EXAM SET-UP

Before the exam

The following items will need to be addressed prior to conducting the Pre-Operational Exam. Completing these tasks should take place at least two weeks prior to exam dates to allow tractor dealerships/owners to schedule use and delivery of equipment and facilitate a productive and timely exam.

- Contact tractor supplier (dealer, farmer, etc.) for tractor use, delivery and pick-up times, and delivery locations. Tractors should be equipped as closely as possible with all options necessary to complete the pre-operational exam (see ‘Finding a Tractor’ for more information).
- Confirm tractor delivery for exam date.
- Assemble enough pre-operational exam scoring forms for all participants.
- Schedule times for youth to complete exam.
- Make exam key for tractor(s) being used (see ‘Making the Exam Key’ for explanation).
- Obtain a watch to keep track of time.
- Obtain a safety equipped hitch pin for exam (can usually be provided by tractor dealership).
- Obtain tire gauge to check tire pressure.
- Have rags on hand for participants or exam administrators to wipe away any dirt/oil/etc. that they may encounter during exam.
- Arrange location for conducting exam (may need an alternative indoor site incase of bad weather) (see ‘Location Preparation’ for more information).

Finding a tractor

The Pre-Operational Exam Scoring Form can be used as a checklist for finding and using a tractor for the exam. Each question has been included for the specific purpose of testing a participant’s knowledge, and ideally, all components addressed in the questions should be present on the tractor used for the exam. However, not all tractors will be equipped exactly as needed depending on availability from the supplier.
A tractor missing one or two components is acceptable while a tractor missing three or more components is unacceptable. A tractor is recommended to be equipped with a ROPS and seatbelt for any testing procedures.

Tractors should be properly equipped with functioning safety components to be used for this exam. It should be verified that the tractor being used for the exam is in good working order. If a brand new tractor is used, which may be the case most of the time, it may be assumed that nothing is wrong with it. However, that is not always the case, and a minimal number of minor problems on used or new tractors (e.g. reflector broken, headlights not working, damaged tires) are acceptable provided the missing, damaged, or broken components are not a danger to the participant. Any areas of the tractor not functioning properly should be reflected in the exam key (see 'Making the Exam Key' for more information). Older tractors may lack safety equipment found on newer ones and thus are not as appropriate for use in testing.

**Scheduling participant exam time**

Participants who are properly prepared will be able to complete the exam in approximately 15 minutes. Planning for the Pre-Operational Exam should include how to allow all eligible participants to participate in a timely fashion. If there are a large number of participants, more than one tractor and more than one qualified exam administrator could be used. If more than one tractor is used, an exam key (see 'Making the Exam Key') must be made for each tractor.

**Making the exam key**

Before the exam begins, the test administrator should make an "exam key" for the tractor being used. A key is important not only for grading purposes but also to eliminate from the exam questions that involve components not found on the tractor. When making the exam key, if the tractor being used is not equipped with items found on the exam, they may be deleted. Deleting only a minimum number of items (one or two) are acceptable. Items found on the exam were included for specifically evaluating certain abilities of youth and as many as possible need to be included in the exam. If items need to be deleted from the exam, an adjustment to the final score is required (see Scoring Section for more information).

**Location preparation**

The exam should take place in an area that prevents participants waiting to take the exam from observing the process. If participants observe the parts being pointed out for the identification of key components section, for example, then the exam will not be measuring their knowledge – only their observational skills of other participants. Keep in mind that the purpose of the exam is to evaluate the knowledge of participants at exam time. Studying the components should be performed before the exam.
PRE-OPERATIONAL EXAM: QUESTION INSTRUCTIONS

Each section (I, II, and III) of the exam contains detailed instructions and should be reviewed by exam administrators prior to administering an exam. Exam administrators should be trained and familiar with tractor operation and components. Even so, each question is provided with a description to clarify the intended purpose of each question. The exam is not intended to be filled out by the participant. Each question should be asked to the participant by the qualified exam administrator.

