MANITOBA PUBLIC INSURANCE

MANDATORY ENTRY-LEVEL TRAINING MANITOBA CLASS 1

Lesson 6

Instructor's Guide

Overview

Purpose/Objectives

This lesson provides instruction on professional driving techniques.

After completing this lesson, students should be able to:

- Apply defensive driving techniques
- Recognize common situations that lead to collisions
- Understand the habits that are key to preventing collisions

How long should it take?

Classroom (hours)			In-Yard (hours)			In-Cab (hours)			Total Training Duration (hours)
Deliver	Apply	Assess	Deliver	Apply	Assess	Deliver	Apply	Assess	
6.5		0.5		0.5		0.5	20	0.5	28.5

Required materials

- Whiteboard or flipchart
- Markers
- Projector
- PPT presentation
- Printed and electronic quizzes
- Pens

Using this document

This document is intended to guide you through the session. It includes the following icons for reference:

▶ **Direction on what you need to <u>do</u>**

Sample language for what you need to <u>say</u>

? Sample wording for what you need to <u>ask</u>

ⓘ Extra information to consider

Lesson Outline

Time (Approx. mins)	Topic	Materials	Slides
20	Introduction		1-3
180	Awareness on the Road		4-28
40	Driving to Conditions		29-34
140	High-Risk Driving Techniques		35-48
5	Wrap Up		49-50
30	Knowledge Check		51
30	Practical In-Yard Application		52
30	Practical In-Cab Demo		52
1200	Practical In-Cab Application		52
30	Practical In-Cab Assessment		53

Total time = 28.5 hrs

ⓘ Times are an approximation of what is expected in a 15-student class with active participation. Times also include in-yard demonstration, application, and assessments.

Student Materials

- Lesson 6: Exercise Book
- Textbook
- Lesson 5 Practical Job Aid
- Operation Lifesaver's Highway-Rail Grade Crossing Training for Professional Truck Drivers Driver's Guide

Mid-Term Competency Exam

Time: 60 minutes

Type: Competency Exam

- Students have a scheduled 1 hour to complete the Mid-Term Exam. This should be done after Lesson 5 and before Lesson 6. The exact timing of this exam will depend on how your time is being organized. A passing grade of the mid-term is required for moving on to more advanced vehicle manoeuvring.

Hand out **Mid-Term Competency Exam**.

Introduction

Objectives: In this section, students will review more advanced driving manoeuvres and learn professional driving techniques to avoid collisions.

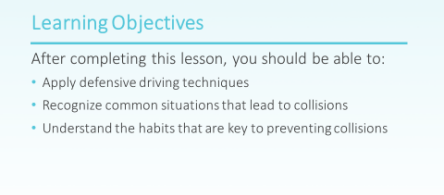
Time: 20 minutes

Slide: 1 Type: Presentation

- Welcome students and allow time to settle if this is a new day of classroom delivery.

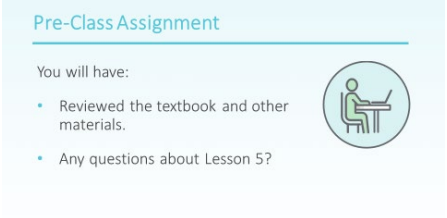
Slide: 2 Type: Presentation

- After completing this lesson, you should be able to:
  - Apply defensive driving techniques
  - Recognize common situations that lead to collisions
  - Understand habits that are key to preventing collisions



Slide: 3 Type: Discussion

- After the last class, you were asked to review Lesson 5 materials.
- ? Do you have any questions about that lesson?
- Answer any questions that may come up.



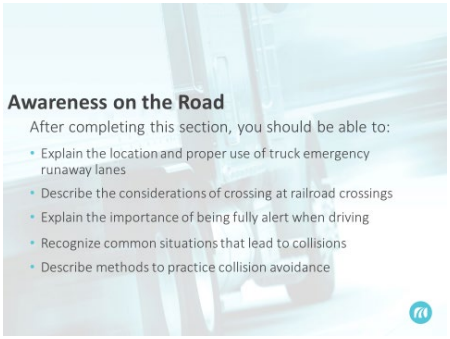
Awareness on the Road

Objectives: This section explains the various situations that can cause collisions that are considered higher risk and best practices for collision avoidance.

Time: 180 minutes

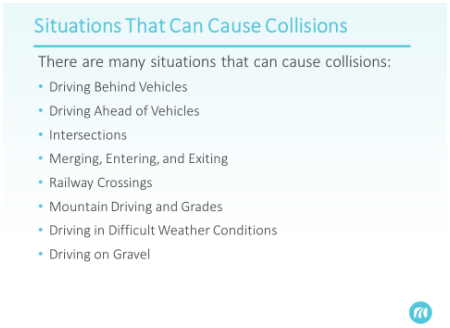
Slide: 4 Type: Presentation

- After completing this section, you should be able to:
  - Explain the location and proper use of truck emergency runaway lanes
  - Describe the considerations of crossing at railroad crossings
  - Explain the importance of being fully alert when driving
  - Recognize common situations that lead to collisions
  - Describe methods to practice collision avoidance



Slide: 5 Type: Presentation

- These are some situations that can cause collisions. We will be discussing these in more detail.



Slide: 6 Type: Presentation

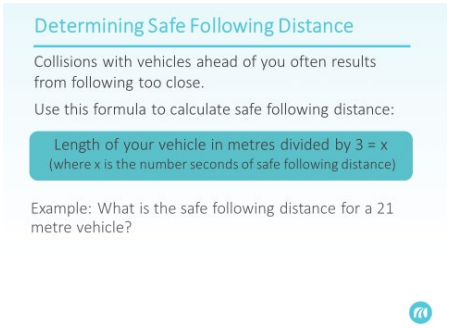
- Collisions with vehicles ahead of you are often caused by following too close.

  A safe following distance can be determined by the number of seconds between when the vehicle ahead passes a stationary object (such as a power pole) and when you arrive at it.

  Use this formula to calculate a safe following distance:

  - Length of your vehicle in metres divided by 3 = x seconds for a safe following distance.

  No matter how long the vehicle, always keep at least 4 seconds of following distance.

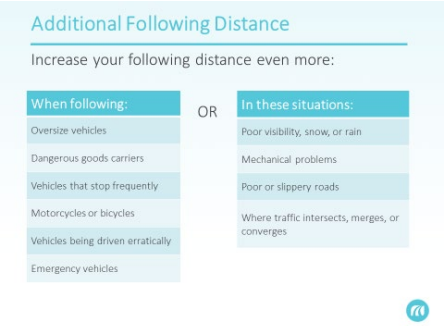


? What is the safe following distance for a 21-metre vehicle?

▶ Write this example on the board/chart paper: 21/3 = 7 seconds.

Slide: 7 Type: Presentation

- Increase your following distance when following:
  - Oversize vehicles that obscure your vision
  - Dangerous goods carriers
  - Vehicles that stop frequently, such as delivery vans, school buses, etc.
  - Motorcycles or bicycles
  - Vehicles being driven erratically
  - Emergency vehicles
- Or in these situations:
  - Poor visibility, snow, or rain
  - Mechanical problems
  - Slippery and/or wet conditions
  - Where traffic intersects, merges, or converges



ⓘ **Textbook Reference:** Section 6 - Advance Driving Manoeuvres.

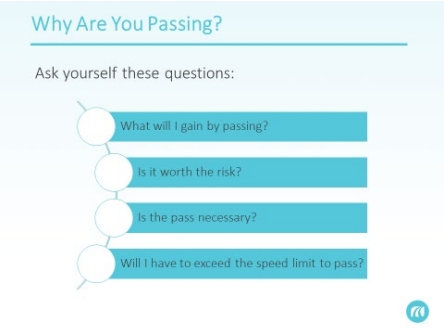
Slide: 8 Type: Presentation

- Passing a slower vehicle is acceptable if done safely and within the speed limit. But before you decide to pass, consciously ask yourself:
  - What will I gain by passing?
  - Is it worth the risk?
  - Is the pass necessary?
  - Will I have to exceed the speed limit to pass?

