

Trainer Value Pack



LEARNER GUIDE



**EASY
GUIDES**
Australia Pty Ltd

Civil Construction



RIIMPO321F
wheeled front end loader

RIIMPO322E
tracked front end loader



RIIMPO318F
skid steer loader



RIIMPO319E
backhoe



RIIMPO320F
excavator



RIIHAN311F
integrated tool carrier

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Plan and prepare for work

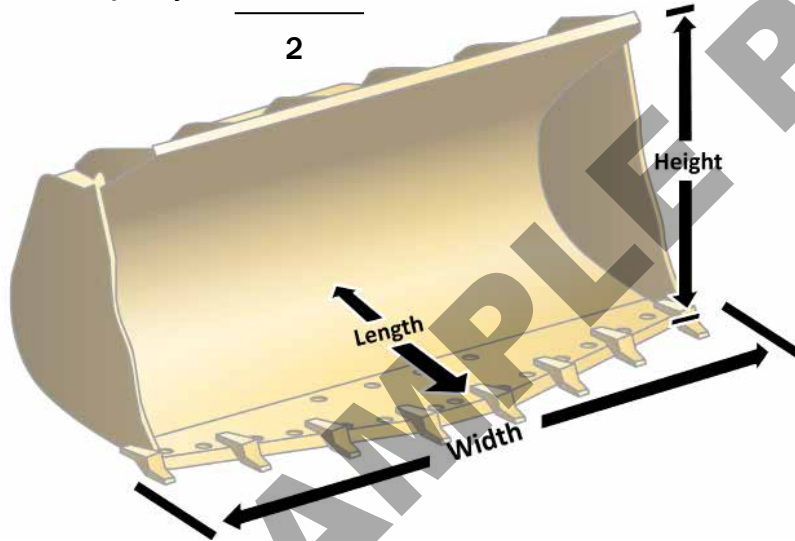


Calculations (continued)

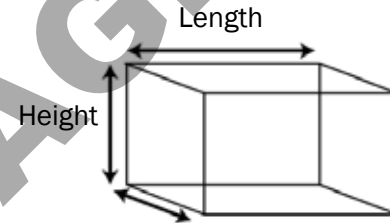
How to find the cubic capacity of a bucket

The planner must know the capacity of the loader bucket to be able to plan the job. For example, a machine with a larger bucket will move

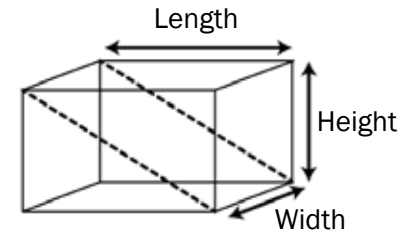
$$\text{Capacity} = \frac{L \times W \times H}{2}$$



Cubic capacity is $\div 2$ because of the shape of the bucket (a triangular prism)



Cubic capacity of cube
 $= L \times W \times H$



Cubic capacity of bucket
 $= L \times W \times H \div 2$

Identifying workplace hazards

A hazard is anything that can harm you or others while you are working. The first thing you need to do is to identify these hazards before you start work.

Take a good look at your workplace and decide if anything could possibly cause injury to you or anyone else in the area.



Above head height

You should check above eye level for:

- Powerlines
- Buildings
- Trees
- Other obstructions.



Ground to eye height

You should check around eye height for:

- Other equipment
- Machinery
- People
- Pedestrians
- Things in the path of travel
- Other obstructions.



Ground level (and below)

You should check the ground to see:

- If the surface is stable and level
- If there are spills or wet surfaces
- Is there debris/rubbish
- Is the surface strong enough to support the weight of any equipment or materials
- Are there trenches or recently backfilled trenches
- Is the ground unstable.



QUESTION 9

What kinds of PPE might you use when using earthmoving equipment?

