Practice Booklet

AS91026 (version 3)
Mathematics and Statistics

Apply numeric reasoning in solving problems
Te whakamahi whakaaro tau whaitake hei whakaoti rapanga

Te whai hua - kia ora!

sorted in Schools

Student name:

Class:

LEVEL	CREDITS
1	4

SORTED THEMES

KiwiSaver
Debt
Goals
Managing my Money

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Topic One:

Understanding your payslip

Topic 1, Activity 1

Watch this **payslip video** that explains the different components of a payslip then complete this mix-and-match activity:

IRD number	The amount that you earn before deductions such as tax are taken off.
Pay period	This is the amount that you will have in your pay packet each week or fortnight after the deductions have been taken out.
Hours worked	You are entitled to a number of holiday days each year and the amount you have are shown on your weekly/fortnightly payslip.
Overtime	This is a voluntary government investment scheme to help you save for your retirement. If you have a salary, you can choose to contribute 3%, 4%, 6%, 8% or 10% of your gross pay. Your employer will also contribute at least 3% to help your fund grow. After contributing to it for three years, you can use your funds to help buy your first home.
Gross pay	This is an eight or nine-digit number that only you have. It is given to you by the Inland Revenue Department (IRD). This number will be on all of your payslips and KiwiSaver statements when you are working.
Net pay	You are entitled to a number of paid sick days each year and the amount you have are shown on your weekly/fortnightly payslip.
PAYE tax	These are the total hours that you have worked over this pay period.
KiwiSaver	For every dollar you earn you will have to pay tax. The amount that you pay will depend on how much you earn.
Holiday pay	This is the length of time that the payslip relates to, for example, a week, a fortnight, or a month.
Sick pay	These are the extra hours that you have worked in this pay period. These are above what you have agreed in your employment contract.

Topic 1, Activity 2

Complete the table below by converting between fractions, decimals, and percentages.

Fraction	Decimal	Percentage
$\frac{1}{2}$		
	0.25	
		75%
	0.125	
$\frac{5}{8}$		
		15%
	0.02	
		115%

Topic 1, Activity 3

a. Use this information to fill in the gaps on the following payslip:

- Roimata worked 41 ordinary hours and 2.5 hours of overtime.
- Her ordinary rate of pay was $18.25.
- The overtime rate is “one and a quarter”.

Remember to include a dollar sign and round the amounts to 2 decimal places.

FIGURE ELECTRICAL LTD

Roimata Paerata
16 Main Road
Greytown

IRD Number 027-598-412
Tax Code MSL

Annual leave available 7.5 days
Sick leave available 3.0 days

Period End **01/06/2021**

Annual Salary **$37,970**

Description	Quantity	Units	Rate	Total	This Pay
Ordinary time		Hours			
Overtime		Hours			
Gross Pay					
Income Tax (PAYE)					-$122.08
ACC Levy					-$11.19
Student Loan Repayment					$0.00
Kiwisaver 3%					$0.00
Net Pay					**$672.01**
KiwiSaver Employer Contribution					$0.00

b. What percentage of Roimata's gross pay did she pay as tax and ACC levies?

c. If Roimata decided to invest 6% of her annual salary in KiwiSaver, how much of her gross fortnightly pay ($805.28) would have been deducted?

Topic 1, Activity 4

a. Express the PAYE income tax rates in the table below as percentages, decimals and simplified fractions.

For each dollar of income	Income tax rate in percentage form	Income tax rate in decimal form	Income tax rate in the simplest fraction form
Up to $14,000	10.5%		
Over $14,000 and up to $48,000	17.5%		
Over $48,000 and up to $70,000	30%		
Over $70,000 and up to $180,000	33%		
Over $180,000	39%		

b. Calculate the income tax payable each year if you earn:

i. $25,000

ii. $50,000:

iii. $75,000:

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Topic Two:

Buying goods and services

Topic 2, Activity 1

1) Find the GST-inclusive cost of these GST-exclusive amounts:

a. $1,250

b. $3,200

c. $44.50

2) Find the GST-exclusive cost of each of these GST-inclusive amounts:

a. $2,300

b. $82.75

c. $1,250

3) An item costs $825 including GST. How much is the GST?