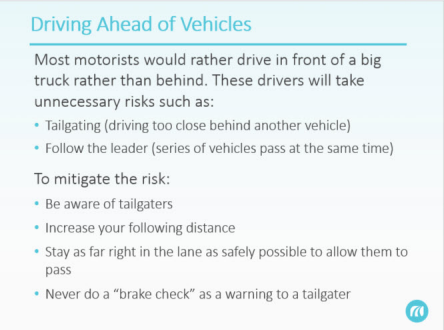
  You may decide you don't need to pass after all.

  Pass on two-lane roads only when absolutely necessary. Choose a safe place with good visibility and the right traffic conditions to allow a safe gap.

  Consciously asking yourself these questions is similar to commentary driving (from Lesson 5).



Slide: 9 Type: Presentation



- Other drivers should use safe following distances when travelling behind you, but they often don't. Most motorists would rather drive in front of you than behind you. Some drivers take unnecessary risks, such as tailgating or following the leader.

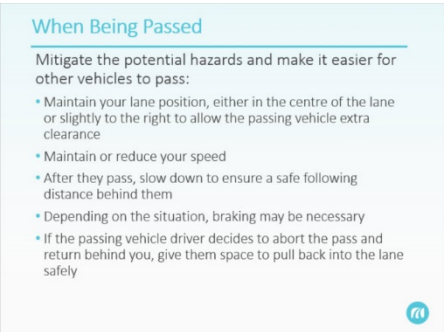
  A tailgater is someone driving too close behind your vehicle. Tailgaters may dart out to make a pass, or pop in and out to assess whether to pass. Bad weather often attracts more tailgating, because the tailgaters want to use your vehicle as a kind of beacon or protective shield from the conditions.

  Following the leader is when a series of vehicles pass you at the same time, even when the second and subsequent vehicles have extremely limited visibility.

  You can't control how closely other vehicles follow you, but you can take measures to mitigate the risks.

  - Be aware of tailgaters.
  - If you have a tailgater, increase your following distance from the vehicle ahead to give yourself more time to react, if needed.
  - Make it easier for the tailgater to pass safely. Stay as far right in the lane as safely possible, and be patient. If you are driving at the speed limit, try slowing down slightly. Even if slowing down doesn't stop the tailgating, it is better to be tailgated at a lower speed.
  - Never do a "brake check" (a sudden application of the brake) as a warning to a tailgater to pass or back off. This may cause the tailgater to panic, and dangerously swerve or brake suddenly.

Slide: 10 Type: Presentation



- When you're being passed:
  - Maintain a lane position in the centre or slightly to the right of the lane, to give the passing vehicle enough clearance.
  - Maintain or reduce your speed.
  - If the passing vehicle cuts in too quickly after the pass, slow down (brake if necessary) to ensure a safe following distance.
  - If the passing vehicle driver decides to abort the pass and return behind you, give them space to pull back into the lane safely.

  Avoid flashing your lights or hazards as a signal that the passing vehicle can safely cut back into the driving lane. The lights may blind or confuse the driver; truck drivers will understand what you mean, but not the average motorist.

  If you're being passed on a multi-lane highway, avoid edging too far to the other side and encroaching on the other lane.

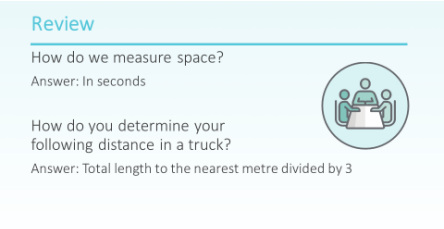
Slide: 11 Type: Discussion

? How do we measure space?

▶ Allow time for students to answer then click to reveal answer.

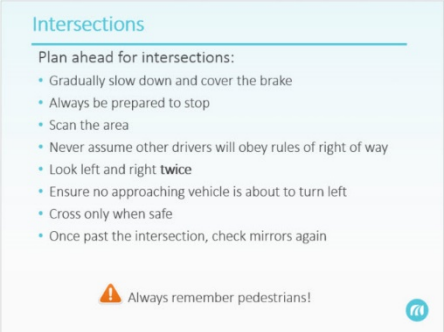
? How do you determine your following distance in a truck?

▶ Allow time for students to answer then click to reveal answer.



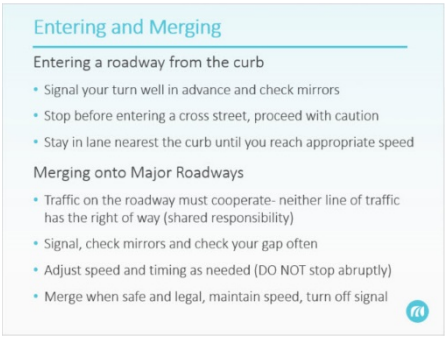
Slide: 12 Type: Presentation

Whether you are stopped at an intersection or have the right of way, follow these steps when crossing:



- As you approach, gradually slow down and cover the brake.
- Always be prepared to stop because of visibility problems, traffic, surprises, anything.
- Scan the area to determine the "point of no return," at which you won't stop if the lights turn amber. Deciding factors include: speed, road conditions, visibility, and traffic volume to the front, rear, and side.
- Never assume other drivers will obey rules of right of way.
- Look left and right twice for traffic indicators and controls, pedestrians and other vehicles. Look around any obstructions like mirror arms.
- Ensure no approaching vehicle is about to turn left in front of you.
- Cross only when safe, even if you have the right of way. Again, don't assume other drivers will obey rules of right of way.
- Once past the intersection, check mirrors again for any change in traffic patterns behind you.
- Always remember pedestrians: if a vehicle is stopped at an intersection, always assume they may be waiting for a pedestrian or other traffic to cross. Never pass a vehicle that stopped at a crosswalk (marked or unmarked) to allow a pedestrian to cross the road.

Slide: 13 Type: Presentation



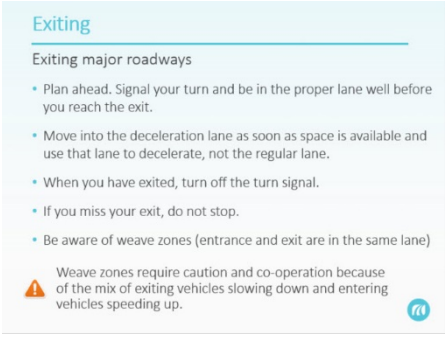
- Refer students to the textbook section on Merging, Entering, and Exiting to review this section together.
- Ask students in the classroom to read through the procedures for entering a major roadway and merging.
  - When entering a roadway from the curb or loading zone:
    - Signal your turn well in advance, check mirrors, and look directly out the windows to ensure the path is clear before proceeding.
    - If entering from an alley, side street, driveway, or terminal, stop before entering a cross street and proceed with extreme caution.
    - Stay in the lane nearest the curb until you reach appropriate speed.

  When merging onto major roadways

    - Merging (when two roadways join into one) is a shared responsibility. Traffic on the main roadway must cooperate to allow space for merging vehicles to enter; neither line of traffic has the right of way.
    - Signal your turn well in advance, check mirrors, and look directly out the windows to ensure the path is clear.
    - Check your gap often and adjust speed and timing as needed.
    - Do not stop or abruptly reduce your speed.
    - When it is safe and legal, merge into the gap after you pass the solid white line of the acceleration lane.
    - Maintain your speed with the traffic flow and turn off the signal.

ⓘ **Textbook Reference:** Section 6 - Advanced Driving Manoeuvres.

