**NZQA**

**Approved**

Achievement standard: 91347 Version 3

Standard title: Demonstrate understanding of advanced concepts used to make products

Level: 2

Credits: 4

Resource title: Getting to know go-karts

Resource reference: Construction and Mechanical Technologies VP-2.22 v2

Vocational pathway: Manufacturing and Technology

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| Date version published | February 2015 Version 2To support internal assessment from 2015 |
| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91347-02-8228 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 91347

Standard title: Demonstrate understanding of advanced concepts used to make products

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Credits: 4

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Learner instructions

# Introduction

This assessment activity requires you to create a presentation that demonstrates your understanding of advanced concepts used to make go-karts.

You are going to be assessed on how you comprehensively you demonstrate understanding of advanced concepts used to make products. You need to prepare a presentation that explains the differences between safe practices in classroom and industrial environments, and discusses how accepted conventions guide construction of go-karts in diverse contexts.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions, and modify them if necessary to suit their learners.

# Task

Complete a presentation that demonstrates your understanding of advanced concepts used to make go-karts.

Include the following in your presentation:

* describe the accepted conventions used when making go-karts. You might refer to such things as flush, parallel, perpendicular, offset, symmetry, array tolerance, ease, press fit, clearances, taper, level, plumb for different stages of construction
* explain how accepted conventions support the construction of go-karts in a specific context. This might be go-karts made at home, go-karts made commercially, or go-karts made for different purposes (for example for family use in the back yard, gravity/off-road/high performance racing, hiring at an amusement park)
* explain how accepted conventions are achieved through use of tools, techniques and materials when making go-karts
* discuss how the accepted conventions guide construction of go-karts in similar contexts. For example a similar context might be go-karts for racing (dirt/speedway, sprint or endure) or home/classroom situations or mass production
* explain the strategies that are used in a classroom situation to manage safety
* explain the differences between safe practice in a classroom situation, and in an industrial setting where go-karts are made commercially
* discuss how accepted conventions guide construction of go-karts or part of a go-kart in diverse contexts. This might include, for example, making go-karts in a classroom/home situation as opposed to making commercial go-karts in an industrial situation or go-karts for young children as opposed to those for high performance specialised racing.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to create a presentation that demonstrates their comprehensive understanding of advanced concepts used to make go-karts.

# Conditions

This is an individual activity.

# Resource requirements

Learners require access to the internet for research.

Visits to industry or from practicing specialists involved with making or maintaining machinery may be helpful.

DIY Go Karts <http://www.diygokarts.com/>

How to build a Go Kart <http://www.wikihow.com/Build-a-Go-Kart>

How To Build Your Own Go-Kart - A Step-by-Step Guide For Homemade Fun!

<http://hubpages.com/hub/Build-Your-Own-Go-Kart---A-Step-by-Step-Guide>

How to build a Kart <http://www.limestonemedia.com/how-to-plans/go-kart-materials.htm>

# Additional information

It may be easier for learners to show their understanding after they have made a go-kart. These final understandings may be informed by some initial investigations before the go-kart is made. However, not having made a go-kart does not exclude a learner from achieving this standard.

For the purposes of this standard:

* health and safety practice includes strategies to manage the safety, responsibility for this, reporting systems, liabilities, monitoring for exposures, and safe practice
* diverse contexts refer to the wider physical and social environment, including the scale of the project; for example diverse situations might include:
	+ the home and/or classroom situation where smallish products are made as opposed to an industrial environment where vehicle related products are constructed
	+ go-karts built for highly specified performance racing as opposed to home-built go-karts for the backyard.

# Assessment schedule: Construction and Mechanical Technologies 91347 – Getting to know go-karts

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner demonstrates understanding of advanced concepts used to make products by:* describing accepted conventions used in the construction of go-karts

For example:The learner describes accepted conventions when cutting and welding tubing, assembling the steering linkage, constructing the axle, mounting the engine, attaching the throttle, constructing the seat and floor.The learner refers to photos when they describe such things as flush, parallel, square, offset, symmetry, array, tolerance, ease, press fit, clearances, eccentricity, taper, weld, strength, malleability and ductility.* explaining how accepted conventions support construction of go-karts in a specific context

For example the learner:* + explains how in the classroom they use a jig to ensure the chassis is welded up so the wheel alignment is symmetrical
	+ explains how they use rests to support tools being used in close-proximity work to ensure a quality finish
	+ explains how they use measuring and marking tools to ensure the array of holes for the engine mount are perpendicular and match the engine mounting studs
* explaining strategies used to manage safety in a classroom environment

For example:The learner explains how they use residual current devices (RCD) to help prevent the potential for fatal electric shocks.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of advanced concepts used to products by:* discussing how accepted conventions guide construction of go-karts in similar contexts

For example:The learner compares and contrasts the conventions used when mass producing go-karts for commercial use, e.g. when cutting and welding tubing, assembling the steering linkage, constructing the axle, mounting the engine, attaching the throttle, constructing the seat and floor.The discussion includes how different jig arrangements are used to ensure the chassis is welded up so the wheel alignments are symmetrical, how CNC machines are used to accurately drill holes etc.The learner discusses the functional and aesthetic requirements of the products, the equipment available etc.The learner refers to photos when they discuss, e.g. flush, parallel, square, offset, symmetry, array, tolerance, ease, press fit, clearances, eccentricity, taper, weld strength, malleability and ductility.* explaining the differences between safe practice in classroom and industrial environments

For example, the learner:* + explains how the same hazard management is covered but may differ in liability and legal implications, using examples of specific safety practices that are followed in each environment; this could include comparing learner’s responsibility for using protective gear and/or machine guards in the workshop, and employee and/or assessor/educator’s liability for failing to use these
	+ compares this with employer’s responsibility in ensuring they are used in a commercial engineering workshop; workplace health and safety requirements are used to support their explanation.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of advanced concepts used to make products by:* discussing how accepted conventions guide construction of go-karts in diverse contexts

For example:The learner compares and contrasts conventions used in diverse contexts, and how these are achieved to ensure the product is fit for purpose. Such contexts and conventions could include the manufacture of commercial go-karts in a fully automated assembly line as opposed to a home-built go-kart, or highly specified performance race karts as opposed to a fun home-built go kart. The discussion includes, e.g. cutting and welding tubing, assembling the steering linkage, constructing the axle, mounting the engine, attaching the throttle, constructing the seat and floor.The learner refers to photos when they discuss, e.g. flush, parallel, square, offset, symmetry, array, tolerance, ease, press fit, clearances, eccentricity, taper, weld strength, malleability and ductility.* explaining the differences between safe practice in classroom and industrial environments

For example, the learner:* + explains how the same hazard management is covered but may differ in liability and legal implications, using examples of specific safety practices that are followed in each environment; this could include comparing learner’s responsibility for using protective gear and/or machine guards in the workshop, and employee and/or assessor/educator’s liability for failing to use these
	+ compares this with employer’s responsibility in ensuring they are used in a commercial engineering workshop; workplace health and safety requirements are used to support their explanation.

*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.