



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



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

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	<input checked="" type="checkbox"/> Solve number problems in context involving manipulation of several steps or reversing processes	<input checked="" type="checkbox"/> Devise a strategy and solve a number problem	<input checked="" type="checkbox"/>
Overall Level of Performance			E

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?

$$\text{sale price} = 60\% \text{ of } 130 = \$78.00$$

$$\begin{aligned} \text{sale price} &= 130 - 78 \\ &= \$52.00 \end{aligned}$$

*very clear
setting out and
correct calculation*



Sale price \$ 52.00

QUESTION TWO

Yesterday petrol cost \$1.75 per litre.
Today the cost of petrol has gone up by 6 cents per litre.

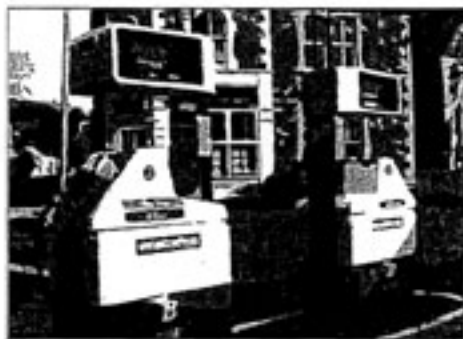
What percentage increase is this?

$$\text{percentage increase} = \frac{0.6}{1.75} \times 100$$

*A common
mistake
to be
written as
60c, even
for top students*

$$= 34.29\% \text{ (2dp)}$$

Increase 34.29% (2dp) %



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?

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

*1 - $\frac{7}{12}$ not
needed as long
as correct answer
of $\frac{5}{12}$ given.*

Fraction left $\frac{5}{12}$



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?

$$\begin{aligned} \text{kg per person} &= 0.75 \div 6 \\ &= 0.125 \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Amount for 40 people} &= 0.125 \times 40 \\ &= 5 \end{aligned}$$

Minced beef 5 kg

*calculations good
and very clear
communication
labelling each step.*

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

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QUESTION FIVE

Jill is buying a car that costs \$2430 including GST.
Her father says he will pay the GST. (GST is 12.5%)

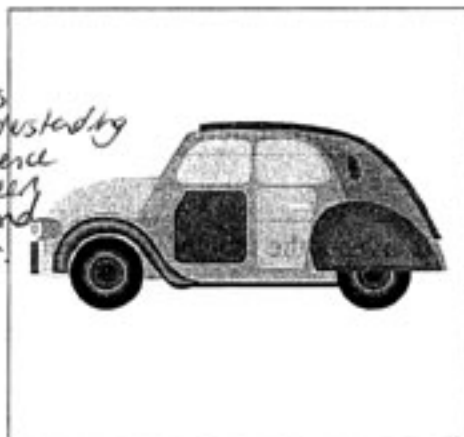
How much will Jill have to pay?

$$\begin{aligned} \text{exclusive GST} &= \cancel{2430} \times 12.5\% \\ &= \cancel{2100} + 303.75 \end{aligned}$$

$$\begin{aligned} \text{GST exclusive} &= 2430 - 303.75 \\ &= \$2126.25 \end{aligned}$$

Jill will pay \$ 2126.25 //

*reverse GST problems
an issue. Many not understood by
difference between
this and
a discount.*



N

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.

$$\begin{aligned} \text{original price} &= \frac{28500}{1.737} \times 26.3 + 28500 \\ &= \$49,222.80 \text{ (2dp)} \end{aligned}$$

Last year's price \$ _____

10,170.28494.

$$\begin{aligned} \text{original price} &= \frac{28500}{0.737} \times 0.263 + 28500 \\ &= \$38,670.28 \text{ (2dp)} \end{aligned}$$



*interesting
approach but
correct*

M

QUESTION SEVEN

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

This year, the annual turnover is $\$1.0449 \times 10^9$.

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

$$\begin{aligned} \text{last year} &= \text{R}956,000,000 \\ \text{this year} &= \text{R}1,044,900,000 \quad \text{All correct.} \\ \% \text{ increase} &= \frac{88,900,000}{956,000,000} \times 100 \\ &= 9.30\% \quad (2dp) \end{aligned}$$



Assessor's
use only

M

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 one:

Jemima will earn $\$162.5$ in 2.5 years.

$$\text{one year} = 5000 \times 3.25\%$$

$$= \$162.5$$

$$\text{next year} = 5162.5 \times 3.5\%$$

$$= \$167.78 \quad (2dp)$$

$$\text{total made} = \$330.28$$

Just calculating ^{the} interest part is valid + fair. Note correct mathematical statements, no premature rounding and money shown to the nearest cent. more than 2dp was not accepted.

even though Jemima had the money in this bank for over 2 years, they only pay interest at the end of the year, ~~there~~ and she is only going to invest for 2 and a half. There fore only receiving 2 years of interest. A valid statement. In practice however banks interest is given even if the interest rate is per annum. We rang a bank them! so correct calculations for 2 or 2.5 years was accepted.

Extra paper for continuation of answers if required.
Clearly number the question.

Assessor's
use only

Question
number

Question eight:

scheme two:

number of 6 months over 2.5 years = 5

$$\begin{aligned} \text{First 6 months} &= 5000 \times 1.3\% \\ &= \$65 \end{aligned}$$

very clear
communication
again.

$$\text{2nd 6 months} = 5065 \times 1.3$$

$$= \cancel{\$65.845} \quad \$65.845$$

calculation
& good. No

$$\text{3rd 6 months} = \cancel{\$66.70} \quad \$66.700985$$

penalty for rounding
and rounding

$$\text{4th 6 months} = \$67.57 \text{ (2dp)} \quad \$67.56809781$$

appropriate at
the last step.

$$\text{5th 6 months} = \$68.45 \text{ (2dp)} \quad \$68.44648308$$

$$\text{Total earned} = \$333.5605659$$

$$= \underline{\underline{\$333.56 \text{ (2dp)}}}}$$

Jemima should invest her \$5000.00 into scheme two.

she earns \$3.28 more than if she invested it in

scheme one. Scheme one, Jemima would get \$330.28 (2dp)

from interest, and in scheme two she would get

$$\$333.56 \text{ (2dp)} \parallel$$

decision made. It is clear &
valid. The difference of \$3.28 was
not needed.

Since this was a fairly easy excellent question, rounding
and incorrect mathematical statements were treated harshly.

The final amount was expected to be an appropriate
monetary value therefore rounding to 3dp or more was
penalised.