7


THE GRADES ARE IN AND YOU FAILED...
How-To-Handle-a-Tire-Blowout
REAR TIRE BLOWOUT
Procedure is same as for front tire
Handle this like a skid
Steer in the direction you want to go
Tire Failure
Front tire blow out - rapid loss of air pressure
•Grip wheel firmly
•Ease off the accelerator, do not brake!
•Check Traffic
•Ease off road braking gently
•Stop, turn on emergency flashers
Transparency 7.4

8


QUICK CLIP.....CHANGING A FLAT TIRE
How-To-Change-a-Flat-Tire

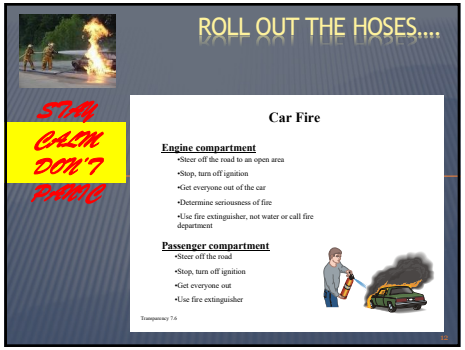
9


To measure the tread life left on your tires a professional would use a tread depth gauge. These are not easily found at the auto parts store. There is an alternative.
U.S. coins can be substituted for a tire tread depth gauge as tires wear to the critical final few 32nds of an inch of their remaining tread depth.
Place a quarter into several tread grooves across the tire. If part of Washington's head is always covered by the tread, you have more than 4/32" of tread depth remaining.
Place a penny into several tread grooves across the tire. If part of Lincoln's head is always covered by the tread, you have more than 2/32" of tread depth remaining.
Place a penny into several tread grooves across the tire. If the top of the Lincoln Memorial is always covered by the tread, you have more than 6/32" of tread depth remaining.

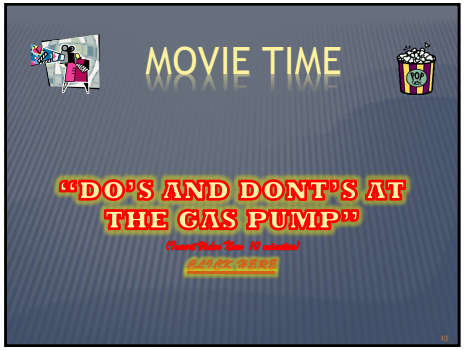
10


OH NO! I GOT WAY TOO MUCH GAS....
IS THIS THE RIGHT ORDER?
Stuck Accelerator
3 •Apply the brakes
2 •Select an escape path
1 •Shift to neutral
4 •Use escape path
5 •Stop and turn off ignition
Transparency 7.5

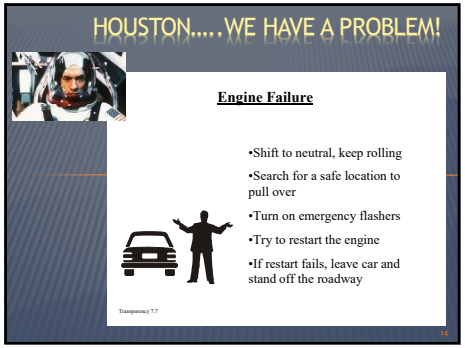
11


ROLL OUT THE HOSES....
STAY CALM DON'T PANIC
Car Fire
Engine compartment
•Steer off the road to an open area
•Stop, turn off ignition
•Get everyone out of the car
•Determine seriousness of fire
•Use fire extinguisher, not water or call fire department
Passenger compartment
•Steer off the road
•Stop, turn off ignition
•Get everyone out
•Use fire extinguisher
Transparency 7.6

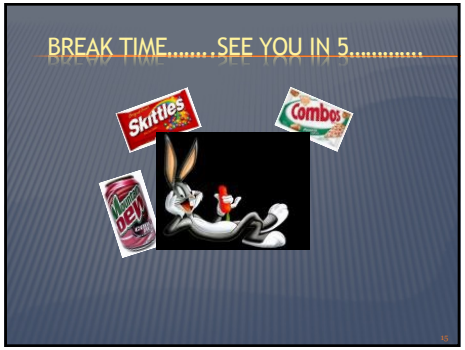
12


MOVIE TIME
"DO'S AND DONT'S AT THE GAS PUMP"
CLICK HERE

13


HOUSTON.....WE HAVE A PROBLEM!
Engine Failure
•Shift to neutral, keep rolling
•Search for a safe location to pull over
•Turn on emergency flashers
•Try to restart the engine
•If restart fails, leave car and stand off the roadway
Transparency 7.7

14


BREAK TIME.....SEE YOU IN 5.....
Skittles
Combos
DEW

15

I THINK I CAN, ITHINK I CAN, I THINK I CAN, NO I CAN'T, ABANDON SHIP!