You might use:

Hard hat



Dust mask



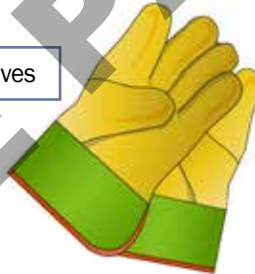
Safety vest



Ear muffs



Gloves



Boots that cover the whole foot



Sunscreen

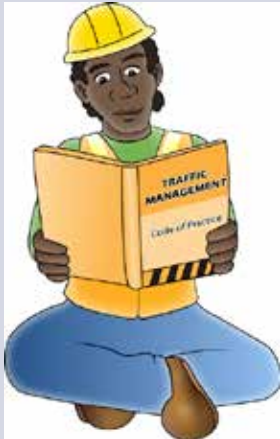


Glasses/ goggles



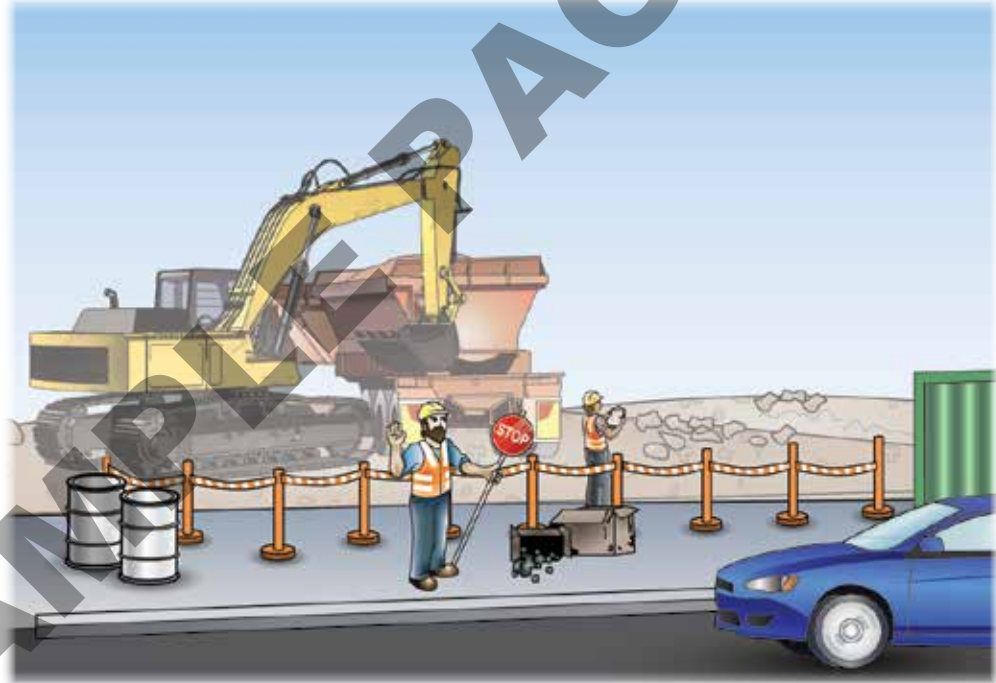
QUESTION 11

What does a traffic management plan (TMP) tell you?



It tells you how to control vehicles in and around the worksite. It helps keep the site safe for you and others.

You may require a traffic control qualification in your state or territory.



Operate earthmoving machinery



Question 18. What are equipment processes, technical capability and limitations when using earthmoving machinery?

Equipment Types:

Bulldozers: Bulldozers are used for pushing or moving large amounts of earth and debris. They are equipped with a front blade for this purpose.

Excavators: Excavators are versatile machines used for digging, trenching, and material handling. They have a digging bucket and a rotating cab mounted on tracks or wheels.

Loaders: Loaders are used for scooping and lifting materials like soil, gravel, or construction debris.

Graders: Graders are used for leveling and grading surfaces, often in road construction or site preparation.

Dump trucks: Dump trucks transport materials such as soil, rocks, or debris from one location to another.