Slide: 14 Type: Presentation



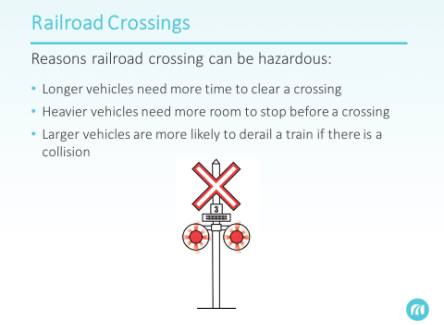
- Refer students to the textbook section on Merging, Entering, and Exiting to review this section together.
- Ask students in the classroom to read through the procedures for exiting a major roadway.
  - When exiting a major roadway:
    - Plan ahead. Be in the proper lane well before you reach your exit.
    - Signal your turn well in advance of the exit.
    - Move into the deceleration lane as soon as space is available, if there is one.

- Decelerate in the deceleration lane, not the regular lane. If the deceleration lane is too short, start reducing speed in the regular lane.
- When you have exited, turn off the turn signal.
- If you miss your exit, do not stop. Continue to the next exit and plan how to return to your route. Do not stop and reverse on the highway, the emergency stopping lane, or shoulder.

Some interchanges have weave zones, where the entrance and exit are in the same lane and close together. Weave zones require caution and cooperation because of the mix of exiting vehicles slowing down and entering vehicles speeding up.

Slide: 15 Type: Presentation

Trains represent one of the most dangerous hazards on the road. A truck-train collision can have terrible consequences because of a train's size, speed, and cargo. Trucks are big too, so there's a greater risk of derailment than for a car-train collision.



Trucks need extra time and distance to stop at and then clear a crossing. A typical tractor-trailer needs at least 14 seconds to clear a single track and more than 15 seconds to clear a double track.

It's easy to misjudge the speed and distance of an approaching train. Never try to beat a train to the crossing.

- https://oli.org/safety-near-trains/driving-safely-near-tracks/professional-drivers
  - Scroll to the bottom of the page to view the Stay Alive When You Drive - Operation Lifesaver, Inc.'s professional drivers video and Training Guide.
- Play a railroad crossing safety video using one of the reputable resources:
  - https://www.operationlifesaver.ca/initiatives/campaigns/train-to-drive/training-for-professional-drivers/
  - https://www.operationlifesaver.ca/resources/resource-items/professional-drivers/pro-drivers.pdf/

Provide a copy of **Highway-Rail Grade Crossing Training for Professional Truck Drivers Driver's Guide** from Operation Lifesaver - https://oli.org/sites/default/files/2019-09/OLI-DriverGuide-stayalive.pdf

ⓘ Operation Lifesaver has resources available to driving instructors for use in the classroom, including videos, a rail safety quiz, classroom knowledge checks, e-Learning and additional training materials. Consider using the resources in your delivery of this section of the curriculum: https://www.operationlifesaver.ca/blog/november-2013/driving-instructors-–-make-rail-safety-part-of-your-drivers-programs!/

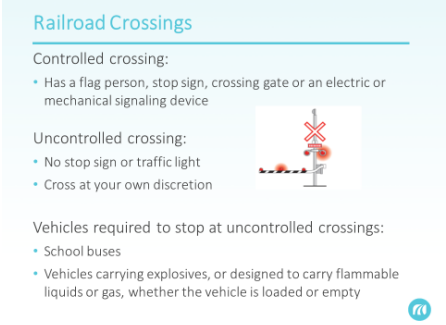
Slide: 16 Type: Presentation

- A controlled crossing has a flag person, stop sign, crossing gate or an electric or mechanical signaling device. All vehicles are required to stop at controlled railway crossings if signaled to do so.

  An uncontrolled crossing has no stop sign or traffic light. You cross at your own discretion.

  For uncontrolled railway crossings, only certain vehicles are required by regulation to stop:

  - School buses
  - Vehicles carrying explosives as cargo or part of their cargo
  - Vehicles designated for carrying flammable liquids or gas, whether the vehicle is loaded or empty

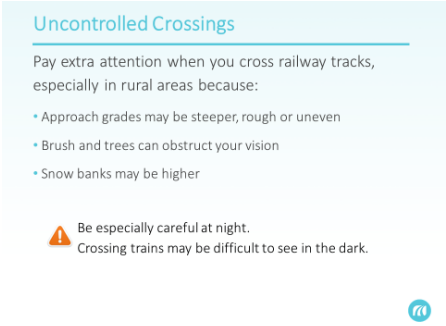


ⓘ **Textbook Reference:** Section 6 - Advanced Driving Manoeuvres – Railway Crossings.

Slide: 17 Type: Presentation

- Uncontrolled railway crossings require extra caution, especially in some rural areas, because:
  - Approach grades may be steeper, rough or uneven.
  - Thicker vegetation can obstruct your vision.
  - In winter, snow banks may be higher.

  Be especially careful at night. Crossing trains may be difficult to see in the dark.



ⓘ **Textbook Reference:** Section 6 - Advanced Driving Manoeuvres – Railway Crossings - Crossing Procedures

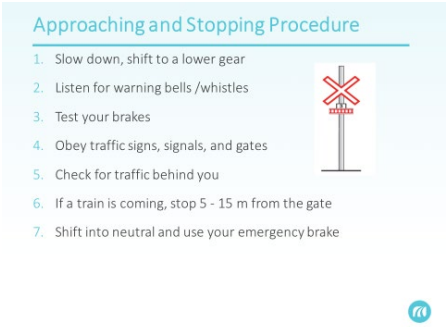
Slide: 18 Type: Presentation

- Always slow down and check for trains, whether the crossing is controlled or uncontrolled. Don't rely completely on the train signals – it's possible they won't come on because of malfunction.

  Remember: anytime is train time. When approaching a familiar crossing that normally never has a train on it, you should still be alert for a train since schedules can change.

  Listen for warning bells and whistles. Turn off, or down, distracting noise from fans, heaters, or the radio. Opening the window helps you hear.

  Shift to a lower gear if you have a manual transmission, and test your brakes.



Obey traffic signs, signals, gates, or anyone directing traffic at a crossing.

Check for traffic behind you.

If a train is coming, stop 5 to 15 metres from the gate.

While stopped, shift into neutral and use your emergency or service brake.

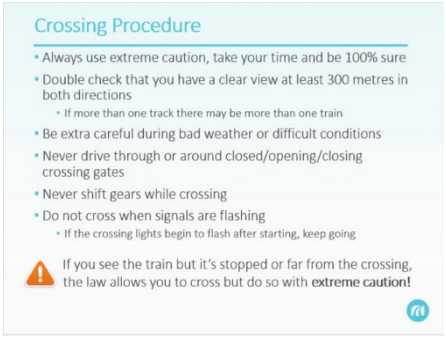
Make sure there is enough room on the other side of the track for the whole unit to clear, including any overhang. Trains are about a metre wider than the rails on both sides.

- Refer students to the textbook on Railway Crossings to review procedures for approaching and stopping at railway tracks.

ⓘ **Textbook Reference:** Section 6 - Advanced Driving Manoeuvres – Railway Crossings – Approaching and Stopping Procedure

Slide: 19 Type: Presentation

- When you are ready to cross:
  - Always use extreme caution and take your time. Be 100% sure it's safe before crossing **any** railway track.
  - Check and double check at least 300 metres in both directions that no trains are approaching. If there is more than one track, there may be more than one train. Wait for a train to pass by far enough so that you have a clear view of the other tracks.

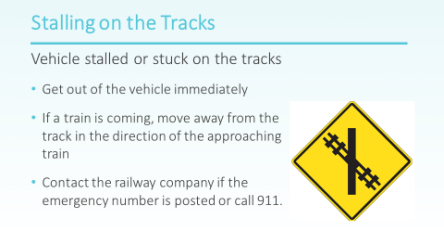


  - Be extra careful when crossing tracks during bad weather, or any other difficult conditions.
  - Never drive through, around or under a crossing gate or barrier when it's closed, closing or opening. Wait until the gate is completely open.
  - Do not cross when signals are flashing. You may not see a train, but it may be approaching at high speed and just not yet visible.
  - Select a gear that will let you cross the track without shifting. To avoid the risk of stalling, never shift gears while crossing.
  - If the crossing lights begin to flash after starting, keep going. It is safer to continue than to back up.