Car Stalls on Railroad Tracks

- If no train is coming, try to restart car
- Shift to neutral, push car off tracks
- If train is approaching, quickly abandon car
- Move towards the train on side of tracks

Transparency 7.8

16

WHERE WERE YOU WHEN THE LIGHTS WENT OUT?

In the dark....

HEADLIGHT FAILURE

- Slow Down, drive in path you remember
- Use dimmer switch (hi-beam / low beam)
- Try using parking lights
- Steer off the roadway to a safe location
- Call for help!

17

DRIVER EMERGENCIES.....
DRIVING OFF THE ROAD (2 WHEEL DROP-OFF)

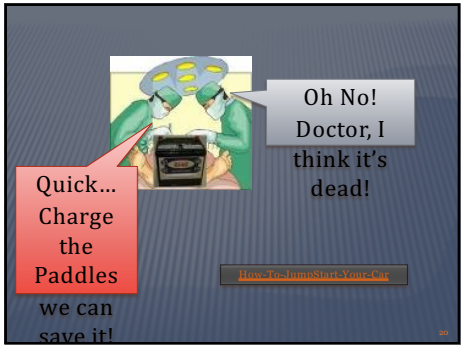
- GRASP THE WHEEL FIRMLY
- FOOT OFF THE ACCELERATOR, BRAKE GENTLY
- POSITION THE CAR TO STRADDLE THE ROADWAY EDGE
- CHECK TRAFFIC FOR A SAFE PLACE TO RETURN TO THE ROADWAY AND SIGNAL

- STEER QUICKLY TOWARDS THE ROADWAY
- COUNTERSTEER (STEER IN OPPOSITE DIRECTION) QUICKLY WHEN FRONT TIRES HIT THE ROADWAY
- CENTER THE CAR IN THE LANE
- ACCELERATE QUICKLY TO THE SPEED OF TRAFFIC

18


MOVIE TIME
RECOGNIZE – REACT - RECOVER
Insert Disk Now….

19


Oh No! Doctor, I think it's dead!
Quick… Charge the Paddles
we can save it!
How To Jump Start Your Car

20


DRIVER EMERGENCIES…
SKIDDING AND SKID CONTROL
CAUSES ----
1. CHANGING SPEED TOO QUICKLY
2. CHANGING DIRECTION TOO QUICKLY

21

Types of Skids

Braking Skid

- 4-wheel lock -- too much braking
- Rear-wheel lock -- rear or car begins to come around and lead

Power skid -- sudden or hard acceleration

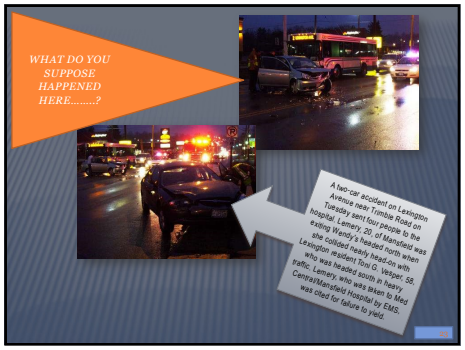
Cornering skid -- sudden or hard acceleration

- Oversteer – rear end fishtails
- Understeer – car continues straight

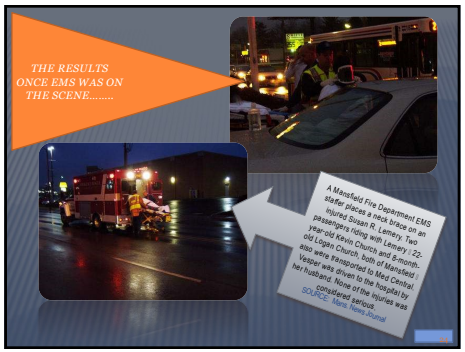
Blowout skid -- use procedure stated earlier