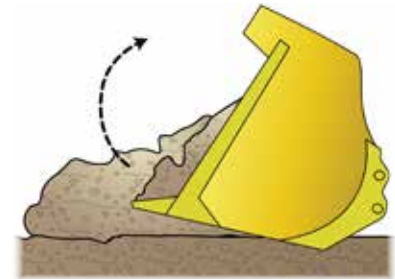
2. Technical Capabilities:

Power and efficiency: Earthmoving machinery is designed for heavy-duty tasks and can move large quantities of material efficiently.

Precision and control: Many machines have precise controls for digging, leveling, and grading.



loader and dump truck



crowd a bucket to maximise the amount of material that can be lifted

...CONTINUES ON NEXT PAGE

QUESTION 30

What kinds of tests should you do before using a machine for earthmoving?

Test brakes



Test attachment movements



Test controls



Test steering



Lift, carry and place materials



Table of weight of common materials

1000 kilograms = 1 tonne

Examples of the approximate weight of different materials:

1 cubic metre of water = 1 metric tonne

1 cubic metre of earth = 1.9 metric tonnes

1 cubic metre of clay = 1.9 metric tonnes

1 cubic metre of dry beach sand = 2.0 metric tonnes

1 cubic metre of concrete = 2.4 metric tonnes

1 cubic metre of coal ash = .08 (8/10) of a metric tonne

25 bags of cement (40 kg each) = 1 metric tonne

1000 common bricks = 4 metric tonnes

1 cubic metre of steel = 7.3 metric tonnes

1 cubic metre of copper = 9 metric tonnes

1 cubic metre of lead = 11.4 metric tonnes



QUESTION 47

How can you find out the weight of a load?

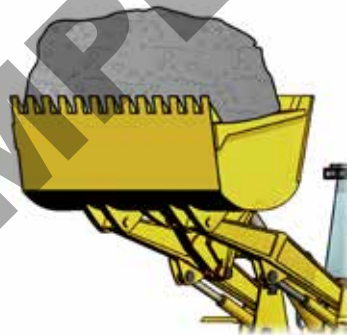
Check the weighbridge note, consignment note, or other information.



Read the weight marked on the load



Estimate the weight of the load. For example,



Check the machine load scales if it has them fitted.



QUESTION 48

You want to use the excavator for lifting.

What must the earthmoving machinery have?

The earthmoving machinery must have an approved lifting lug and the SWL marked on the boom. The lug must be manufacturer approved.

Do not use the bucket to lift! If there is a quick-hitch type bucket, take off the bucket first.

Do not lift from anything attached by the quick hitch system.

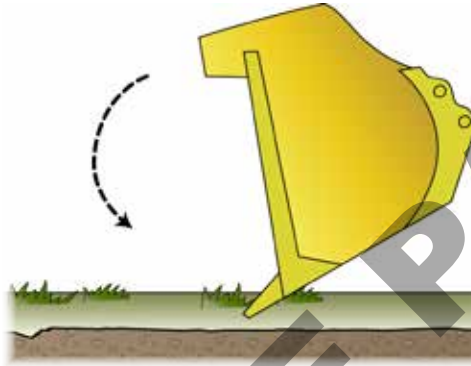


QUESTION 63

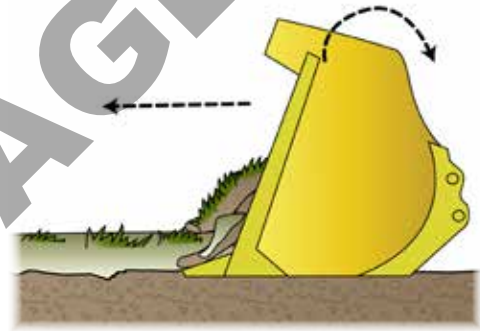
How do you strip topsoil?

Explain the steps.

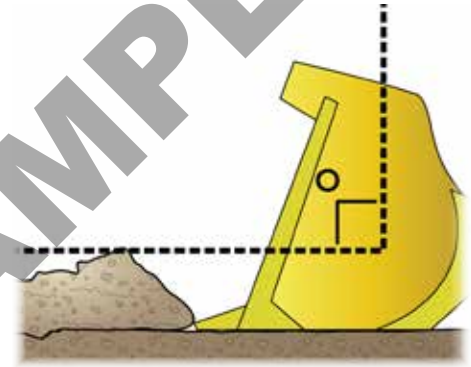
1. Tilt the bucket forward so the front of the cutting edge is in contact with the ground.