  If you do see the train and it's stopped or not close to the crossing, the law allows you to cross. Do so with extreme caution only. Be absolutely certain you can cross safely.

Slide: 20 Type: Presentation

If you stall or get stuck on a crossing, get out of the vehicle immediately. If a train is coming, move away from the track in the direction of the approaching train. This will reduce the chance of being struck by flying debris if the train hits the vehicle, because the momentum of the train striking the vehicle will sweep the debris forward. Contact the railway company if its emergency number is posted or call 911.



? The phone numbers to call for repairs or other non-emergency issues are listed in your textbook. What are the phone numbers for Canadian Pacific and Canadian National Railway?

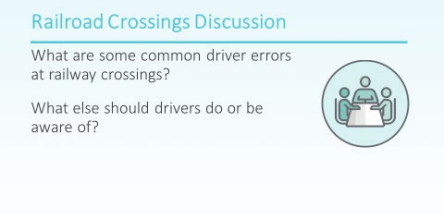
▶ Ask students for phone numbers from textbook.

ⓘ **Textbook Reference:** Section 6 - Advanced Driving Manoeuvres – Stalling on the Tracks

Slide: 21 Type: Discussion

? What are some common driver errors at railway crossings?

? What else should drivers do or be aware of?



▶ Allow for a 10-minute discussion with students. After getting some answers from students, refer to the list below for possible answers.

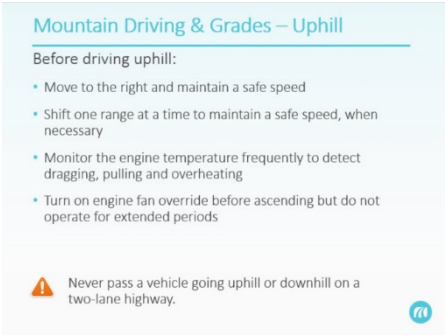
- Because of its size, it is easy to misjudge the speed and distance of an approaching train.
- Trying to beat a train to the crossing. Many vehicles have been hit by the train or have run into the side of it when trying to get across the tracks ahead of an approaching train.
- Immediately preceding across the tracks after the train clears without first checking for other trains. You must be patient and wait for a train to proceed a sufficient distance to allow for good visibility in both directions.
- Crossing tracks while the flashing signals are operating. If the signals are on and there is no train in sight, it may be approaching at high speed but is not yet visible, or possibly there could be a malfunction in the system.
- Not being prepared to stop. The signals may be malfunctioning in the off position and a train may be approaching the crossing – always be prepared to stop when approaching a railway crossing, even one where signals are present but not activated.
- You should reduce speed and be especially observant if weather conditions or sight observations limit visibility of the rail.
- Some tracks may have curves and may be hidden behind trees or hills, making it difficult to see and react to a train approaching at high speed.
- Always use extreme caution. Take your time. Be 100% sure it is safe before crossing any railway track whether signalized or not.

Slide: 22 Type: Exercise

- You will have 15 minutes to complete Exercise 1 in the Lesson 6 - Exercise Book.
  - If time permits, you should review the questions after the students have completed the exercise. Alternatively, you may provide a copy of the **Lesson 6 - Exercise Book Answer Key** at the end of the lesson for them to review on their own time.

Slide: 23 Type: Presentation

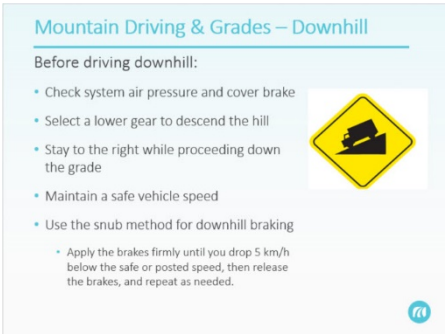
- Before driving uphill:
  - Move to the right and maintain a safe speed.
  - Shift one range at a time to maintain a safe speed, when necessary.
  - Monitor the engine temperature frequently to detect dragging, pulling, and overheating.
  - Never pass a vehicle on a downgrade or an upgrade on a two-lane highway.
  - Turn on the engine fan override before ascending to start the cooling process early. Do not operate the fan for extended periods. It was designed for intermittent use only.



Slide: 24 Type: Presentation

- Before descending:
  - Check the system air pressure and cover the brake.
  - Select a lower gear that allows you to descend without using service brakes.
  - Stay to the right and maintain a speed that allows you to stay in control without overheating the brakes or depleting the air pressure.
  - Brake moderately or intermittently to prevent overspeeding.
  - If you pass the safe or posted speed, use the snub method of braking: apply the brakes firmly until you drop 5 km/h below the safe or posted speed, then release the brakes, and repeat as needed.

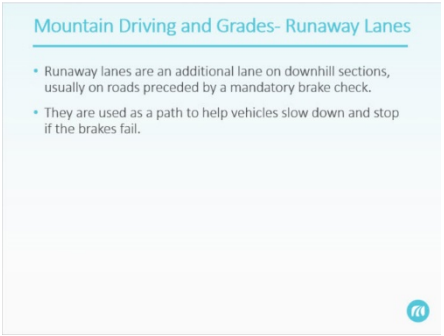
    With an automatic transmission, do not exceed the top speed of the selected gear. This keeps the automatic transmission from upshifting.



Slide: 25 Type: Presentation

- Runaway lanes are an additional lane on downhill sections, usually on roads preceded by a mandatory brake-check.

  They are used as a path to help vehicles slow down and stop should the brakes fail.



Slide: 26 Type: Presentation

- Check your side mirrors for following traffic, then signal to pull over.

  Downshift, if necessary, to reduce speed in preparation to stop.

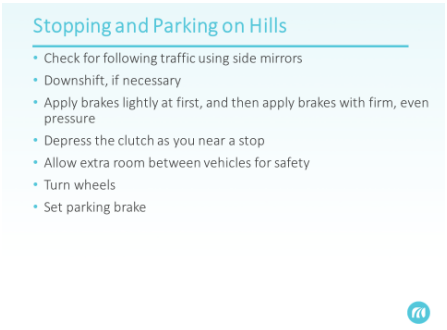
  Apply brakes lightly at first (going downhill, you should probably tap the brakes with your right foot a couple of times) and then apply firm, even pressure for a smooth stop.

  Depress the clutch as you near a stop. When stopped, shift to low gear or reverse for manual transmissions, and neutral for automatic transmissions.

  Allow extra room between vehicles.

  Turn wheels into the curb downhill, away from the curb uphill. Make gentle contact with the curb. If there's no curb, turn the wheel to the right, uphill or downhill. According to Manitoba law, the wheels of a parked vehicle must be no more than 50 cm from the curb.

  Set the parking brake and turn off the ignition.



ⓘ **Textbook Reference:** Section 5 – Braking, Section 6 - Mountain Driving and Grades.

Slide: 27 Type: Presentation

- Starting a manual transmission truck uphill can be a challenging manoeuvre, especially in heavy traffic. On a gentle grade, the normal starting procedure may work. You should:
  - Depress the clutch.
  - Shift into the appropriate gear.
  - Release the parking brake.
  - Release the clutch slowly to the friction point while gradually depressing the accelerator.

