NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 1 Mathematics, 2006

90151 Solve straightforward number problems in context

Credits: Three
9.30 am Friday 24 November 2006

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

You should show ALL working.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–6 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Achievement Criteria		
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Solve straightforward number problems in context ✓	Solve number problems in context involving manipulation several steps or reversing processes	Devise a strategy to solve a number problem

Overall Level of Performance ___

2

You are advised to spend 25 minutes answering the questions in this booklet.

Assessor's use only

MONEY, MONEY, MONEY

You should show **ALL** working.

QUESTION ONE

A skateboard has a marked price of $130.
There is a "60% off" sale.

What is the sale price of the skateboard?

$130 \times 0.60 = 78$ $130 - 78 = 52$

This approach is fine.

Sale price $ __52__.

A

QUESTION TWO

Yesterday petrol cost $1.75 per litre.
Today the cost of petrol has gone up by 6 cents per litre.
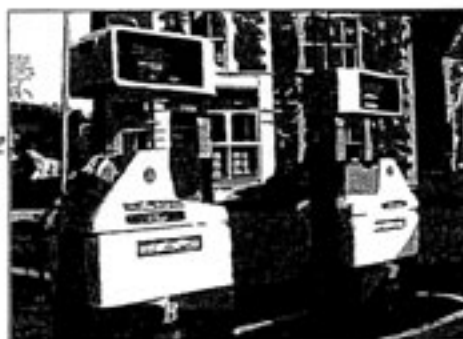
What percentage increase is this?

Clearly able to use 6c as 0.06 then change 0.034 to a percentage

$\frac{.06}{.75} = 0.034$

$1.75 \times 0.06 = 0.105$

$1.75 + 0.105 = 1.855$

Increase __3.4__ %

A

QUESTION THREE

Tami bought a box of apricots.

Tami threw away $\frac{1}{3}$ of the box of apricots because they were rotten.

She gave away $\frac{1}{4}$ of the box of apricots.

What fraction of the box of apricots did Tami have left?

$\frac{1}{3}$ $\frac{1}{4}$ $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

All this is correct but not sufficient. Needed to go $1 - \frac{7}{12} = \frac{5}{12}$.

Fraction left __$\frac{7}{12}$__

NS

QUESTION FOUR

Jack is having a party for 40 people.
He is going to make Spaghetti Bolognese.

How much minced beef will he need to use?

$6 \times 7 = 42$

student has no idea how to use proportion. They do know if we make 7 times the amount, it will feed 42 people.

Minced beef _____ kg

| **Spaghetti Bolognese** |
| *(serves six people)* |
| 0.75 kg minced beef |
| 100 g tomato paste |
| $\frac{3}{4}$ cup water |
| 2 tsp mixed herbs |
| 2 tsp crushed garlic |
| 300 g uncooked spaghetti |

QUESTION FIVE

Jill is buying a car that costs $2 430 including GST.
Her father says he will pay the GST. (GST is 12.5%)

How much will Jill have to pay?

$2430 \times 0.125 = 303.75$

$2430 - 303.75 = 2126.25$
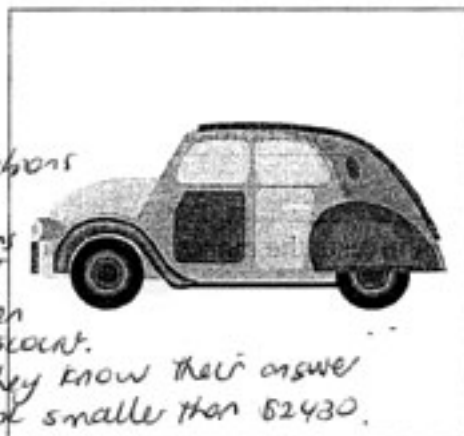
Jill will pay $ 2126.25

At merit level, reverse GST calculations are required. This student performs a forward GST calculation & then subtracts, like a discount. At least they know their answer should be smaller than $2430.
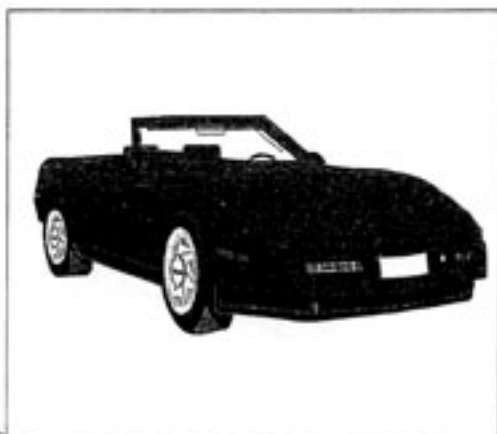
QUESTION SIX

Sione bought a car last year.
The car has reduced in value by 26.3% in one year.
It is now worth $28 500.

Calculate the price Sione paid for his car **last year**.

_____

_____

_____

Last year's price $ _____

QUESTION SEVEN

Last year, Mr Bigg's company had an annual turnover of 9.56×10^8.

This year, the annual turnover is 1.0449×10^9.

What percentage increase is this for Mr Bigg's company?

$$\frac{1044900000}{56000000} \quad \frac{9.56 \times 10^9}{1.0449 \times 10} - \frac{9.56000000}{1044900000}$$

$$= 0.109$$

Increase ___ 109 ___ %

Assessor's note: An A. Considered 2 mistakes. If A had 109.299% we would have said 1 mistake in calculation and given an A, but decimal point obviously in wrong place too. See comments on merit exemplar.

QUESTION EIGHT

Jemima has $5 000 to invest for two and a half years. Her bank offers two different investment schemes:

Scheme 1
The client invests the money in an account that pays 3.25% interest **only** at the **end of each year**.

Scheme 2
The client invests the money in an account that pays 1.3% interest at the **end of each six months**.

Investigate each scheme and recommend to Jemima, with reasons, what she should do.

Scheme 1

$5000 \times 0.0325 = 162.5$

$\$5162.5$ — 1st year

$5162.5 \times 0.0325 = 107.78125$

$5162.5 + 167.78125 = 5330.28$

$\boxed{\$5330.28}$ — 2nd year

used when 3 is required for sufficiency. Not needed or changed by 2 A for achieved.

Scheme 2

$5000 \times 0.013 = 65$

$\$5065$ — 1st 6 mths $5065 \times 0.013 = 65.845$ $5065 + 65.845 = 5130.845$

$\$5130.845$ — 1st year $5130.845 \times 0.013 = 66.70098$ $5130.845 + 66.70098 = 5197.545985$

$\$5197.545985$ — 1 year 6 mths $5197.545985 \times 0.013 = 67.568$ $5197.545985 + 67.568 = 5265.114$

$\$5265.114$ — 2nd year $5265.114 \times 0.013 = 68.446$ $5265.114 + 68.446 = 5333.56$

$\boxed{\$5333.56}$ — 2nd year, 6 months ← final sum

This is commonplace where an 'A' student also got this question correct. Only 1 A awarded as some skill repeated twice.

So Scheme 2 is better because you will get $2.28 more. *not enough to get A there*