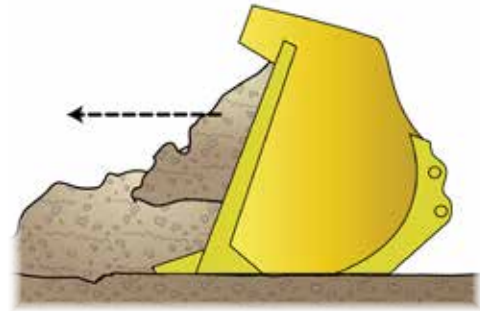
2. Drive forward to dig.



3. Roll the bucket back to level at the correct depth.

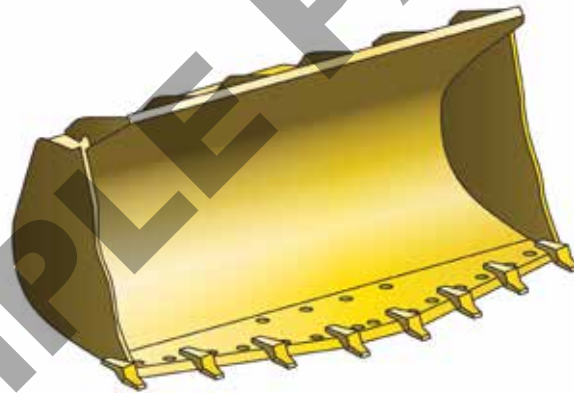


4. Move forward until the bucket is full.



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Select, remove and fit attachments



QUESTION 74

What kinds of buckets can you use on a front end loader / backhoe?

What do you use them for?

Rock bucket

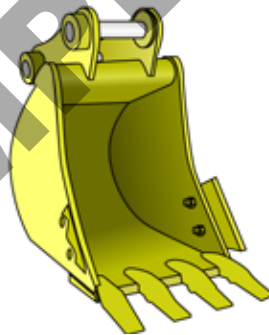
This bucket has a straight or spade edge. You use this bucket for moving rocks.

**Multi-purpose bucket (4-in-1)**

This bucket has teeth and a blade. You use this bucket for dozing, clamping, loading, scraping and back blading for levelling.

**Excavating bucket**

This bucket has teeth and is used for general digging.

**Trench bucket**

This bucket is narrower than the excavating bucket and is used to dig trenches suitable for pipe or cable laying.



Relocate the machine



QUESTION 96

A loader is to be transported. How is the preparation done by the person responsible?

Make sure the transport vehicle is wide enough and long enough to fit the loader

Make sure the transport vehicle is clean

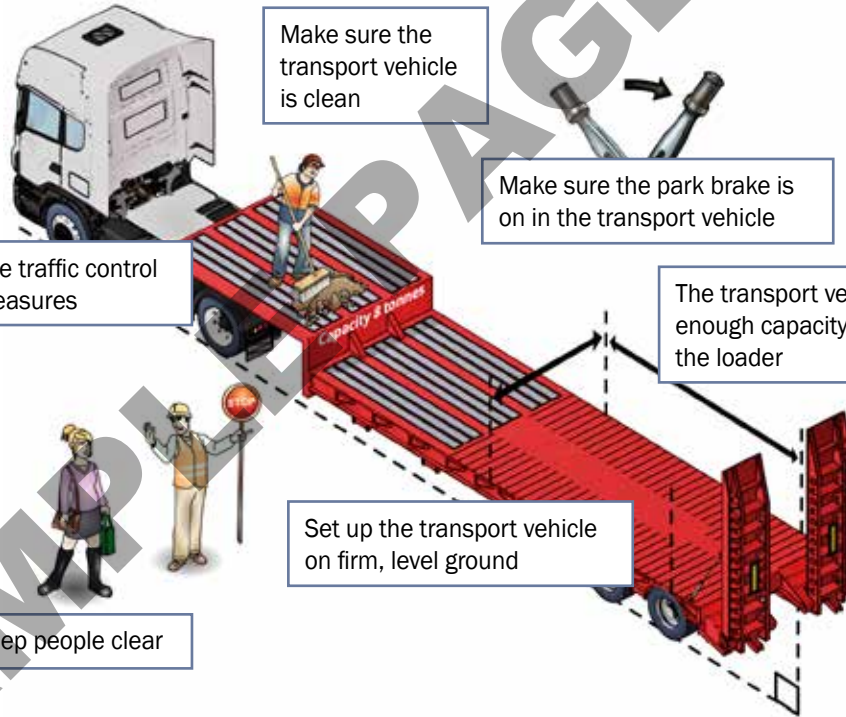
Make sure the park brake is on in the transport vehicle