Some of the terminology used in the exam may not be common to every locality. The exam administrator should review the exam to adjust terminology to commonly used terms specific to the geographic region in which testing is taking place. There is a learning curve for participants finding parts on a tractor. When youth study for this exam, they may use a different brand, year, model, or differently equipped tractors than the one used on exam day (e.g. transmission controls, method of turning off the engine, location of hydraulic controls). Appropriate time should be given to participants if they are having difficulty while becoming accustomed to tractor equipment and controls.

Section I. Physical Compatibility

These questions are designed to assess if the participant is physically ready to independently complete the Pre-Operational Exam by identifying characteristics that would place the youth at risk in an operational setting. If any question in Section I is not answered with a “Yes”, then the youth taking this exam may not complete the remainder of the exam and cannot be certified under the GEARING UP FOR SAFETY Training Program. This action is not meant to fail the participant. Rather it is an indicator that a youth is not physically ready or capable to independently operate a tractor safely. The course of action if a participant is not able to continue would be to suggest that the participant should return at a later date (possibly the next year) to retake this part of the exam. By that time, the youth may have physically grown enough or corrected physical limitations that would allow them to pass and continue with the rest of the exam.

The following four questions address the participant’s ability to meet the physical requirements for the test. For question #3, ask the participant to mount the tractor. This will provide an answer for question 3 and 4.
Section I. Physical Compatibility

Participant must meet all physical requirements to complete this exam (see GEARING UP FOR SAFETY Program Leader’s Guide for more details).

Note: Any NO responses in this section will make participant ineligible for completion of the exam.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>If NO, Explain:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Is participant free of any uncorrected physical limitations (e.g. vision or hearing impairments, potential seizures) that could create potential hazards to himself/herself or others while operating the tractor?

2. Is participant able to physically conduct the pre-operational exam without assistance?

3. Is participant able to physically access the operator’s station without assistance?

4. Is participant able to physically access/operate all essential controls (e.g. clutch, brake, steering, throttle)?

Section II. Identification of Key Components

Section II contains tractor components that should be successfully identified by the participant. This is primarily an identification exercise. Performance related to some items in this section will be assessed in Section III. Participants should be asked to physically point out the component for each question to the exam administrator. Participants can also be asked the purpose of some components to determine if they have a thorough knowledge of the test item (e.g. ROPS, brake pedal lock, seat belt, etc.). Assistance may not be given to participants other than alternate names of the parts included on this exam. If more prominent names of parts are used in your area, then simply substitute those common names for the ones used on the scoring form. A brief description for each question is provided for clarity. This exam is formatted to minimize the number of times participants mount/dismount the operator’s station. The beginning of each part (A or B) within each section provides instruction on whether the participant should be on or off the tractor.

For evaluation of Sections II and III, use correct/incorrect as the answer to the question: How did participant answer the question or perform the required skill?

Example:

The exam administrator asks a participant to point out the brake pedal lock. The participant points to the correct component. The administrator marks correct on the exam. If
the participant doesn’t know the answer or points to a part other than the brake pedal lock, then the administrator marks incorrect on the exam and moves to the next item.

Section II. Identification of Key Components
The participant must be able to identify each of the following components of the tractor without assistance (see GEARING UP FOR SAFETY Program Leader’s Guide for more details).

<table>
<thead>
<tr>
<th>Part A. This part of the exam can be completed while participant is in operator’s seat from previous section.</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Roll Over Protective Structure (ROPS)</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
</tbody>
</table>

The ROPS helps protect an operator wearing a seat belt in a rollover situation. Two-post, four post, and integral cab ROPS can be found on tractors (see pictures below).

| 2. Seatbelt | □ | □ |

A seatbelt is found on the operator’s seat and is used only when a tractor is equipped with a ROPS to protect the operator in a rollover. Both the belt and buckle must be identified (see picture). This is an identification question only; participant will be asked to buckle the seat belt in Section III. The seatbelt is designed to keep the operator within the “zone of safety” in the event of an overturn.

| 3. Brake pedals | □ | □ |

Brakes are used to stop the tractor and to help shorten a turning radius. Tractors are designed with independent rear brakes – one for the left rear wheel and one for the right rear wheel (see picture for location). Some four-wheel drive tractors may have only one brake pedal.
4. Brake pedal lock

The purpose of the brake pedal lock (see picture) is to lock the two brake pedals together for road transport. When braking at road transport speeds, if one pedal is unintentionally depressed instead of both, a hazardous spin could be created that could overturn the tractor. Unless tractors are operated on a highway, brakes should be unlocked.