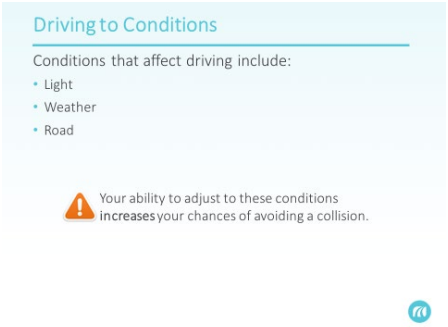
Slide: 28 Type: Presentation

- Hopefully, you won't encounter very many high-risk driving situations in your career, but the reality is you very likely will. The last part of this section provides advice on:
  - Skidding
  - Jackknifing
  - Tire Blowout
  - Loss of Visibility
  - Emergency Braking
  - Loss of Brakes
  - Emergency Evasive Action
  - Oncoming Vehicles

Driving to Conditions

Time: 40 minutes

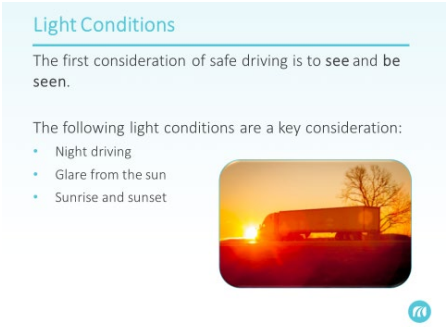
Slide: 29 Type: Presentation



- Conditions that affect any driving situation include:
  - Light
  - Weather
  - Road

  You may need to change your driving to suit these conditions. The changes can be minor, to very serious. They may require little to no adjustments, or on the other extreme, you may need to get off the road completely until the conditions return to safe and favourable.

Slide: 30 Type: Presentation

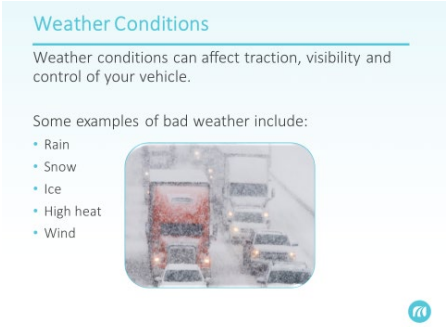


- The first requirement of safe driving is to see and be seen. The ability to do this is affected by light conditions: natural or artificial light, too little light, or too much light.

  Remember: In Manitoba, you are legally required to use headlights:
  - Anytime between 30 minutes before sunset to 30 minutes after sunrise.
  - In conditions of poor visibility (less than 60 metres).

ⓘ **Textbook Reference:** Section 6 - Driving in Difficult Weather Conditions - Night or Low-Light Conditions.

Slide: 31 Type: Presentation



- Bad weather can affect traction, visibility and vehicle control. For example:
  - Rain and snow can cause traction problems.
  - Icy roads are perhaps the most dangerous winter hazard.
  - Adverse weather can obscure your vision with rain, snow, fog or road splatter, as well, steam up glass with interior vapour.
  - Other drivers find it harder to see you, and pedestrians hide behind umbrellas so they fail to see cars approaching.
  - High winds make steering difficult and cause vehicles to veer to the wrong side of the road.

Slide: 32 Type: Group Activity

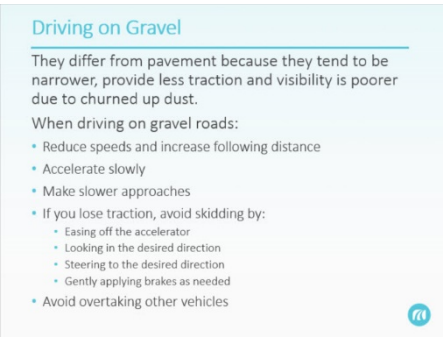
? How would you deal with less than ideal conditions when you are driving? List some of the conditions and what techniques or strategies you will use.

▶ Direct students to work in small groups to brainstorm. Allow for a 10-minute discussion with students after the groups have had time to discuss. Ask each group to share one condition and one example of how they will deal with that condition.

ⓘ **Textbook Reference:** Section 6 - Driving in Difficult Weather Conditions.

Slide: 33 Type: Presentation

◀ Gravel roads are common in Manitoba. Driving on them is not the same as driving on paved roads:



- They tend to be narrower and have soft shoulders.
- They provide less traction.
- Vehicles churn up dust and spray rocks.

For these reasons, when driving on gravel roads:

- Reduce speeds and increase following distance. Be extra cautious in slippery conditions.
- Accelerate slowly to get a sense of how your vehicle handles on a gravel road.
- Make slower approaches to railway crossings, intersections, uphill sections, or hazards.

If you lose traction, avoid skidding by:

- Easing off the accelerator
- Looking in the desired direction
- Steering to the desired direction
- Gently and smoothly applying brakes as needed once the vehicle has regained traction

Avoid overtaking other vehicles unless absolutely necessary. When meeting oncoming vehicles, slow down and move to the right as far as you can safely go. Once you've passed, gradually re-centre the truck and return to normal (safe) speed.

Gravel roads are hard on trucks. If you drive on them often, your vehicle may require more frequent servicing. Gravel roads can clog the air filter and radiator with dust, increasing the risk of overheating the engine. Dust can also stick to greased parts, causing more friction and wear.

▶ You may wish to play a video about driving in adverse conditions. A video has been provided through the MELT curriculum website: https://apps.mpi.mb.ca/MELT/videos/Adverse%20conditions.wmv

ⓘ **Textbook Reference:** Section 6 - Driving in Difficult Weather Conditions – Driving on Gravel.

Slide: 34 Type: Self-paced Activity

- You will have 15 minutes to complete Exercise 2 & 3 in the Exercise Book.
  - If time permits, you should review the questions after the students have completed the exercise. Alternatively, you may provide a copy of the **Lesson 6 - Exercise Book Answer Key** at the end of the lesson for them to review on their own time.

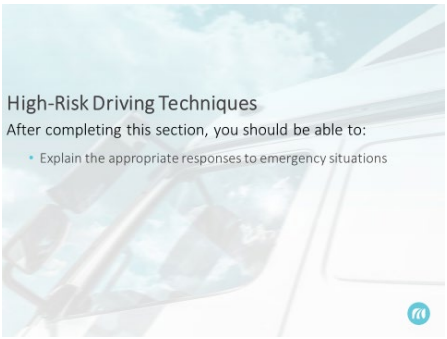
High-Risk Driving Techniques

Objectives: This section explains the various situations that can cause collisions that are considered higher risk and best practices for collision avoidance.

Time: 40 minutes

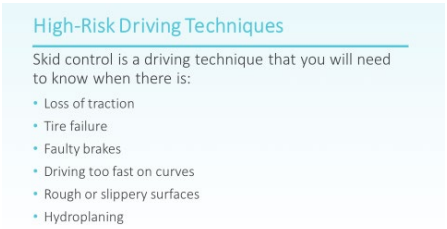
Slide: 35 Type: Presentation

- After completing this section, you should be able to explain the appropriate responses to emergency situations.



Slide: 36 Type: Presentation

- Skidding occurs when tires lose traction with the road surface, causing you to lose control of steering, braking, decelerating, and accelerating. Skidding can be caused by:
    - Slippery conditions
    - Tire failure, resulting from underinflation or sudden deflation from a blowout
    - Faulty brakes
    - Driving too fast on curves, or rough or slippery surfaces
    - Travelling too fast on a water-covered road, which results in hydroplaning



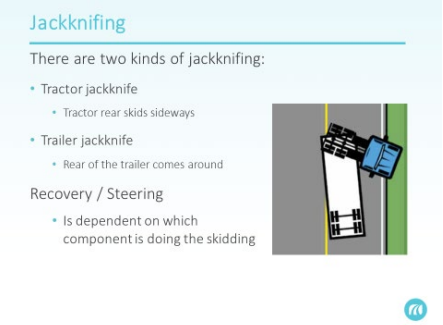
You can prevent skidding by planning ahead, watching carefully, and driving according to conditions, especially on unfamiliar roads.

If you start to skid, regain control by turning your wheels in the direction that the rear is skidding. Be careful not to oversteer. When you feel that the vehicle has regained traction, straighten the wheels.

