Exemplar for Unit Standard

Numeracy Level 1

This exemplar supports assessment against:

Unit Standard 26623

Use number to solve problems

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements.

New Zealand Qualifications Authority

To support internal assessment

	Meets Performance Criteria 1.1
1.	**Rugby Fundraiser**
	This sample of learner evidence contributes to part of a portfolio of naturally occurring evidence generated over an acceptable period of time to meet the requirements of Guidance Information (GIs) 2 & 3. The evidence reflects skills described by step 5 of the *Make sense of number to solve problems* strand of the Learning Progressions for Adult Numeracy (GI4).
	The problems posed are in a real context (GI4) and can be solved using numeracy skills (GI7). Solving the problems by independently selecting effective numeracy strategies contributes evidence towards Outcome 1.
	There is acceptable evidence for addition (1) (5) (8) (9), subtraction (2), multiplication (6) (7) and division (10). There is also evidence for working with percentages (3), fractions (4), decimals (1) (2) (6) (7) (8) (9) (10) and integers (3) (5) in this activity.
	The problems learners solve need to be sufficiently different to demonstrate transfer of competency against the standard. Where problems involve calculations that are very similar (6) (7), only one of these calculations would provide evidence toward the standard.

Learner 1 - PC 1.1

Meets requirements for addition, subtraction, multiplication, division, integers, percentages, decimals and fractions

Rugby Fundraiser

Jack is organising a fundraising event for his rugby club.
He wants to know how much he should charge for each ticket to make a $4000 profit.

The costs involved are:
Hire of hall
Hire of band for 4 hours $402
Decorations $95.60
Catering (dinner) $18.25 per person
Printing (tickets) $2.20 per ticket
All the costs are GST inclusive.

If the total cost of the hall hire, band and decorations is $1547.60, what was the charge for the hall?

$$402$$
$$95.60$$
$$\overline{497.60} \quad ① $$

$$1547.60$$
$$497.60$$
$$\overline{1050.00} \quad ② \qquad \$1050$$

The rugby club has 520 members.
A survey indicates 70% of the members will attend the event.
Of those attending, ¾ will bring partners.

Work out how many people Jack can expect to come to the event and how much he should charge for each ticket in order to make a $4000 profit.

70% of 520 = 364 ③

$\frac{3}{4}$ x 364 = 273 ④

⑤
expect 364 + 273 = 637 people to come

tickets 637 x 2·20 = $1401·40 ⑥

catering 637 x 18·25 = $11625·25 ⑦

Total money 1547·60 + 1401·40 + 11625·25 = $14574·25 ⑧

With profit 14574·25 + 4000 = 18574·25 ⑨

each ticket 18574·25 ÷ 637 = 29·15 ⑩

probably charge $30

	Meets Requirements for Guidance Information 2, 3, 4 and 7
2.	**To Market, To Market** This sample of learner evidence contributes to part of a portfolio of naturally occurring evidence generated over an acceptable period of time to meet the requirements of Guidance Information (GIs) 2 & 3. The evidence reflects skills described by step 5 of the *Make sense of number to solve problems* strand of the Learning Progressions for Adult Numeracy (GI4). The problems posed are in a real context (GI4) and can be solved using numeracy skills (GI7). Solving the problems by independently selecting effective numeracy strategies contributes evidence towards Outcome 1. There is acceptable evidence for addition (2), subtraction (3) (6) (8) (10), multiplication (1) (5) (7) and division (9). There is also evidence for fractions (4) and percentage (5). There is evidence for decimals from all of the problems in this activity. Note that neither division involving single digit numbers (4), nor division by 10, 100, or 1000 (5), reflects the required level of step 5. This sample provides evidence towards range items addition, subtraction, division, multiplication, fractions, percentage and decimals.

Learner 2 - GI 2, 3, 4 and 7

Meets requirements for addition, subtraction, multiplication, division, percentages, decimals and fractions.

To Market, To Market

Every Saturday Jenny and Paul go to their local farmers market to buy their supplies for the week.

At the market Jenny and Paul visit their favourite vegetable supplier.

They buy:
1.2 kg of tomatoes. The tomatoes cost $4.99 a kilo.
A bag of capsicums for $3.90.
A cauliflower for $4.80 and a head of broccoli for $1.15.
A bag of potatoes for $5.70.

How much do the five items cost in total?

$1.2 \times 4.99 =$ $5.99 tomatoes   ①
            $3.90
            $4.80   Total is $21.54
            $1.15
            $5.70
            $21.54   ②

At the fruit stall Jenny and Paul buy a large tray of strawberries for $7.40.
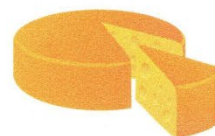If they pay $20 cash for the strawberries how much change will they get?

$20 - $7.40 = $12.60   ③

At the cheese stall they purchase some brie.
The brie comes from a round.
The complete round costs $38.80 but Jenny and Paul only want one eighth of the round.

What is the cost of the cheese?