5. Manual transmission

| - Clutch
| - Hydrostatic transmission
| - Directional pedals

A clutch (see left picture) or directional pedal (see right picture) is used to begin movement or end movement of a tractor. Use the item in this question that applies to the tractor being used for the exam.

6. Parking brake

A parking brake is applied when tractor operation has ended to keep tractor from rolling when parked. Newer tractors may be equipped with a “Park Gear” that works similar to the Park position in an automobile’s automatic transmission. Use the parking brake type that applies to the tractor you are using for the exam.
7. Power Take Off (PTO) lever or control

The PTO lever or control button is used to engage or disengage the PTO shaft. Color of button or lever handle should be yellow.

8. Hand/foot throttle

Hand throttle (top arrow) controls engine speed and is usually found in the dash area or on a console beside operator's seat. The color should be either red or orange.

Foot throttle (bottom arrow) also controls engine speed but is found on the floor of the operator’s platform and is operated with the foot. Colors vary for this component. Participants can identify one or both of these items to get the question correct.

9. Transmission gear or range selector(s)

Gear or range selectors are used to determine what gear, speed, and in what direction a tractor will travel. Depending on how a tractor is equipped, multiple selectors may be used. Participants must successfully identify all selectors on the tractor (will vary depending on make and model). Color of selector handles or knobs should be orange.
10. Ignition or engine shut-off control(s)

The shut-off control is used to turn off the engine. Most new tractors simply use the key switch in the off position to stop the engine (left picture). Some older tractors use a lever or pull knob to shut off the fuel supply to the pump (right picture).

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Part B. Participant must dismount tractor for this part of the exam.

11. Participant safely dismounted tractor

Participant must use three points of contact at all times when mounting or dismounting a tractor. This includes two hands and one foot or two feet and one hand. Jumping off a tractor is not allowed and should receive an ‘Incorrect’ evaluation. Larger tractors should be mounted/dismounted while facing the tractor. Smaller tractors can be dismounted while facing away from the tractor. Any tractor must be dismounted slowly.

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12. Engine oil level indicator or dipstick

This component is used to check how much oil is in the engine crankcase. Exact location may vary between makes and models but will be close to the engine. Operating the engine without sufficient engine lubricant can cause severe engine damage.
13. Fuel tank cap

The fuel tank cap is used to keep fuel in the tank while keeping dirt and other debris out of the fuel tank. The cap is located on the fuel tank or fill tube leading to the tank. On gravity feed or most gasoline engines the cap contains a vent hole to allow for equalization of pressure inside of the tank. A plugged vent hole can cause the fuel to stop flowing to the engine.

14. Fuel tank shut-off

The fuel shut-off will be located in a fuel line leading from the fuel tank to the fuel pump or fuel filter on the engine. Some tractors equipped with an electric fuel pump may not have this device. Knowing how to shut off the fuel at the tank can prevent excessive fuel leakage in the event that a leak develops in the fuel system.

15. Air filter/cleaner

This item is located in the engine compartment of most tractors and is used to filter dirt out of air going into an engine. A plugged air filter can lead to poor engine performance.
16. Radiator/cooling system reservoir cap

The radiator cap is found on top of the radiator and regulates pressure in a cooling system. The cooling system reservoir is the tank with extra cooling fluid found outside the radiator. Fluid is pulled in or taken out as needed. Most reservoirs have full and add lines for easy checking of fluid level in the cooling system. Participants can identify either of these items to get the question correct.

17. Muffler/exhaust pipe

A muffler is used to quiet the noise from engine operation. An exhaust pipe is an extension of the muffler and used to direct exhaust fumes away from the operator. Both items are found in the exhaust system. Some mufflers are positioned under the hood while some are external. A faulty exhaust muffler can lead to excessive engine noise and cause hearing damage to the operator.

