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## **Class 3 and Class 5 Study Guide**

Unit Standard 17575 and 17577

Operate a combination vehicle to meet the requirements for a full class 3 or class 5 driver licence

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# Introduction

Welcome to your class 3 and class 5 study guide designed to help you successfully pass your closed book theory assessment. This guide is your essential resource to give you the confidence needed to help pass the written theory on the day.

Please read this carefully as you are not allowed to reference any material during the theory assessment, it is a closed book assessment, and you will be required to answer all the questions in one session. Completing the pre-course study will set you up for success.

## Making the Most of the Practice Quiz

At the end of this guide, you'll find a targeted quiz that serves as checkpoint for your learning. These will help you:

- Reinforce your understanding through active recall
- Identify knowledge gaps before they become problems on assessment day
- Train your brain to retrieve information under conditions like the actual assessment

Once you have completed the questions and checked your answers, have someone verbally ask you the questions and try to answer these without referencing the study guide. This is a great checkpoint to see if you have retained the knowledge. Do this as many times as possible.

Let's begin your journey towards assessment success!

## Purpose and scope

This study guide covers some essential learning outcomes that you must competently demonstrate for Unit Standards 17575 and 17577, Operate a combination vehicle to meet the requirements for a full class3/5 driver licence.

1. Describe requirements relating to safe loading of a combination vehicle and driving techniques that minimise the adverse effects of a high centre of gravity
2. Identify and explain night driving hazards and described measures to minimise risk

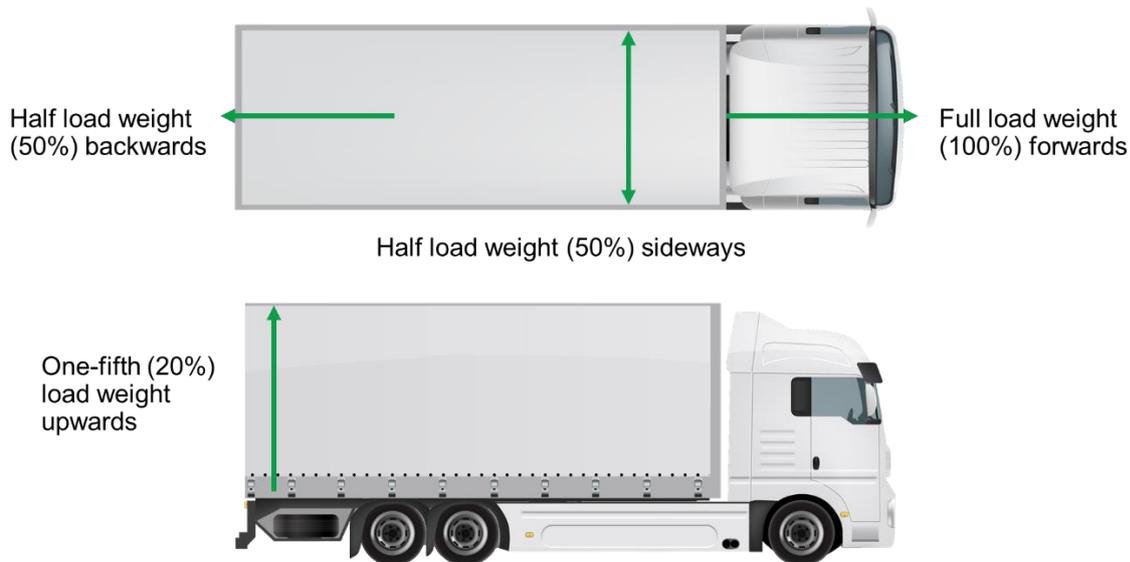
Other outcomes you will be required to achieve not covered in this study guide are

1. Connect and disconnect a trailer to and from a prime mover
2. Carry out a pre inspection of the combination
3. Drive a combination vehicle efficiently in different traffic and road conditions
4. Reverse a combination vehicle
5. Park, shut down and secure both the combination vehicle

## Load security

Any load carried on a vehicle must be sufficiently restrained to prevent movement caused by the forces that arise from the vehicle passing over road undulations, when it changes direction, or as being braked or accelerated.

The Truck Loading Code sets out the minimum standards for safely restraining (holding) a load under normal operating conditions.



It requires much more force to stop a load that has started moving than it does to prevent the movement in the first place. It is essential that the vehicle is loaded and restrained so no part of the load can freely move in any direction.

The skill is not only in the driving of the truck but also the safe securement of the load. Correct restraint on a load will prevent:

- The load being lost of the vehicle
- The load being damaged
- The vehicle being damaged
- The load moving creating an unstable vehicle
- Injury to drivers and the public

## Anchor points

Each anchor point must have a strength rating at least equal (not less) to the rated strength of the lashing secured. An example of this would be to attach a 2500kg load binder to a rope rail that had a rating of only 700kg. the value of the restraint would then be only 700kg. this is what we call the weakest link.