Transparency 7.11

22



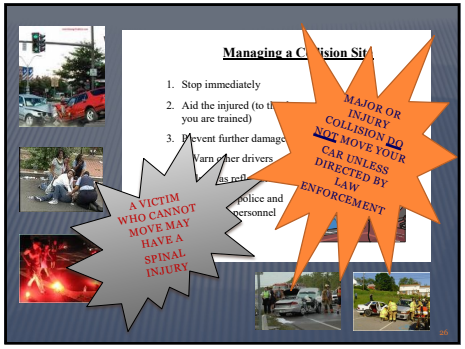
23



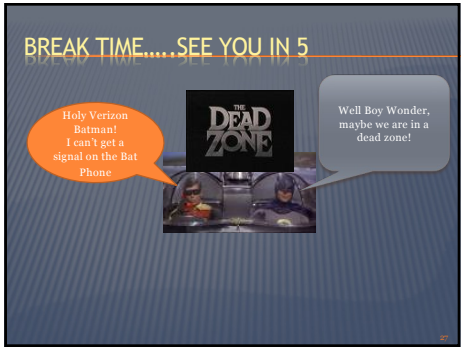
24


MOVIE TIME
"UK PSA ANNOUNCEMENT"
(CAUTION THE CONTENT IS VERY GRAPHIC AND MAY BE DISTURBING. THIS VIDEO IS SAID TO HAVE BEEN BANNED FROM U.S. TELEVISION AND YOUTUBE.)
CLICK HERE TO START

25

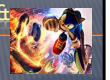

Managing a Collision Sit
1. Stop immediately
2. Aid the injured (to th
you are trained)
3. Prevent further damage
Warn other drivers
police and
personnel
A VICTIM WHO CANNOT MOVE MAY HAVE A SPINAL INJURY
MAJOR OR INJURY COLLISION DO NOT MOVE YOUR CAR UNLESS DIRECTED BY LAW ENFORCEMENT

26


BREAK TIME.....SEE YOU IN 5
Holy Verizon Batman! I can't get a signal on the Bat Phone
THE DEAD ZONE
Well Boy Wonder, maybe we are in a dead zone!

27

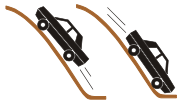
NATURAL LAWS AFFECTING VEHICLE & OPERATOR PERFORMANCE…



The "Gravity Cavity"…what goes up has to come down

Gravity

Definition - a force that pulls objects toward the center of the earth



Effects of gravity driving uphill:

- Slower speed
- More power needed
- Effects on passing

Effects of gravity driving downhill:

- Increased speed
- Longer stopping distance
- Brake wear
- Lower gear may be needed for speed control

Transparency 6.1

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Center of Gravity

*** Definition - the point on an object around which the weight is evenly distributed**

- **Low center of gravity - more stability**
- **High center of gravity less stability**
  - **>Less Control**
  - **>More likelihood of rollover**

Transparency 6.2

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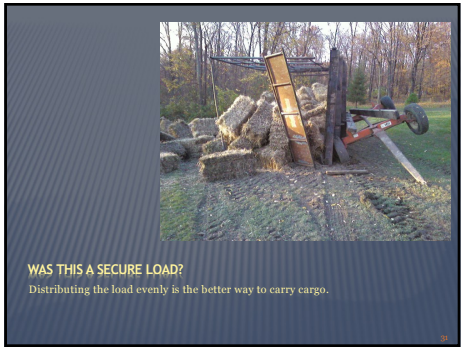
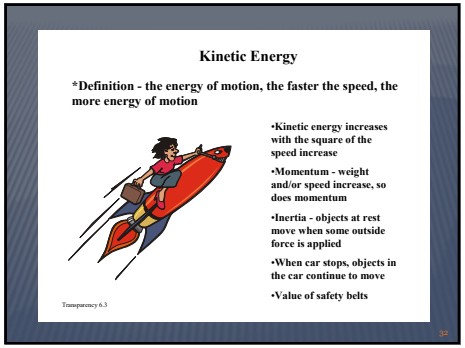
LOAD STABILITY…..

WILL GRANNY & ELLIE MAE STAY ON IF JETHRO TAKES A WILD TURN?

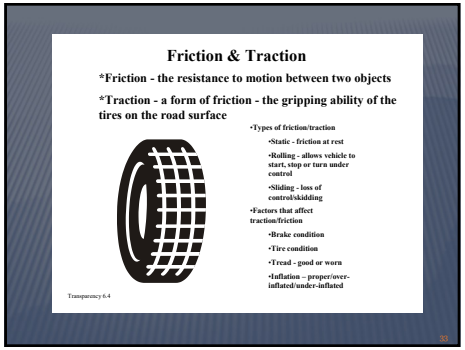
30


WAS THIS A SECURE LOAD?
Distributing the load evenly is the better way to carry cargo.
31