Use traffic control measures

The transport vehicle has enough capacity to carry the loader

Set up the transport vehicle on firm, level ground

Keep people clear



Carry out post-operational procedures



QUESTION 99

You've finished using earthmoving machinery.

What post-operational checks do you do?

Check for:



Housekeeping



QUESTION 109

After you've finished the job, what should you do?

Tell people who live in the area that the work is finished.



Clean the job site.



Throw away any rubbish and recycle what you can.



CIVIL CONSTRUCTION

Learner Workbook

(Formative assessment)



STUDENT COPY

Civil Construction



RIIMP0321F
wheeled front end loader



RIIMP0322F
tracked front end loader



RIIMP0318F
skid steer loader



RIIMP0319E
backhoe



RIIMP0320F
excavator



RIIHAN311F
integrated tool carrier

This resource was developed by:



Learner Name: _____

Student Number: _____ Date: ____/____/____

Contents

Contact Details	2
Application / Context of training (formative assessment)	4
Training Conditions.....	4
Knowledge Assessment	6
Score for knowledge assessment	26
Practical tasks	27
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SAMPLE PAGES

Knowledge Assessment



Question 1

What is the first thing that is done to build a new road?



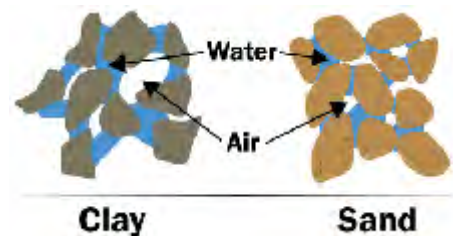
Question 2


What is the last thing you do in constructing a road?




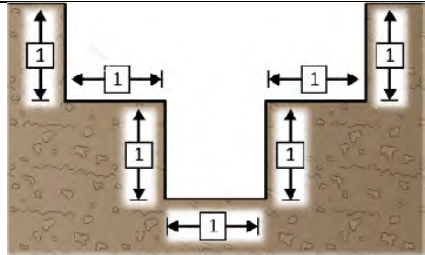
Question 3

What is the difference in viscosity between dry loose soil and wet muddy soil?




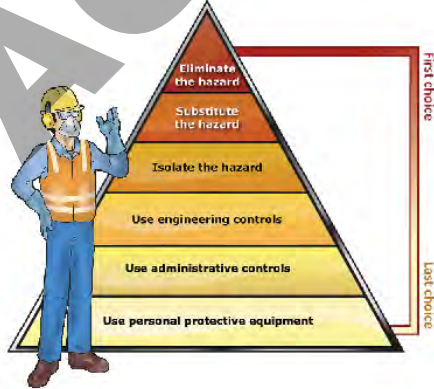
Question 10	
What is a hazard?	
	


Question 11	
What is fatigue?	
	

Question 12	
How can you make a trench safe?	
	