Another way to look at it, is the same 2500kg load binder secured to a 3000kg rope hook or dropper. While the anchor point is rated at 3000kg, the rating of the load binder is only 2500kg so now the load binder is the weakest link. A load anchor plate provides load anchor point ratings to assist you on what load restraint to use and could also have a factor on where you position the load to achieve the correct restraint strength.

<b>ACME EQUIPMENT LTD CONSULTING ENGINEERS</b> Evermore Street • Waiwai • tel: 09 4445556		
Certificate No.	12345	
Vehicle Serial No.	AAA123	
Certifying Engineer ID	XYZ	
<b>LOAD ANCHOR RATINGS (NZS 5444)</b>		
<i>Load Anchor Type</i>	<i>No.</i>	<i>Rating</i>
Chain hooks	6 each side	5,000 kg
Rope hooks	10 each side	3,000 kg
Rope rails	Continuous each side	700 kg

## Securing rigid loads

When packets are loaded against a headboard and the top packet is supported by at least 150mm of headboard, the securing devices must have a combined rated strength of at least the weight of the load.

When packets are loaded so the lower packet is supported by the headboard, but the upper packets are not (either away from headboard or support is less than 150mm), the securing devices must have a combined rated strength of at least 1.5 times the weight of the load.

When the load has no headboard support, the securing devices must have a combined rated strength of at least twice the weight of the load.

This is to help increase the friction between the load and the deck of the vehicle, and to stop movement of the load as there is no support.



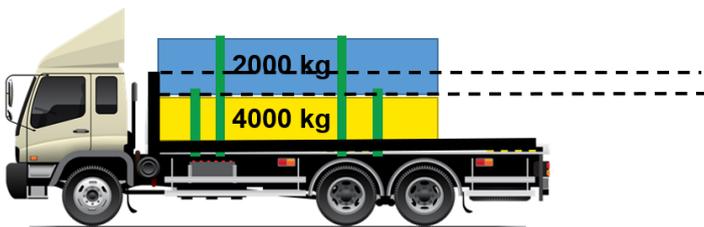
**Against headboard:** weight of the load (4000 kg) restraint



**Partially against headboard:** 1.5x weight of load (9000 kg) restraint



**Not against headboard:** twice the weight of the load (8000 kg) restraint



Headboard height of 150mm or more,  
1 x weight of the load  
If less than 150mm, 1.5 x weight of the load is required



Baulking height of 150mm or more,  
1 x weight of the load  
If less than 150mm, 2 x weight of the load is required

# Load distribution and arrangement on vehicles

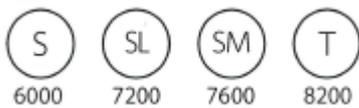
The priority with any load is to keep within the maximum legal weight limits and vehicle dimensions. The load should be spread to keep the centre of gravity as low as possible and as near as possible to the centre line to maintain lateral stability.



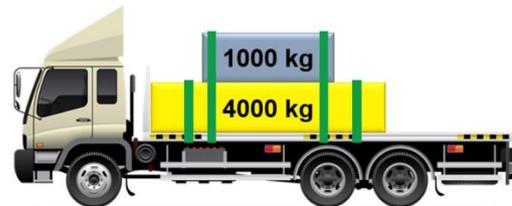
Stay within legal vehicle size limits



Load for correct axle weight distribution



Stay within NZTA legal axle weight limits



Heavy load low, light load high  
Keep the CoG as low as possible

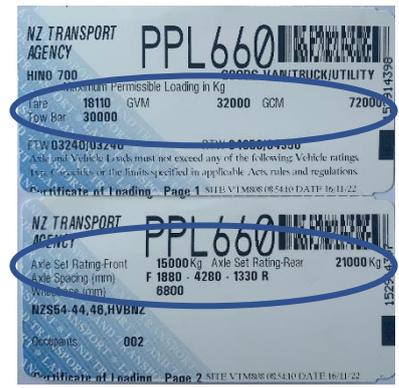
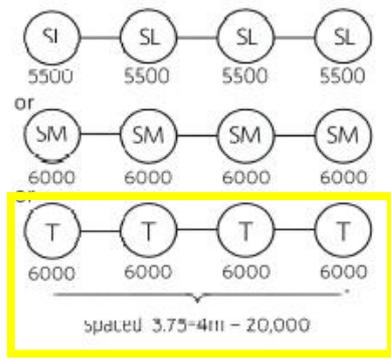
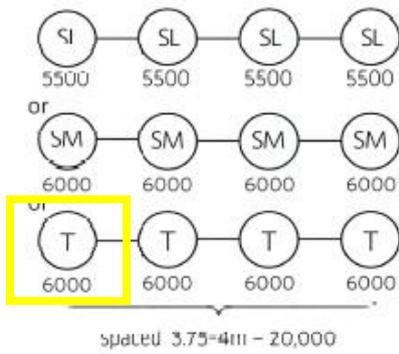
Reposition the load if a load has been part unloaded



