



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

Level 1, 2002

**Mathematics: Solve straightforward
number problems in context (90151)**

National Statistics

Assessment Report

Assessment Schedule

Mathematics: Solve straightforward number problems in context (90151)**National Statistics**

Number of Results	Percentage achieved			
	Not Achieved	Achieved	Merit	Excellence
40,460	23%	42%	32%	3%

Assessment Report**General Comments**

Some candidates had problems reading the resource sheet.

Fractions were a major problem, and often not done in Question Five.

Reversing of % was poorly handled.

It was obvious that many candidates had not read the question carefully nor checked that their answer was appropriate, ie in correct form.

The handling of rounding was a major concern. Many candidates appeared to believe that money is always rounded to 0 or 5c. When done as premature rounding, this can lead to major errors in extended questions.

Candidates require greater guidance on what is a mathematical statement.

Many candidates used the 'guess and check' method for determining a percentage, but this is not really appropriate.

Many candidates set out their answers poorly, except in Question Six where on the whole setting out was much better.

Comments on Specific Questions**Question One**

- (a) On the whole, this question was well done. Many candidates made copying/interpretation errors from the resource sheet. A common error was $2 \square 2$ packs. A mathematical misconception was taking away 0.20 or 20c instead of 20%. Some candidates divided by 1.2. Others gave the discount as the answer.
- (b) Many candidates found the total earned but had difficulty calculating the % banked. Some had $> 100\%$ as the answer.

'Guess and check' was used surprisingly often. Some candidates did 50% of 127.50 then subtracted. Quite a number gave % not banked.

A number of candidates did proceed past working out wages, while some did $139.50/50 \square 100$ and others did $77.50/127.50$ or $8.50/50.00$.

Finding quantity as 5 of another was often not well done.

Many rounded 39% to 40%.

Question Two

- (a) Not well done, with poor reading of the question again and the answer left as number of legs rather than fraction.

It was obvious that some candidates were not able to use the fraction button on their calculator. Some left the answer as a decimal.

Errors such as $30 - \frac{1}{3} - \frac{1}{10} = 29 \frac{17}{30}$ showed poor understanding of the meaning of 30. Other errors were $\frac{1}{3}$ of 30 = 10, $\frac{1}{10}$ of 20 = 2, $30 - 12 = 18$.

- (b) This question seemed to cause the most difficulty in this section. Again, poor candidate reading of the question was evident.

Some incorrect answers included 20:10 and $\frac{2}{3} \times 30 = 20$. $2 \div 3 = 6$, $30/6 = 5$, answer = 10:15.

Some candidates gave the correct ratio without specifying which was spicy.

Question Three

Many candidates used an incorrect amount, \$24.95 instead of \$28.55, to calculate the percentage saving. Some left the difference of \$3.60 as the percentage saving. Again, many candidates used 'guess and check', often with 12.5% (familiarity with GST) as their first guess.

Some candidates did not interpret the party pack correctly and used 10 lots of \$2.50. This was allowed.

Many candidates worked out $\$24.95/\28.55 and then subtracted from 100% to get the percentage saving. Some calculation errors crept in here.

Question Four

This question was not particularly well done. Many candidates used $\frac{1}{9}$, $\frac{1}{8}$ which did not help them with the other reverse percentage questions.

Some mathematical errors were to take off 12.5% (or $\frac{1}{8}$).

Premature rounding in the calculation was an issue.

Question Five

This question was poorly done.

Many candidates did not include the fraction component of the calculation.

Candidates often did not convert their answer back into standard form.

A common incorrect answer was $1\ 631\ 500 = 1631.5 \times 10^3$, ie one number after the decimal point.

A few candidates thought that standard form meant writing it in words.

Question Six

This question was surprisingly well done when attempted. It gave many candidates the opportunity for replacement evidence.

Most candidates made good statements and were logical in their setting out. The crucial aspect was the reverse percentage of 28% markup for Debbie's order.

Many candidates did not divide by 1.28 and other errors were to divide by 1.405 (adding .28 and .125 instead of multiplying to get 1.44) or to multiply by .72.

The resource sheet caused some difficulties, especially with calculating the number of side orders.

A very common error was an incorrect total of \$257.20 instead of \$257.10 for Ben's order, despite having written the subtotals correctly. Assessors believed that this 0.10 error came from incorrectly entering one of the 0.85 subtotals as 0.95.

Most candidates made an effort to write appropriate statements. Care needed to be taken with statements such as 'GST' when in fact it was the removal of GST that was being calculated.

The fact that the school paid Debbie's GST caused some candidates a problem as they tried to give two interpretations of their answer.

Assessment Schedule

Mathematics: Solve straightforward number problems in context (90151)

	Achievement Criteria	No.	Evidence	Code	Judgement	Sufficiency
Evidence contributing to Achievement	Solve straightforward number problems in context.	One (a)	6.76	A	Accept 6.75 or 6.80	Achievement Three of Code A Note: Only two Code As can come from Question Six.
		One (b)	39.2	A	Or equivalent Accept 39	
		Two (a)	$\frac{17}{30}$	A	Or equivalent No alternative	
		Two (b)	18	A		
Evidence contributing to Achievement with Merit	Solve number problems in context involving manipulation, several steps or reversing processes.	Three	Full price of Party Pack: \$28.55 So percentage saving is: 12.6 (12.60945709) 14.4% x	M A	Or equivalent eg 13, 12.61	Achievement with Merit Achievement plus Two of Code M OR Three of Code M Note: Only one code M can come from Question Six
		Four	24.95 divided by 1.125 = 22.18 \$21.83 x	M A	Accept either 22.15, 22.17 or 22.20.	
		Five	$\frac{4}{5} \square 2.9 \square 10^6$ $- \frac{17}{20} \square 8.1 \square 10^5$ $= 1.6315 \square 10^6$	M A	Accept other correct rounding for 1.6315 eg 1.6 Clear communication of mathematical ideas is expected.	

Evidence contributing to Achievement with Excellence	Devise a strategy and solve a number problem.	Six	<p><u>Ben's party order</u></p> <p>Total before discount: \$257.10</p> <p>Total after discount: \$218.54</p> <p>Price per person: \$6.83 (divided by 33 = \$6.62)</p> <p><u>Debbie's party order</u></p> <p>Total before reductions: \$272.60</p> <p>Without GST mark-up:</p> <p>\$242.31 \$212.97</p> <p>\$238.53x \$196.27x</p> <p>Total without GST and mark-up:</p> <p>\$189.31</p> <p>\$162.20x</p> <p>Price per person: \$7.57 (divided by 26 = \$7.28)</p> <p>Therefore Ben's order is cheaper per person.</p>	<p>A</p> <p>M A</p> <p>M A</p> <p>E</p>	<p>Must have at least three written statements describing what is being calculated.</p> <p>Accept one calculation error.</p> <p>Work must be logically set out.</p> <p>Correct mathematical statements and appropriate rounding are required.</p> <p>Decision must be based on a comparison of the per person prices for each party order.</p>	<p>Achievement with Excellence</p> <p>Merit plus Code E</p>
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