Question 13																																									
What is the purpose of a Job Safety Analysis (JSA) or Safe Work Method Statement (SWMS)?																																									
	<p style="text-align: center;">Job Safety Analysis Worksheet</p> <p>Company name: _____ Date: _____ JSA No. _____</p> <p>Site name: _____ Permit to work requirement: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Contractor: _____ Approved by: _____</p> <p>Activity: _____</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Hazards</th> <th>Risk control measures</th> <th>Who is responsible?</th> </tr> </thead> <tbody> <tr> <td><small>List the tasks needed to do the job in the order they are done.</small></td> <td><small>Identify each task list the hazards that could CAUSE injury when the task is done.</small></td> <td><small>List the control measures needed to remove or minimise the risk of injury from the hazard you have identified.</small></td> <td><small>Write the name of the person responsible (supervisor or above) for putting the control measures in place.</small></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Activity	Hazards	Risk control measures	Who is responsible?	<small>List the tasks needed to do the job in the order they are done.</small>	<small>Identify each task list the hazards that could CAUSE injury when the task is done.</small>	<small>List the control measures needed to remove or minimise the risk of injury from the hazard you have identified.</small>	<small>Write the name of the person responsible (supervisor or above) for putting the control measures in place.</small>																																
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Question 14	
What does an environmental (EMP) tell you?	
	

Question 15	
What is the Hierarchy of Hazard Control?	
	

Question 16	
What personal protective equipment (PPE) might you need when doing earthmoving work?	
Answer may include but is not limited to:	

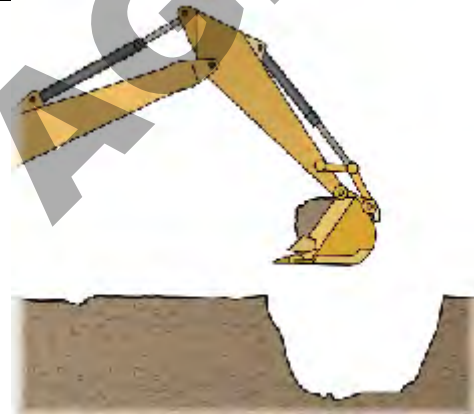
Question 17

What does a traffic management plan (TMP) tell you?



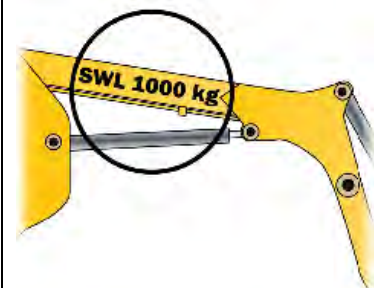
Question 18

What kinds of jobs do you use earthmoving equipment for?



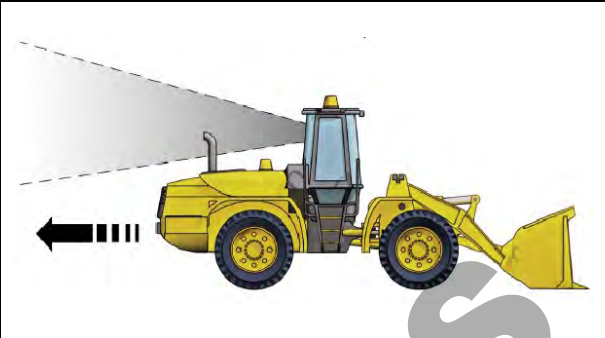
Question 19

How might you check if the equipment is capable of doing the job?



Question 29

What do you do before reversing earthmoving machine from a stationary position?



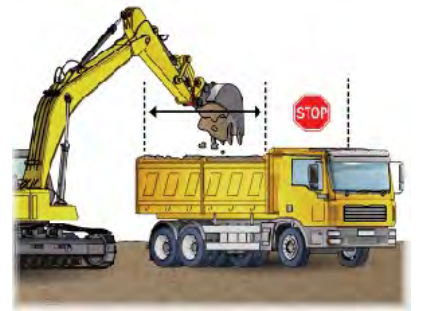
Question 30

Why is it dangerous to slew a load over the cabin of a truck?