Frequently a skid in one direction is followed by one in the opposite direction (as a result of oversteering while trying to correct the first skid). As the vehicle fishtails in the opposite direction, steer in the direction of the new skid.

ⓘ **Textbook Reference:** Section 6 - Professional Driving Techniques – High-Risk Driving Situations/Techniques.

Slide: 37 Type: Presentation

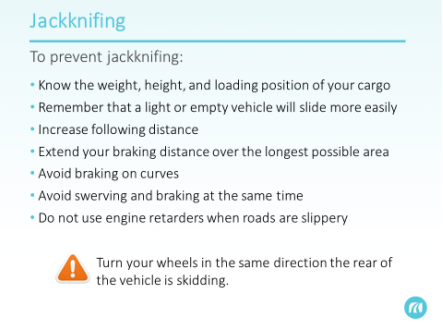


- Jackknifing is when a tractor-trailer folds into an “L” or “V” shape (like closing a jackknife). There are two distinct kinds of jackknifing:

  In a tractor jackknife, the tractor rear skids sideways. You must react quickly, because it takes less than two seconds for a tractor-trailer to jackknife to 15 degrees, which is impossible to recover from. If sudden acceleration is causing the skid, ease up on the accelerator and steer to safety. Using the brakes will not help to prevent sliding, so don’t apply them.

  In a trailer jackknife, the rear of the trailer swings either left or right. If this happens, release the brakes immediately and gently accelerate to allow the trailer to correct itself. Keeping the wheels rolling will help you regain control. Steer gently and let your speed drop.

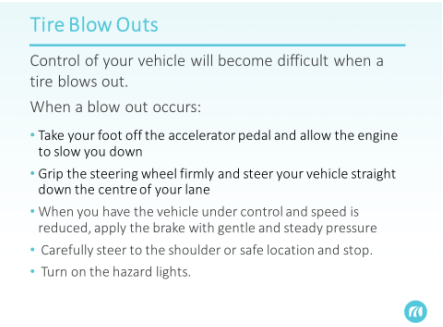
Slide: 38 Type: Presentation



- To prevent jackknifing:
  - Know the weight, height, and loading position of your cargo.
  - Remember that a light or empty vehicle slides more easily.
  - Increase following distance.
  - Extend your braking distance over the longest possible area.
  - Avoid braking on curves.
  - Avoid swerving and braking at the same time.
  - Do not use engine retarders when roads are slippery.

  When steering, turn your wheels in the same direction the rear of the vehicle is skidding. Be careful not to oversteer. You will be able to feel when the vehicle regains traction. Then, straighten the wheels.

Slide: 39 Type: Presentation



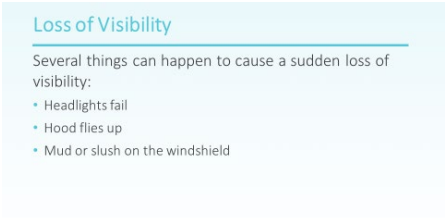
- If a tire has an air leak, you may feel the vehicle begin to pull and vibrate as you hold the steering wheel. If this air leak is not corrected quickly, the tire will become flat. If one of your front tires blows, there will be a strong pull in your steering towards the side with the blowout. A back tire blowout may cause the back end to swerve or ‘fish-tail’. A flat tire acts as a brake and the tractor-trailer will pull hard to that side. You will have to grip the wheel firmly to maintain steering control.

  When a blowout occurs:

  - Take your foot off the accelerator and allow the engine to slow you down.
  - Grip the steering wheel firmly and steer your vehicle straight down the centre of your lane.

- Do not apply the brakes immediately. Wait until you have the vehicle under control at a low speed, then apply the brake with gentle and steady pressure.
- Carefully steer to the shoulder or other safe location and stop.
- Turn on the hazard lights and place warning devices on the road. Placement of warning devices will be covered in Section 10.

Slide: 40 Type: Presentation



- Several things can happen to cause a sudden loss of visibility – your headlights could fail, your hood could fly up, mud and slush might get splashed on the windshield, etc. Suddenly you can't see where you are going and you must stop as quickly as practical before losing steering control or hitting something.

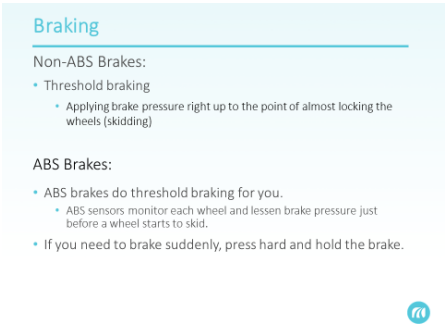
? What can you do in each situation?

▶ Wait for students to respond. Then refer students to the Loss of Visibility section of the Textbook in Section 6.

- If the headlights fail:
  - Immediately hit the dimmer switch to see if the high-beams work.
  - Signal a right turn.
  - Slow your vehicle quickly but safely. You want to reduce your speed before any steering error causes a collision.
  - Carefully steer to the shoulder or other safe location and stop.
  - Turn on the hazard lights and place warning devices on the road.
- If the hood flies up:
  - Look out the left and right windows to keep your sense of direction and road position.
  - Apply brakes moderately.
  - Signal a right turn.
  - Carefully steer to the shoulder or other safe location and stop.
  - Turn on the hazard lights and place warning devices on the road.
- If mud or slush splashes on the windshield:
  - Turn on wipers and washers.
  - Look out side windows and apply brakes moderately.
  - If the windshield wipers have failed or you have no washer fluid, signal a right turn.
  - Carefully steer to the shoulder or other safe location and stop.
  - Turn on the hazard lights. If you will remain stationary more than momentarily, place warning devices on the road.

Slide: 41 Type: Presentation

- Emergency braking with non-ABS brakes requires a sensitive touch on the brake pedal, using a technique called threshold braking.



  Threshold braking means applying brake pressure almost to the point of locking the wheels (skidding), and backing off just enough to prevent the skid. It's not easy to do; it requires a quick foot and good sense of feel to keep the brake pressure maximized without locking the wheels. Once mastered, threshold braking will stop you faster than any other technique.

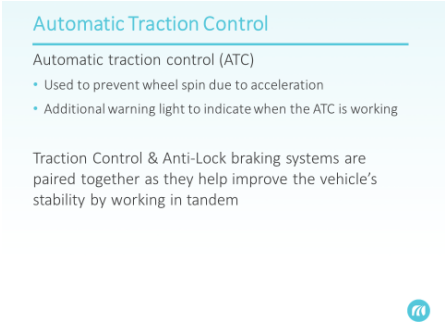
  Threshold braking is not "pumping the brakes." Pumping the brakes with no feel for what the wheels and brakes are doing is counterproductive in a situation where maximum braking effort is needed.

  ABS brakes do threshold braking for you. ABS sensors monitor each wheel and lessen brake pressure just before a wheel starts to skid.

  To allow ABS brakes to work when you need to brake suddenly, press hard and hold the brake. Don't worry what it feels or sounds like, just focus on steering to safety. Release the brake only when you no longer need to brake. Do not pump ABS brakes. Doing so defeats the computer's efforts to sense a wheel skid.

Slide: 42 Type: Presentation

- A Traction Control System (TCS) is used to prevent wheel spin from occurring due to acceleration. This usually happens on a slippery surface, such as snow or a pool of water, where the wheels are not able to generate enough traction to move the vehicle.



  The TCS and anti-lock braking (ABS) systems help improve the vehicle's stability by working in tandem. The major difference between the TCS and ABS is that while ABS stops the wheel from spinning while braking, The TCS stops the wheel from spinning while the vehicle is accelerating. The TCS is also known as an anti-slip regulation.