$\frac{1}{8}$ of $38.80   ④
     $38.80 \div 8 = $4.85

While they are at the market they decide to order their Christmas ham from Happy Hogs, the free range pork supplier.

The cost of the ham will be $92 and Jenny and Paul need to pay a 15% deposit.

How much is the deposit for the ham and how much will be left to pay when they collect the ham?

15% of $92   (5)
15 ÷ 100 × 92 = $13·80 deposit

Still to pay $92 – $13·80 (6)
= $78·20

On the way home they stop at the service station and fill the car with diesel.
The price of diesel is 125.9 cents per litre. Jenny knows this is about $1.26 per litre. They put 46 litres of diesel in the car.

How much do they pay for the diesel?

46 × $1·26 = $57·96 (7)

If Jenny and Paul use their fuel card they would save $5.52
How many cents per litre is the fuel card discount?

$57·96 – $5·52 = $52·44 (8)

46 litres for $52·44

52·44 ÷ 46 = $1·14 per litre (9)

$1·26 – $1·14 = $0·12 (10)

discount is 12 cents per litre.

	Meets Requirements for Guidance Information 2, 3, 4 and 7
3.	**Shelter Trees** This sample of learner evidence contributes to part of a portfolio of naturally occurring evidence generated over an acceptable period of time to meet the requirements of Guidance Information (GIs) 2 & 3. The evidence reflects skills described by step 5 of the *Make sense of number to solve problems* strand of the Learning Progressions for Adult Numeracy (GI4 & GI7). The problems posed are in a real context (GI4) and can be solved using numeracy skills (GI7). Solving the problems by independently selecting effective numeracy strategies contributes evidence towards Outcome 1. There is acceptable evidence for fractions (1), division (2), percentage (4), multiplication (3) (4) and addition (5). There is also evidence for decimals (2) (3) (4) (5). Note that division by 10, 100 and 1000 does not reflect the required level of step 5. Therefore, division by 100 in the percentage problem (4) is not acceptable evidence for division.

Learner 3 - GI 2, 3 4 and 7

Meets requirements for addition, multiplication, division, percentages, decimals and fractions

Shelter Trees

Dave wants to plant a row of trees for shelter.
The row of trees will be 72 m long.
After visiting the local nursery Dave decides to plant
leyland cypress.
The nursery advice the trees should be planted 1½ m apart.
The nursery sells the trees for $4.20 plus GST.

Work out how may trees Dave will need for his shelter belt and the total cost.

$1\frac{1}{2} = 1.5$ ①

② $72 \div 1.5 = 48$ trees @ $4.20 ea = $201.60 ③

$201.60 + 15\%$ GST $= 201.60 \times .15$ ④

$= $30.24 + 201.60 ⑤

$= 231.84

	Meets Requirements for Guidance Information 2, 3, 4 and 7.
4.	**Mrs Howard's Fruit Cake** This sample of learner evidence contributes to part of a portfolio of naturally occurring evidence generated over an acceptable period of time to meet the requirements of Guidance Information (GIs) 2 and 3. The problems posed are in a real context (GI4) and can be solved using numeracy skills (GI7). Some of the evidence does not reflect skills described by step 5 of the *Make sense of number to solve problems* strand of the Learning Progressions for Adult Numeracy (GI4). Solving problems with calculations involving single digit numbers does not reflect the required level of step 5. Therefore, there is no acceptable evidence for multiplication from the doubling of the recipe ingredients (1). However, there is acceptable evidence for fractions (2), addition and integers (3), and fractions and multiplication (4).

Learner 4 - GI 2, 3 4 and 7
Meets requirements for addition, multiplication, integers and fractions

Mrs Howard's Fruit Cake

Jane found the following list of ingredients for a fruit cake in one of her Mothers recipe books:

Dried fruit
435 g sultanas
170 g raisins
50 g glacé cherries
50 g mixed peel

¼ cup brandy
125 g butter
¾ cup brown sugar
½ tsp grated orange rind
½ tsp vanilla essence
1 Tbsp marmalade
2 eggs
1¼ cups plain flour
½ tsp mixed spice

For Christmas she decides to double the recipe to make a larger cake.
Write down the ingredients Jane will need for the larger cake.
Dried fruit

870g sultanas
340g raisins ①
100g glacé cherries
100g mixed peel

½ c brandy
250g butter ②
1½ c brown sugar
1 tsp grated orange rind
1 tsp vanilla essence
2 Tb marmalade
4 eggs
2½ c plain flour ②
1 mixed spice

Jane decides to buy mixed fruit from the bulk bins at the supermarket rather than follow the recipe exactly.
What weight of mixed fruit will Jane need to buy?

870 + 340 + 100 + 100 = 1410g

③

Jane doesn't have accurate measuring cups for the flour and brown sugar so decides to use her scales to weigh the flour and sugar. She looks on the internet and finds a cup of flour will weigh 120 grams. What weight of flour does she need for her cake?

1 cup = 120g
2½ cups flour   so   2½ × 120 = 300g

④