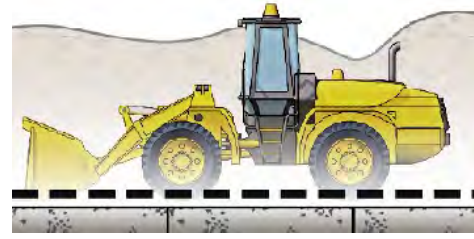
Question 31

What safety precautions should the operator take when dumping a load into a truck?



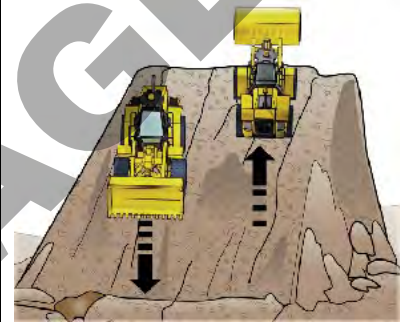
Question 32

When travelling with a load, what kind of ground is the safest to travel on?



Question 33

Which way should you travel when driving on sloping ground?



Question 34

When travelling down a steep slope, which gear do you use?



Question 35

How can you find out the weight of a load?



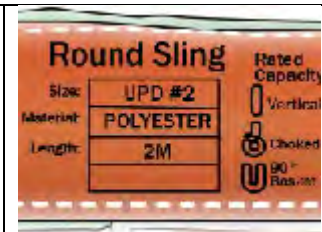
Question 36

You want to use the earthmoving machinery for lifting. What must the earthmoving machinery have?



Question 37

What are two ways to find out the working load limit (WLL) of synthetic webbing slings?



Question 55

How do you prepare a machine for travel on a public road?



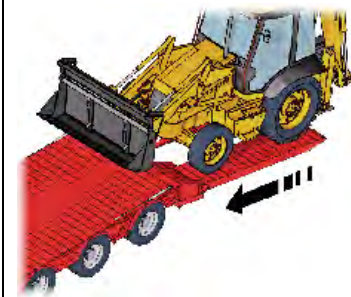
Question 56

Before you drive on a public road, what checks do you make on the machine?



Question 57

A loader is to be transported. How is the preparation done by the person responsible?



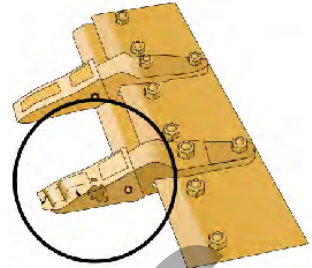
Question 58

You've finished using earthmoving machinery. What post-operational checks do you do?



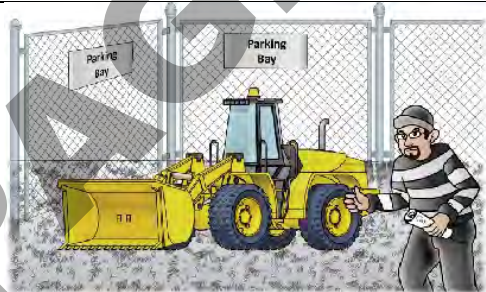
Question 59

What are some common parts that wear or get damaged on earthmoving machinery?



Question 60

Why should you remove the keys from earthmoving machinery when leaving it parked?



Question 61

What do you have to clean when you have finished using earthmoving machinery?



Question 62

What are some items on earthmoving machinery that can be recycled?



Question 63

After you've finished the job, what should you do?



Question 64

You have finished using earthmoving equipment. What documentation may you need to complete?



SAMPLE PAGES

Score for knowledge assessment

Knowledge Assessment		
Correct answers:	_____ / 63	
Percentage:		
Result (circle):	Satisfactory	Not satisfactory

Assessor feedback:

If you have any questions about your results, speak to your trainer/supervisor.

Practical tasks



The skills and knowledge required to operate earthmoving machinery to load, distribute and place materials, work must be performed **on at least two occasions**. The two occasions could include the following:

Occasion 1 – Workbook (formative assessment)

Occasion 2 – Summative assessment instrument

Attachments:

Two different attachments must be used.