  The TCS uses wheel speed sensors to measure the vehicle's speed with the rate at which the drive wheels are spinning, to detect if there is any slip occurring between the tire and the road. If a slip is detected between the road and the wheel, the TCS ensures that only the minimum amount of torque is supplied to the slipping wheel to generate the required amount of friction for the vehicle to move.

  The primary input of the TCS is the wheel speed sensor. These sensors continuously monitor the speed of each driven wheel and send the data to the ABS and the TCS electronic control unit. When a slip is detected between the tire and the road, the TCS regulates brake pressure on the slipping wheel. This process of slowing down the wheel helps it regain traction. Simultaneously,

torque is shifted through the differential to the opposite wheel that has a better traction when compared to the slipping wheel.

The brake pressure is applied by routing the pressure from the ABS pump and through the ABS modulator. The pressure applied is regulated through a high pressure accumulator. The TCS includes an extra solenoid valve in the ABS modulator, for each individual drive wheel's brake circuit. This arrangement allows the system to apply brake pressure to slow down the spinning wheel in order to regain traction. The continuous usage of brakes in the TCS generates a lot of heat in the brake calipers. To prevent overheating of these callipers, the TCS automatically discontinues after a certain length of time.

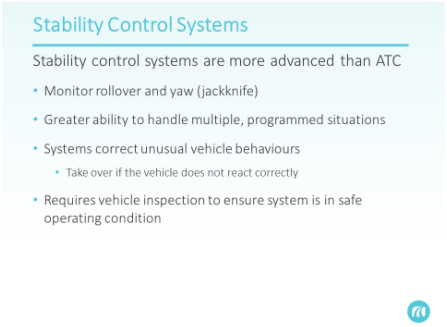
If both the driven wheels are losing traction, the TCS slows both the slipping wheels equally to slow them down until they regain traction. Otherwise, the systems send a signal to the powertrain control module (PCM) to reduce the engine torque to the wheels until traction is regained.

When the TCS is activated in a vehicle, it is shown to you through the instrument cluster. In a lot of performance vehicles, there is an option of switching the TCS on or off. When this system is disabled, a warning light glows to notify you that the TCS is switched off. Switching off the TCS does not switch off the ABS in the vehicle, even though they are inter-related.

There is an additional Automatic Traction Control (ATC) warning light on the dash to indicate when the ATC is working and when it needs to be repaired.

Slide: 43 Type: Presentation

Stability control systems are more advanced than ATC. While using the same wheel speed sensors and ATC valves, the sensors monitor rollover and yaw (jackknife) and the computer has a greater ability to handle multiple, programmed situations.



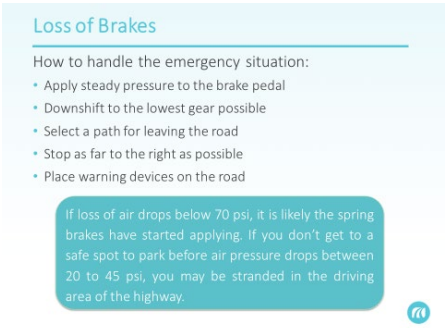
Stability control systems replace and incorporate the functions of the TCS. The stability control system's warning light replaces the ATC warning light.

These systems correct unusual vehicle behaviour. They may respond by cutting back engine power, applying the retarder, or applying individual brakes in any location. No new driving techniques are required. The systems simply take over if the vehicle does not react correctly.

While regulations govern the legislative requirements for vehicle inspections, industry best practices require vehicles to be inspected often throughout the shift to ensure that mechanical components continue to work properly. These inspections must be done before, during and after each trip. Each inspection has a different purpose.

These periodic inspections ensure the brake system is in safe operating condition and reduce the chance of a collision caused by mechanical failure.

Slide: 44 Type: Presentation



- You are driving down the highway, you step on the brake pedal to slow down or stop – and there is no response or a sudden evacuation of air. This is definitely an emergency situation.

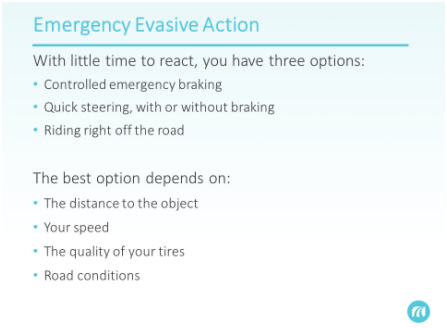
  With a loss of brakes, you should:

- Apply steady pressure to the brake pedal to avoid wasting air volume.
- Downshift to the lowest gear possible. If the way ahead is clear, allow engine compression to slow you down and stay on the road.
- As you slow down, select a path to bring the vehicle to a stop on the shoulder or as far to the right as practical.
- Once stopped, place your emergency devices to warn other traffic of your position.

  If loss of air drops below 70 psi, it is likely the spring brakes will start applying. If you don't get to a safe spot to park before air pressure drops between 20 to 45 psi, you may be stranded in the driving area of the highway.

  If you must leave the road quickly to avoid a collision, select the path that will most likely minimize injury and property damage, in that order. Look for something to sideswipe, like a roadside bank, snow bank, guardrail, even parked cars – anything that will slow you down. If you must go into a ditch, do so at an angle to reduce the chance of a rollover.

Slide: 45 Type: Presentation



- Sometimes emergency situations are unavoidable. Perhaps a distracted pedestrian will cross the street in front of you, unaware that you are coming. Or suddenly you find a vehicle mistakenly in your lane and driving straight

  In these situations, you have little time to react. In general, you have three options:

  - Controlled emergency braking –Note that slamming on the breaks is generally not a safe option. While it may work in some high-risk situations, sudden breaking in a vehicle without anti-lock brakes can lock the wheels and cause loss of control.
  - Quick steering, with or without braking – This can be an effective option, but of course in a big, heavy truck, you are limited in your ability to swerve sharply to avoid an object or to leave the pavement with any great amount of control.
  - Riding right off the road - If it's not immediately obvious that you can stop in time, steer your vehicle to a safe path. (The next section on Oncoming Vehicles provides more details.)

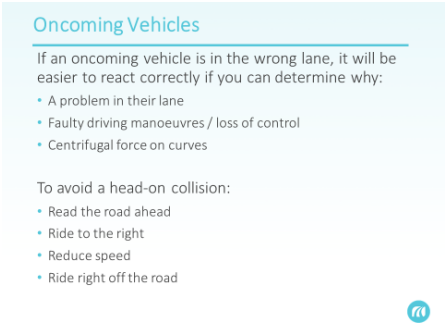
  The best option depends on:

  - Your speed

- The distance to the object
- The quality of your tires
- Road conditions – wet, dry, slippery, etc.

Slide: 46 Type: Presentation

If an oncoming vehicle is in the wrong lane, it will be easier to react correctly if you can determine why it's happening:



- A problem in their lane - Trouble in a driver's own lane such as a construction barrier, animal, pedestrian, or bicycle may cause a driver to swerve left.
- Faulty driving manoeuvres - Through an error in judgment, a driver may enter your lane. For example, a driver may make a wide right turn or misjudge the distance required to pass a vehicle.
- Centrifugal force on curves - Centrifugal force keeps a vehicle in a straight line on curves.
- Loss of Control.

Drivers can lose control of a vehicle for many reasons, including:

- The driver overcorrecting after the right wheel drops off the pavement edge
- Loss of visibility or the centre line is obscured or worn away
- Falling asleep at the wheel, drug or alcohol impairment
- Tire blowout or skidding
- Poor road conditions or potholes
- Poor judgment

To avoid a head-on collision:

- Read the Road Ahead - Be aware of oncoming traffic and try to anticipate what is causing a vehicle to cross the centre line and enter your lane.
- Ride to the Right - Don't crowd the centre line. Leave plenty of room. If there are two lanes available to you going in the same direction, use the right lane. In urban areas, the right lane generally moves quicker because vehicles turning right normally cause less delay than those turning left.
- Reduce Speed - When you see a threat developing with an oncoming vehicle in your lane, reduce your speed immediately. If necessary, sound the horn and flash your lights to let the oncoming vehicle know you are there.
- Ride Right Off the Road - If you take the actions above and the vehicle is still coming head-on, you have only one option left: to ride off the road to the right. This option will, in almost all cases, be better than a head-on collision.