18. Battery

A battery is used to engage an electric motor or starter to start an engine and usually is found in an enclosed compartment. The battery contains sulfuric acid that can cause severe eye injuries and skin burns. A charging battery can produce hydrogen gas that is explosive in the right mixture with air.
19. Location for front or rear ballast/weights

Ballast/weights are used to assist power transfer for effective tractor operation. All tractors may not be equipped with ballast. If not, participants should be able to identify the location for ballast/weight. Front ballast can be attached to the front of the tractor frame. Rear ballast can be weights attached to the rear wheels, fluid in the tires, or weights attached to the tractor between the rear wheels. Ballast weights are extremely heavy and should not be handled alone.

20. Slow Moving Vehicle (SMV) emblem

The SMV emblem is the orange and red triangle required to be in place on the rear of all equipment traveling 25 MPH or less. On newer high speed tractors that travel more than 25 mph the SMV emblem will be accompanied by a circle that contains the maximum designed speed intended by the manufacturer.

21. Power Take Off (PTO) master shield

The master shield covers the tractor PTO stub shaft and the connection point of the tractor side of a PTO shaft. There are three basic types of tractor master shields: bolt-on, removable, and hinged. The most common on smaller tractors is the bolt-on type.
22. **Drawbar**

The drawbar is the connection point for towed implements with wheels. On some tractors the drawbar may be adjustable to accommodate different types of towed implements. The drawbar is the only site at the rear of the tractor that should be used for towing. Hitching to a point higher than the drawbar could lead to rear overturn.

23. **Lower arms for 3-point hitch**

The lower arms in a 3-point hitch are the lower components used to attach fully mounted implements.

24. **Center or top link for 3-point hitch**

The center or top link in a 3-point hitch is the upper component used to attach fully mounted implements. The top link or the mounting point should never be used for hitching a chain or towing an implement. Doing so could result in a rear overturn.
25. Hydraulic outlets

Hydraulic outlets are supply ports for implements requiring hydraulic power. Outlets can be located at the rear of a tractor (majority of larger tractors) or between the front and rear wheels for mid-mounted implements (usually compact tractors). On most tractors, plastic or rubber covers are used to keep dirt out of the ports.

26. Power Take Off (PTO) shaft

A PTO stub shaft is used to supply power to implements requiring auxiliary power and is located at the rear of the tractor. These shafts can be either 540 RPM (6 splines on left) or 1000 RPM (20 or 21 splines on right). The stub shaft is guarded by the tractor master shield.
Section III. Pre-Operational Safety Inspection

Section III of the Pre-Operational Exam includes items that participants are required to discuss or tasks they are required to perform. The tractor will not be started for this section. As in Section II, the questions should be asked by the exam administrator for participants to identify or perform.

The participant must be able to complete the following pre-operational safety inspections without assistance (see GEARING UP FOR SAFETY Program Leader's Guide for more details).

<table>
<thead>
<tr>
<th>Part A. Participant must remain on ground from previous section.</th>
<th>Correct</th>
<th>Incorrect</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. Knowledge of where to find proper tire inflation pressures</td>
<td>☐</td>
<td>☐</td>
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</table>

Proper tire inflation is important for safe and efficient operation. The question that should be asked here is “Where would you find information on how to properly inflate tires?” The answer supplied by the participant should be either “on the tire” or “in the owner’s manual.” Only one tire is required for completing this question. Tire inflation pressures found on the tire usually provide an acceptable range or a maximum pressure, while inflation pressures found in the operators manual may relate to the tractor usage.

| 28. Tires inflated properly | ☐       | ☐         |          |

Participants should be able to use a tire pressure gauge to determine how much air is in a tire. Performing this on only one tire is adequate to demonstrate their ability. The test administrator should check the pressure before the test begins to be able to know if participants answer correctly. If a large number of participants will take the exam, the exam administrator should rotate which tires are used to prevent significant deflation of the tire.