Practical Assessment 1 – Pre-Start



Observation performed when performing Practical Task 1 from work order provided (Job 1, Job 2)	Yes	No	N/A	Job 1	Job 2
Candidate:					
Located and apply relevant documentation, policies and procedures.					
<input type="checkbox"/> Locates operator’s manual for earthmoving machinery and finds requirements for pre-start and start-up checks.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Locates site policies and procedures for personal protective equipment requirements when operating earthmoving machinery.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Candidate displays preparedness for emergency situations by outlining the steps to be taken in the case of a fire or accident.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Interrupt work order or requirements before performing work task.				<input type="checkbox"/>	<input type="checkbox"/>
Selected and wear personal protective equipment.					
<input type="checkbox"/> PPE selected must be as per site policies and relevant to the task. As a minimum MUST include appropriate footwear, Hi-visibility workwear and hard hat.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> PPE must be checked for serviceability and correctly fitted.				<input type="checkbox"/>	<input type="checkbox"/>
Conducted pre-start inspection of earthmoving machinery.					
<input type="checkbox"/> Pre-start check is carried out as per operators manual and workplace policies and procedures. Where possible a completed pre-start checklist should be provided as supporting evidence.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> During inspection the candidate must identify and/or verbalise any common faults they are looking for.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Faults and/or damage found during inspection must be managed as per workplace policies and procedures. This should include, tagging out faulty equipment, isolating faulty equipment, reporting to the appropriate person and recording in a logbook. If no faults or damage are found the candidate must verbalise the procedure for the worksite to the assessor.				<input type="checkbox"/>	<input type="checkbox"/>

Carried out vehicle refuelling requirements and procedures where applicable.					
<input type="checkbox"/> Candidate must refuel the earthmoving machinery when necessary. The candidate must refer to workplace policies and procedures for refuelling.				<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> The correct PPE for refuelling must be selected and worn during the refuelling process.				<input type="checkbox"/>	<input type="checkbox"/>

The applicants' performance in Practical Assessment 1 – Pre-Start activity was deemed to be:

<input type="checkbox"/> Satisfactory	<input type="checkbox"/> Not yet satisfactory
Applicant signature:	Date:
Trainer/assessor signature:	Date:

SAMPLE PAGES

Practical Assessment Summary – Competency Sign Off

Files to be submitted.

Written Assessment

- 1 x Knowledge assessment

Practical Work

- 2 x activity’s performed in work place or simulated environment

Documents that need to be submitted.

- 2 x Copies of work order
- 1 x Trainer’s Assessment Work book filled in of candidate’s assessment.

Written / Practical Assessment Summary		Satisfactory	Not Satisfactory
0. Knowledge assessment		<input type="checkbox"/>	<input type="checkbox"/>
1. Pre-Start		<input type="checkbox"/>	<input type="checkbox"/>
2. Drive and operate earthmoving machinery		<input type="checkbox"/>	<input type="checkbox"/>
3. Complete operations to specification		<input type="checkbox"/>	<input type="checkbox"/>
4. Attachments		<input type="checkbox"/>	<input type="checkbox"/>
5. Load, unload and relocate earthmoving machinery		<input type="checkbox"/>	<input type="checkbox"/>
6. Housekeeping		<input type="checkbox"/>	<input type="checkbox"/>
Competency:	Not Yet Competent <input type="checkbox"/> Date _____	Competent <input type="checkbox"/> Date _____	
Feedback to be given to candidate or to workplace trainer.			
Trainer / Assessor signature: Date:	The learner has been assessed as <input type="checkbox"/> Not Yet competent / <input type="checkbox"/> competent in the elements and performance criteria, critical aspects for assessment, required skills and knowledge for this unit and the evidence presented is: <input type="checkbox"/> Authentic <input type="checkbox"/> Valid <input type="checkbox"/> Reliable <input type="checkbox"/> Current <input type="checkbox"/> Sufficient		