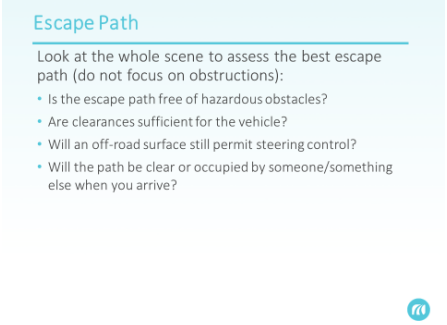
If you have to ride right off the road:

- Stay calm.
- Look at the whole scene to assess the best escape path.
- Look and steer in the direction you want to go.
- Steer firmly and as gradually as possible (don't oversteer) to clear the obstruction.
- If a collision is unavoidable, try to hit the object or vehicle at an angle rather than head-on to lessen the impact. Never try to out-guess the other driver by pulling to the left.

ⓘ **Textbook Reference:** Section 6 - Professional Driving Techniques – High-Risk Driving Situations/Techniques – Oncoming Vehicles.

Slide: 47 Type: Presentation

- If you take the actions above and the vehicle is still coming head-on, you have only one option left: to ride off the road to the right. This option will, in almost all cases, be better than a head-on collision. If you have to do this, look at the whole scene to assess the best escape path (do not focus on obstructions):
  - Is the escape path free of hazardous obstacles?
  - Are clearances sufficient for the vehicle?
  - Will an off-road surface still permit steering control?
  - Will the path be clear or occupied by someone/ something else when you arrive?



- Remind students about the concept of gates and how that would be applied when looking for an escape path.

ⓘ **Textbook Reference:** Section 6 - Professional Driving Techniques – High-Risk Driving Situations/Techniques – Oncoming Vehicles – Ride Right off the Road.

Slide: 48 Type: Self-paced Activity

- You will have 15 minutes to complete Exercise 4 in the Lesson 6 - Exercise Book.
- If time permits, you should review the questions after the students have completed the exercise. Alternatively, you may provide a copy of the **Lesson 6 - Exercise Book Answer Key** at the end of the lesson for them to review on their own time.

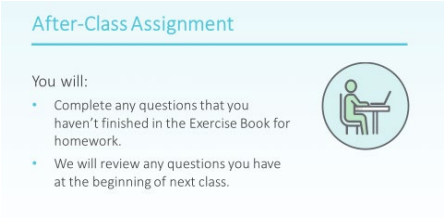
Wrap Up

Time: 5 minutes

Slide: 49 Type: Presentation

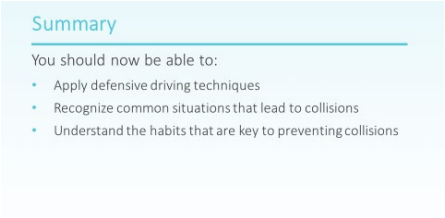
- For an after-class assignment, you will complete any questions that you haven't finished in the Lesson 6 - Exercise Book.

  We will review any questions you have at the beginning of the next class.



Slide: 50 Type: Presentation

- You should now be able to:
  - Apply defensive driving techniques
  - Recognize common situations that lead to collisions
  - Understand the habits that are key to preventing collisions

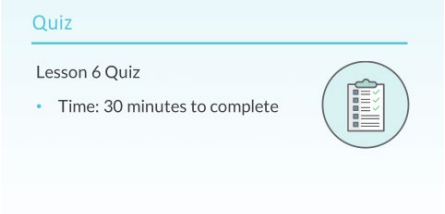


Knowledge Check

Time: 30 minutes

Slide: 51 Type: Presentation

- Provide students with a printed copy of the Lesson 6 - Quiz. Time provided for this quiz is 30 minutes. Remind students of the scoring and weight of the quiz. Explain what is required for a passing grade.
- When complete, fill out the assessment tracker for each student and the classroom assessment tracker.



You will have 30 minutes to complete the lesson quiz.

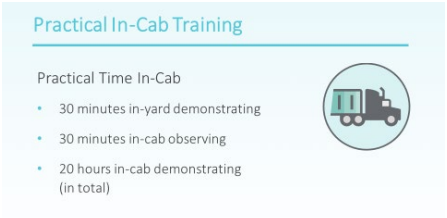
Practical In-Cab Training

Time: 1260 minutes

Preparation

- Organize students and time in-yard in order to maximize efficiency.
- Print **Lesson 5 - Practical Job Aid** for each student.
- Print **Lesson 4 – Practical Job Aid 4** for each student
- Print **Lesson 4 – Practical Job Aid 3** for each student
- Print **Lesson 4 – Practical Job Aid 2** for each student
- Ensure the yard and vehicle are prepared for training.

Slide: 52 Type: Presentation



You will head out to the vehicle where an instructor will demonstrate professional driving techniques and you will observe. Then you will do the same driving demonstration for the instructor.

You may wish to take your textbook with you as a reference while you are observing.

Each time you attempt the activity during training, you will be provided a copy of your assessment, which you can then review to improve your skills in this area.

- At the end of the classroom session, the instructor and the students will proceed to the vehicle for a demonstration of professional driving techniques. The instructor will have about 30 minutes to demonstrate the techniques to the student, after which the student will perform the activities.
- The students will have a minimum of 20 hours to practice the professional driving techniques throughout the course. This time may be split up and used in 30-minute increments throughout the length of the course to allow for better balance of classroom and practical training. Make decisions about how to organize yard time based on numbers of students, available instructors for proper vehicle student ratio, and available vehicles.

? Are there any questions about the practical in-yard training?

- **Wait for students to respond.**

Hand out **Lesson 4 - Practical Job Aid**s and instruct students to use the job aids before they begin driving and while they are en-route during their driving demonstrations. Required inspections must be done.

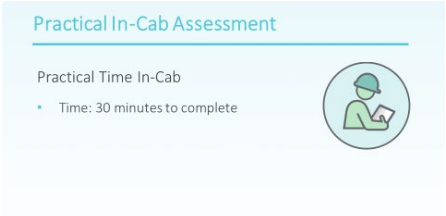
Practical In-Cab Assessment

Time: 30 minutes

Preparation

- Ensure the yard and vehicle are set up for assessment.
- Print the **Practical Assessment Rubric Evaluator Job Aid** for the evaluator.
- Review **Performing Practical Assessments**.
- Prepare to record assessment performance either on printed **Lesson 5 – Practical Job Aid** sheets or directly into the **Practical Assessments** Excel file.
- Ensure you have access to the **Practical Assessments** Excel file.
- Print the **Instructors Class Summary**.
- Print the **Instructors Student Summary**.

Slide: 53 Type: Presentation



You will now have a practical assessment where your instructor will assess your understanding and skill competency. This final in-cab assessment will count towards your final course mark. Each time you attempt the activities, your instructor will provide you with a copy of your in-cab assessment which you should review to improve your skills in this area.

? Are there any questions before beginning the practical assessment?

▶ Wait for students to respond.

ⓘ You must be familiar with the assessment rubric before evaluating the student's practical knowledge and skills.

▶ The instructor will evaluate students using the practical assessment sheet. The list may then be shared with the student to improve their performance. Use one practical assessment sheet each time the student performs the activities.

A minimum of 30 minutes will be used for the in-cab assessment.

▶ Check the recorded time in the log as well to confirm accuracy and proper completion of required paperwork for Hours of Service compliance.

ⓘ Evaluators may record performance on printed sheets but it is required to enter the results into the MELT **Practical Assessments** Excel file for automated scoring. A copy should then be printed and signed.