### Why you may need to reposition the load.

- The centre of gravity is down the centre of the deck
- Balance the vehicle for stability
- The load weight is even across the axles
- Even braking performance and traction
- The load is spread across the combination
- You may need to transfer more weight onto the truck to have a 1:1.5 weight ratio (i.e. trailer GVM is 15000kg, truck GVM must be 10000kg)
- To shift load against the headboard for load security and prevent load movement

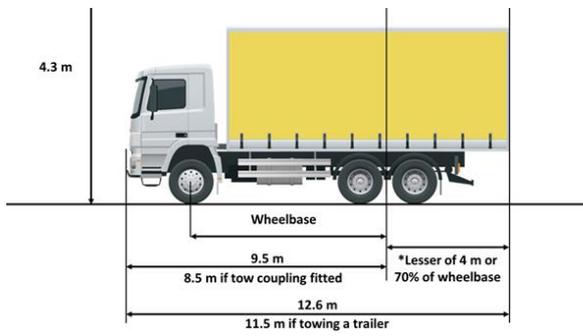
### Loading errors that could result in fine



Exceeding legal axle weights

Exceeding legal group axle weights

Exceeding COL weights



Exceeding legal vehicle dimensions

Unrestrained load

Uncovered or uncontained load that could fall from the vehicle

## Night driving hazards

As a professional driver you will always be confronted with hazards, and you need to recognise them and apply techniques to reduce your risk. The key is to be proactive rather than reactive when identifying hazards.

- Identify the risk
- Predict what may happen
- Decide on what action to take
- Act on that decision

Some hazards could be

Hazards	Possible risk	Reduce risk
Low visibility	<ul style="list-style-type: none"> <li>• Can't see road ahead</li> <li>• Objects/people on the road</li> </ul>	<ul style="list-style-type: none"> <li>• Drive at a speed within in your headlights</li> <li>• Use road marker reflectors</li> <li>• Have lights on high beam when possible</li> </ul>
Fatigue, Sore eyes	<ul style="list-style-type: none"> <li>• Poor judgement of conditions</li> <li>• Poor vehicle control</li> </ul>	<ul style="list-style-type: none"> <li>• Pull over and have a break/nap</li> </ul>
Oncoming headlights	<ul style="list-style-type: none"> <li>• On full beam, blinding you</li> <li>• Misjudging distance and speed of oncoming vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Look to the left side of the road</li> <li>• Keep windscreen clean to reduce glare</li> <li>• Don't overtake unless it is clear</li> </ul>
Poor Weather	<ul style="list-style-type: none"> <li>• Can't see change in road conditions</li> <li>• Miss advisory signs</li> </ul>	<ul style="list-style-type: none"> <li>• Slow down and drive to the conditions</li> <li>• Increase following distances</li> </ul>

## High centre of gravity vehicles

Not all loads or vehicles are created equal, so it is not always possible to keep the centre of gravity low. You need to apply driving techniques when operating these vehicles to reduce the risk of an incident or, worse, a vehicle rollover like the concrete truck below.



- Use correct cornering technique, correct speed, correct gear, smooth steering
- Look well ahead, scan as far as possible so you do not need to react suddenly with a change in direction
- Increase your following distances for smooth braking
- Take care on roads with steep camber
- Avoid lifting a wheel over kerbs or dropping into gutters

# Static roll threshold

Static roll threshold (SRT) is a measure of the likelihood of a vehicle rolling over.

The amount of sideways acceleration a heavy vehicle must be able to handle is a minimum SRT value of 0.35g

On some vehicles this needs to be controlled to remain stable by reducing the height of centre of gravity to remain within a level of steady turning sideways acceleration the vehicle can tolerate without rolling over.

The COL on a trailer will display the SRT limitations



This trailer has good stability

The easiest way to understand this, is to read as it is displayed on the COL

**4.10m/24t** Loading to the maximum height of 4.10m you could load to a maximum GVM weight of 24t

**24t/4.10m** Loading to a maximum GVM weight of 24T you can load to 4.10m height

Remember, the maximum weight on a quad axle set is 20T (unless under permit)



This trailer has variances in heights and weights to ensure it remains stable and the amount of sideways acceleration meets the minimum SRT value of 0.35g

**4.30m/28t** Loading to the maximum height of 4.30m the vehicles GVM cannot exceed 28T

**35t/3.90m** Loading to a GVM weight of 35T your height must not exceed 3.90m

When your heavy trailer exceeds its Static Roll Threshold (SRT), it becomes dangerously unstable which can cause a trailer to rollover with a change in direction.

