

NZQA Approved

Internal Assessment Resource

Mathematics and Statistics Level 1

This resource supports assessment against Achievement Standard 91026 version 2

Standard title: Apply numeric reasoning in solving problems

**Credits:** 4

Resource title: Drylie Equestrian Combined Training Event

**Resource reference:** Mathematics and Statistics 1.1C

|  |
| --- |
| This resource:   * Clarifies the requirements of the standard * Supports good assessment practice * Should be subjected to the school’s usual assessment quality assurance process * Should be modified to make the context relevant to students in their school environment and ensure that submitted evidence is authentic |

|  |  |
| --- | --- |
| Date version published by Ministry of Education | February 2015  To support internal assessment from 2015 |
| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91026-01-9023 |
| Authenticity of evidence | Teachers must manage authenticity for any assessment from a public source, because students may have access to the assessment schedule or student exemplar material.  Using this assessment resource without modification may mean that students’ work is not authentic. The teacher 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. |

Internal Assessment Resource

Achievement standard: 91026

Standard title: Apply numeric reasoning in solving problems

Credits: 4

Resource title: Drylie Equestrian Combined Training Event

Resource reference: Mathematics and Statistics 1.1C

Teacher guidelines

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

Teachers 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 students against it.

Context/setting

This activity requires students to apply numeric reasoning, using extended abstract thinking, to estimate a fee for each class and a ground levy for each rider and horse combination competing in a combined training event, so that costs are covered and a small profit is made.

Conditions

Students need to work independently to complete this activity.

Resource requirements

Students should have access to appropriate technology.

Additional information

Teachers need to ensure students are familiar with any context specific vocabulary used in this resource.

Internal Assessment Resource

Achievement standard: 91026

Standard title: Apply numeric reasoning in solving problems

Credits: 4

Resource title: Drylie Equestrian Combined Training Event

Resource reference: Mathematics and Statistics 1.1C

Student instructions

Introduction

This assessment activity requires you to apply numeric reasoning to estimate the entry fee and ground levy at an equestrian combined training event.

You are going to be assessed on how you apply numeric reasoning, using extended abstract thinking, when investigating a suitable class fee and ground levy for this combined training event and the maximum number of classes a particular rider can enter.

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

Teacher note: It is expected that the teacher will read the student instructions and modify them if necessary to suit their students.

Task

Drylie Equestrian Centre is planning a combined training event for beginning and introductory riders. In a combined training event there are classes for a dressage test and a jumping course, classes for dressage only and classes for jumping only. They need to use the local pony club grounds because the Drylie Equestrian Centre does not have sufficient parking for trucks and floats. Drylie Equestrian Centre needs to cover their costs and want to make a profit of at least $400.

Estimate a fee for each class and a ground levy which covers all the expenses and produces a small profit for Drylie Equestrian Centre.

Erica would like to be able to ride her pony and her horse. She has $57 to spend for entries and petrol and thinks she will need $25 for petrol. She is a regular rider at the Drylie Equestrian Centre. Can she enter three classes on her horse and three classes on her pony? Suggest some changes to costs which would allow this to happen.

In the solution of this problem you should:

* show calculations, as appropriate, that you have used in the solution of the problem
* use mathematical statements
* explain what you are calculating at each stage of the solution.

The quality of your discussion and reasoning and how well you link this to the context will determine the overall grade.

Entries

* The event allows riders to compete in up to three classes with one mount. Riders may complete on up to two mounts. There are seven classes in this event. (Resource 1 has details of classes.)
* The organising committee is expecting about 60 (to the nearest 10) rider and horse/pony combinations to enter.
* 3/5 of these entries are expected to enter two classes, 24% to enter one class and the remaining entries will be for three classes.
* Regular riders at the Drylie Equestrian Centre will receive a 12% discount on their entry fees.
* One third of the entries are expected to be from these regular riders.

Costs

* Ribbons up to 4th place are needed for each class. Four extra ribbons need to be available in case there are some equal placings. Ribbons cost $1.65 + GST each. GST is 15%.
* A ground levy needs to cover the hiring of the grounds and a secretary’s room which will be $355 (inclusive of GST) for the day.
* For this event a chain dressage arena and jump stands and poles will need to be hired from the local pony club. This will cost a total of $310.
* Two jump judges and two dressage judges will be required for the day. They will be given gift vouchers of $30 each.
* Extra food for the judges, writers and scorer is estimated to be $164.

Resource 1

The seven classes in this event are as follows:

Class 1 Dressage Test D1 and any jump height

Class 2 Dressage Test D2 and any jump height

Class 3 Dressage Test D1

Class 4 Dressage Test D2

Class 5 Jump height 50 cm

Class 6 Jump height 65 cm

Class 7 Jump height 90 cm.

Assessment schedule: Mathematics and Statistics 91026 - Drylie Equestrian Combined Training Event

|  |  |  |
| --- | --- | --- |
| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The student applies numeric reasoning in solving problems by:   * selecting and using a range of methods in solving problems * demonstrating knowledge of number concepts and terms * communicating solutions which usually require only one or two steps   At least three different numeric methods need to be selected and correctly used in solving problems  For example, the student:   * uses percentages to calculate the number of riders entering one class * uses fractions to calculate the likely number of riders entering two classes * uses an increase in percentage (finds a GST inclusive price) to calculate the cost of the ribbons.   The student communicates what is being calculated at each step.  The examples above are indicative of the evidence that is required. | The student applies numeric reasoning, using relational thinking, in solving problems involving one or more of:   * selecting and carrying out a logical sequence of steps * connecting different concepts and representations * demonstrating understanding of concepts   The student has also related findings to the context, or communicated thinking using appropriate mathematical statements  For example:   * The student finds the total number of likely class entries and links the different costs to find an estimated fee and ground levy for each class. * The fee and ground levy are used to find the maximum number of classes Erica could enter with her horse and her pony.   The student has clearly shown a logical sequence of steps and has communicated using appropriate mathematical statements.  The examples above are indicative of the evidence that is required. | The student applies numeric reasoning, using extended abstract thinking, in solving problems involving one or more of:   * devising a strategy to investigate or solve a problem * identifying relevant concepts in context * developing a chain of logical reasoning   The student has also used correct mathematical statements, or communicated mathematical insight  For example:  The student determines the maximum number of classes Erica could enter and calculates the minimum number of entries, and cost per class to cover costs and make a profit of at least $400 identifying and discussing how this is affected by aspects such as:   * rounding of cost per class * rounding down of numbers in classes * considering fewer than 60 rider/horse combinations * assuming regular riders at the Drylie Equestrian centre enter one, two or three classes in the same ratio as other riders.   The student has clearly communicated their solution using correct mathematical statements.  *The examples above are indicative of the evidence that is required.* |

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the Achievement Standard.