Note: The intention of this question is to check the pressure in a tire without fluid added for ballast. Most, if not all, tractors from a tractor dealer will not have fluid in the rear tires and are safer for youth to examine. Special consideration must be given when working with fluid. Most fluid ballast mixtures are corrosive and would require special Personal Protective Equipment (PPE) for participants to use to perform this task. The valve stem must be on top, rubber gloves must be worn, and a WD-40 type substance (for spraying the tire gauge after each use) would be needed. A special gauge designed for use with fluid ballast is needed.
<p>| | | |</p>
<table>
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<tbody>
<tr>
<td>29. Tires appear free of major damage (e.g. cracks in sidewall or pieces of tire missing, etc.)</td>
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<tr>
<td>Participants should inspect tires to see if any major damage is present such as cracks or pieces missing. Damaged tires are an operational hazard. Inspection of all four tires in a walk around inspection is necessary.</td>
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<tr>
<td>30. Wheel lugs in place and appear tight</td>
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<tr>
<td>Using a torque wrench to check the tightness of the lug bolts/nuts is not necessary. The task to be performed here is that a participant checks to make sure all lug bolts/nuts are in place and that they all appear tight. Inspection of all four wheels in a walk around inspection is necessary.</td>
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<tr>
<td>31. Roll Over Protective Structure (ROPS) in place or in extended position (if equipped with fold down system)</td>
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<tr>
<td>Participants should examine the previously identified ROPS to determine if it is extended (foldable left picture) or in place (rigid right picture).</td>
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</tbody>
</table>
32. Power Take Off (PTO) master shield in place

Participants should determine if the previously identified master shield is properly in place. If the master shield is of the hinged type it should be in the folded down position.

33. Slow Moving Vehicle (SMV) emblem clean and not faded

Participants should determine if the SMV emblem is clean with bright colors. Faded and dirty emblems can be hazardous when traveling on roadways. Having a faded or damaged SMV emblem on the test tractor would require the participant to confirm the need for an SMV replacement.

34. All lights (hazard, turning, and work lights) in place and clean

This question asks the participant to inspect the lights and reflectors to make sure they are all present and not damaged. Operation of these will be required in question 44.

35. Safety hitch pin available for drawbar

Have a safety equipped hitch pin available for examination. Participants should be asked what makes it a “safety equipped hitch pin.” They should respond “the clip on the bottom” that keeps the pin from bouncing out during operation.

36. Fuel system free of leaks

Leaks do not only consist of puddles of fluid under the tractor which would be unlikely on a the test tractor. Fuel systems include the fuel tank, fuel lines, fuel pump, fuel filters, fuel injectors, and numerous fittings. All should be free from leaks. Participants should visually inspect the fuel system for leaks.
37. Cooling system free of leaks

Leaks do not only consist of puddles of fluid under the tractor which would be unlikely on the test tractor. Cooling systems include hoses, a radiator, water pumps, and a reservoir. All should be free of leaks. Participants should visually inspect the cooling system for leaks.

38. Hydraulic system free of leaks

Leaks do not only consist of puddles of fluid under the tractor which would be unlikely on the test tractor. Hydraulic systems include pumps, hoses, filters, outlets, and numerous fittings. All should be free of leaks. Participants should visually inspect the hydraulic system for leaks.

39. Muffler/exhaust pipe in place

The previously identified muffler or exhaust pipe should be in place.

### Part B. Participant must remount the tractor and be in operator’s seat for this part of the exam.

<table>
<thead>
<tr>
<th>Correct</th>
<th>Incorrect</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>40. Participant safely mounted tractor</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Participant must use three points of contact at all times when mounting or dismounting a tractor. This includes two hands and one foot or two feet and one hand. Jumping on or off a tractor is not allowed. Larger tractors should be mounted/dismounted while facing the tractor. Smaller tractors can be dismounted while facing away from the tractor. Any tractor must be dismounted slowly.