This happens because the centre of gravity shifts too far outside the trailer's support base as it leans during a turn or sudden manoeuvre. Once this threshold is passed, recovery becomes extremely difficult or impossible, resulting in a rollover accident that can cause significant damage, road closures, and serious injuries or fatalities. This is why proper loading, weight distribution, and cautious driving are essential when operating heavy trailers.



## Class 3 and class 5 knowledge quiz

1. If the load is against the headboard, the load restraint system must be able to handle \_\_\_\_\_% weight of the load in a forward direction
2. The load restraint system must be able to take \_\_\_\_\_% the weight of the load in a sideways and rearward direction
3. If the load of 2000kg is not against the headboard you would require how much load restraint? \_\_\_\_\_kg
4. If the load is against the headboard but the top load is not supported by at least 150mm of the headboard, the load restraints must be at least \_\_\_\_\_ times the weight of the load
5. During a roadside inspection, what can you be fined for? (tick that applies)
  - Exceeding your vehicle GVM/COL
  - Being late for work
  - Exceeding legal group axle weights
  - Exceeding legal axle weights
  - Having an uncontained or uncovered load
  - Forgetting to eat breakfast
  - Exceeding legal vehicle dimensions
  - Having an unsecured load
6. How would you load your vehicle to have good vehicle control and weight distribution?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_

7. Have a look at the night driving hazards below.

<ul style="list-style-type: none"> <li>_ On coming headlights</li> <li>_ Low visibility</li> <li>_ Driver fatigue</li> <li>_ Poor weather</li> </ul>	<ul style="list-style-type: none"> <li>_ Judgement of other vehicles speed or distance</li> <li>_ Other drivers on the road</li> </ul>
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From the above, pick 3 hazards and note them as 1,2 and 3.  
Explain what could happen and how to prevent it happening:

**1. What could happen** \_\_\_\_\_  
\_\_\_\_\_

**Prevention** \_\_\_\_\_

**2. What could happen** \_\_\_\_\_  
\_\_\_\_\_

**Prevention** \_\_\_\_\_

**3. What could happen** \_\_\_\_\_  
\_\_\_\_\_

**Prevention** \_\_\_\_\_

8. Driving a top-heavy container truck, what three techniques would you use to maintain stability?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

9. Heavy trailers have an SRT rating. Study the Certificate of loading and answer the following questions



a. If you were going to load your vehicle to 4.25m high, what would your maximum legal GVM be? \_\_\_\_\_ t

b. What does 27t/3.91m refer to on this COL?

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10. Will your vehicle potentially tip over when going around a corner or a bend if you exceed the SRT?

Yes/no

11. You have unloaded part of your load from your truck and trailer combination. Why would you reposition some of the load across the combination?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

## Quiz answers

Q1 100% (full weight of the load)

Q2 50% (half the weight of the load)

Q3 4000kg (twice the weight of the load)

Q4 1 ½ (times the weight of the load)

- Q5
- Exceeding your vehicle GVM/COL
  - Exceeding legal group axle weights
  - Exceeding legal axle weights
  - Having an uncontained or uncovered load
  - Exceeding legal vehicle dimensions
  - Having an unsecured load

Q6 Keep the centre of gravity down the centre of the vehicle deck  
Load the vehicle so it has even weight distribution  
Keep the load weight as low as possible. Low centre of gravity  
**Other answers are possible. See pages 7 & 8**

Q7 **Hazard** Oncoming headlight  
**What could happen** could be blinded by high beam  
**Prevention** Look to the left. Slow down if required

**Hazard** Low visibility

**What could happen** unable to see the road clearly

**Prevention** use high beam to improve visibility. Drive within your headlight range

**Hazard** Poor weather

**What could happen** Lose of traction. Can't see changes in road conditions

**Prevention** Slow down to a speed suitable for the conditions. Increase following distances

**Other answers are possible. Answer must identify a clear night hazard, identify what could happen and a prevention.**

- Q8
1. Look well ahead, scan as far as possible so you don't need to react suddenly with a change in direction
  2. Increase your following distances for smooth braking
  3. Take care on roads with steep camber

**Other answers are possible. See page 10**

- Q9           a. 22t  
              b. If your GVM is 27t, the height cannot exceed 3.91m

Q10   yes

- Q11   Balance the vehicle for stability  
      The load weight is even across the axles  
      Even braking performance and traction

**Other answers are possible. See page 8**