31


Kinetic Energy
*Definition - the energy of motion, the faster the speed, the more energy of motion
•Kinetic energy increases with the square of the speed increase
•Momentum - weight and/or speed increase, so does momentum
•Inertia - objects at rest move when some outside force is applied
•When car stops, objects in the car continue to move
•Value of safety belts
Transparency 6.3
32

32


Friction & Traction
*Friction - the resistance to motion between two objects
*Traction - a form of friction - the gripping ability of the tires on the road surface
•Types of friction/traction
•Static - friction at rest
•Rolling - allows vehicle to start, stop or turn under control
•Sliding - loss of control/skidding
•Factors that affect traction/friction
•Brake condition
•Tire condition
•Tread - good or worn
•Inflation – proper/over-inflated/under-inflated
Transparency 6.4
33

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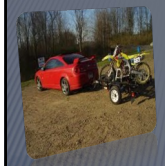
OTHER FACTORS THAT AFFECT TRACTION / FRICTION

- Road condition
  - Surface type
  - Surface materials
  - Curves, hills, etc.
    - Adjust speed
    - Adjust position in the lane
    - Centrifugal force
- Passenger load distribution
  - Heavy in front
  - Light in back
  - Car-top carrier – distribute weight properly




34

34




WHEN LOADING A TRAILER

More of the weight should be on the front of the trailer than in the back of the trailer, however the load should be spread as evenly as possible.

35

35

STOPPING DISTANCES

IT'S SIMPLE MATH:

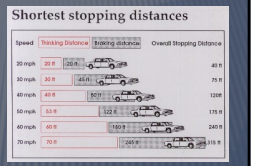
$TSD = PD + RD + BD$

TSD - Total Stopping Distance

PD - Perception Distance

RD - Reaction Distance

BD - Braking Distance



TRACTION | KINETIC ENERGY | MOMENTUM

These natural laws affect your stopping distance!

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Force of Impact

*Definition - the force at which one object hits another

Force of impact varies with the square of the speed increase

Factors that affect force of impact:

- **-Speed**
- **-Weight**
- **-Distance traveled before hitting the object**

Unavoidable collision:

- **-Head-on: worst type - find a "soft" crash area**
- **-Side: find a point that will reduce injury or damage**

Vehicle features that absorb energy:

- **-Front & rear collapse areas**
- **-Side door beams**
- **-Reinforced windshields**
- **-Energy-absorbing steering mechanism**

Transparency 6.5

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- Reduce injuries and fatalities
- Proper method for using the safety belt
  - Adjust seat / belt not twisted
  - Snap metal end into fitting
    - Shoulder belt across shoulder
    - Lap belt across hips or upper thighs
  - Adjust lap belt for snugness
  - Adjust shoulder belt across chest

SAFETY BELTS - MANDATORY IN THE STATE OF OHIO

38

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- Proper type and size
- Properly secured in car
- Manufacturer's specifications
- Children under age 8 must ride in a booster seat or other appropriate child safety seat unless they are 4'9" or taller
- Children from 8 – 15 years old who are not secured in a car seat must be secured in the vehicle's seat belt
- Because of possible injury by air bag inflation, children should be in child safety seats or belted in the back seat

CHILD SAFETY SEATS - NEW LAWS IN OHIO

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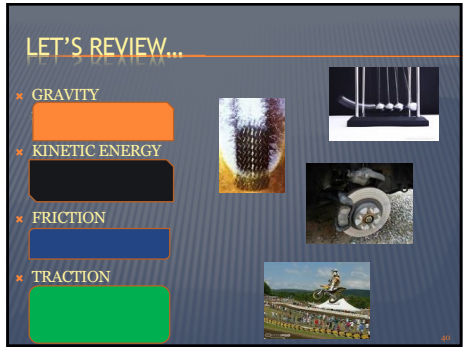

LET'S REVIEW...
GRAVITY
KINETIC ENERGY
FRICTION
TRACTION

40


MOVIE TIME
UNDERSTANDIN
G CAR CRASHES

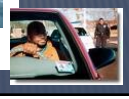
41

42

BUSTED…..WHAT DO I DO NOW?

How to Respond at a Traffic Stop

- Pull over at the nearest safe location
- Roll down driver's side window
- Keep hands in view of the officer
- Present to the officer:
  - Driver's license
  - Registration card
  - Insurance card
- Be cooperative and polite
- Do not argue with the officer
- Obey the directions of the officer



43

MOVIE TIME

"WHAT TO DO WHEN YOU ARE PULLED OVER"

WHAT TO DO WHEN PULLED OVER.MP4

44

THIS IS……

CLASS EXERCISE……

45

46