41. Operator steps and platform free of debris and tools

Debris and tools on the steps or platform are a tripping hazard and could cause a serious fall. Participants should determine if there is any unnecessary items present. When the exam is set up, a hitch pin or small chain could be intentionally left for the participant to identify and remove or the platform can be clean. The “exam key” should reflect the situation.
42. Seat adjusted by participant to allow access to controls

The seat should be adjusted by the participant so that all controls are accessible especially ones that control starting and stopping movement. A participant that cannot sit securely in the seat and reach the clutch and brake should not be allowed to operate the tractor.

43. Seatbelt functioning

The seatbelt should be fastened by the participants. They should then tell the exam administrator if the seatbelt is properly functioning. The seatbelt must be worn throughout the remainder of the exam.

44. Lights and flashers operational

The participant should turn on all the lights at this point to determine if they all operate properly. The exam administrator should ask for each of the light systems: hazards, headlights, worklights, and turn signals if tractor is so equipped. No assistance can be given except if the key switch is required to be in the “ON” position for the light systems to work (not all tractors are the same). To reduce mounting/dismounting of the participant and help complete the exam faster, the exam administrator can either stand in front of headlights or hold a clipboard in front of the lights so participants can determine if they work when the switch is turned to the “ON” position. The participant should be able to recognize if a light is not working properly.

45. Neutral-start switch operational

The neutral start system is designed to prevent a runover by only allowing a tractor to start when the transmission is either in a neutral or park position depending on make and model. In some cases, the clutch pedal must be fully disengaged. Participants must be sitting securely in the operator’s seat. Ask Question 45 (A and B) in the following format before a participant actually attempts to start the tractor:

45A: “What does the neutral-start safety switch do?”

Correct Response: Participant should provide an answer similar to: allows the engine to start only when the transmission is in neutral or park.
45B: “How should you check to see if the switch is working?”

Correct Response (manual transmission): To check the operation of this device, the clutch should be disengaged (clutch pedal pushed all the way down), the gear shift(s) should be placed in any gear (lowest gear is best in the event that the switch malfunctions), and the ignition key should be turned to try to start the engine. If the engine does not start, the neutral start switch is working properly.

Correct Response (hydrostatic transmission): When the key is turned the engine should not start. (Brake pedal is usually required to be depressed in Park position.) If the engine doesn’t start, the neutral start switch is working properly.

Only if 45A and B are answered correctly, should the participant be allowed to actually “test” the switch.

46. Manual transmission
   - Clutch and brakes can be fully depressed/disengaged
   - Hydrostatic transmission
   - Directional and brake pedals can be fully depressed

   This question is meant to determine if the participant can safely stop the tractor in a driving situation. Fully disengaging the clutch pedal while also engaging the brakes ensures the participant should be physically capable to stop a tractor equipped with a manual transmission. In hydrostatic transmissions, the participant should be able to allow the directional pedals to move to the neutral position and fully engage the brakes.

SCORING

Number of correct items ________/46 (Minimum of 39 or 85% correct)

There are a total of 46 items for sections II and III. The minimum number of correct items is 39, which meets the minimum passing requirement of 85% for this exam. Remember that the total number (46) must be adjusted down if items are deleted from the exam for a tractor that is not equipped with all items on the exam (i.e. 38/45 = 85%, 37/44 = 85%). Deleting more than three items from the exam is not recommended.

Examinee passes this exam Yes ☐ No ☐
Participants receiving a score of 85% correct or better pass the Pre-Operational Exam. Those receiving a failing score may be eligible to re-take the exam at a later date. Participants passing this exam are eligible to progress to the Operational Exam based on a ‘YES’ answer to the following question.

A **NO** response to the question below indicates that participant is ineligible to proceed to the operational exam.

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has participant previously operated a tractor and towed implement?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

The final question for this exam is included to determine if a participant has prior experience operating a tractor and towed trailer. The purpose of this is to identify youth who have no operational experience and to prevent them from participating in the operational exam. The purpose of the Operational Exam is to evaluate operational abilities at that time – not to have a practice driving session. Practice sessions are acceptable but must take place on the youth’s own time under proper adult supervision and before participation in the Pre-Operational Exam.