Topic 2, Activity 2

Solve the following ratio challenges:

a. Dannielle, Monika, and Esther are going to split the electricity and water bills in the ratio 3:2:2 for Monika:Dannielle:Esther.

i. How much will each person pay if the electricity bill is $215?

ii. How much will each person pay if the water bill is $65.

b. The flatmates have decided to opt-in to an unlimited wifi and telephone broadband contract. Monika wants the landline included as she does not have a cell phone. Esther uses a lot of data because she is into e-sports. The flatmates decide that the ratio of the contract payments will be 4:1:3 for Monika:Dannielle:Esther.

If the plan costs $83 per month, how much will each person contribute?

c. The three flatmates spend on average $175 per week on food but Esther's work provides her with lunch. The flatmates decide to split the food bill using the ratio 3:3:2 for Monika:Dannielle:Esther.

How much of the average weekly food bill will each flatmate contribute?

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Topic Three:

Borrowing money

Topic 3, Activity 1

Hemi uses his credit card to pay for an electric bicycle that costs $3800.
The interest on the card is 24% per year, which works out as 2% per month.

Hemi pays $150 off his loan each month.

Month	Balance owed	Monthly interest at 2% per month	Amount paid	New balance
May	$3,800.00	$76.00	$150	$3,726.00
June	$3,724.00	$74.52	$150	$3,650.52
July	$3,650.52	$73.01	$150	$3,573.53
August	$3,573.53	$71.47	$150	$3,495.00
September				

a. Complete the next line of the table.

b. Estimate how long it will take Hemi to pay off the debt.

c. Hemi discovers that it will take 36 months to pay off the loan in full if he pays $150 per week. How much will he have paid in total?

d. What is the percentage increase from the original cost of the bicycle ($3,800) to the amount that Hemi actually pays for it?

Topic 3, Activity 2

An electronics store advertises 24 months interest free on hire purchases. After 24 months, the interest is 22% per annum.

The hire purchase arrangement includes a $55 booking fee and a $1.80 monthly service fee.

Sacha wants to buy a laptop that costs $499.

a. How much will the booking fee and monthly service fees be for 24 months?

b. How much will Sacha have to pay each week for the laptop if she wants to pay it off in 24 months?

Topic 3, Activity 3

Will has started work but needs a car to travel from home. He uses a finance company loan to buy a $12,000 used electric car. The loan has a term of five years, with an interest rate of 9.5%. The monthly repayments are $252.

a. Work out the total cost of the car over five years.

b. Calculate the total amount Will will pay in interest over the five year term of the loan.

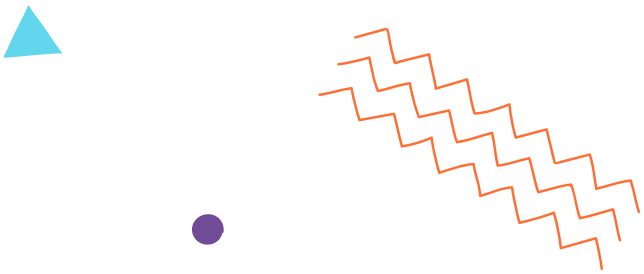
c. Use the **Sorted.org debt calculator** to explore how much money Will could save if he increases the monthly payment to $282.

Topic 3, Activity 4

The student loan repayment threshold is $20,020 per year. Student loan repayments are 12% of any income earned over this amount.

a. If the repayment threshold is $20,020 per year, what is the fortnightly repayment threshold?

b. Lucky earns $860 a fortnight. How much money does she need to repay on her student loan each fortnight? Remember to show your working using correct mathematical statements.



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Topic Four:

Saving for a goal

Topic 4, Activity 1

Calculate the interest earned after 1 year:

a. $4,000 at 1%

b. $10,000 at 1.05%

c. $3,000 at 2.5%

d. $2,000 at 0.85%

Topic 4, Activity 2

The compound interest formula is

$$A = P\left(1 + \frac{r}{100}\right)^t$$

- A represents the final amount of your investment after a certain number of years (t).
- P represents the principal, which is the amount that you invest.
- r represents the interest rate per annum, for example, if the interest rate is 3.45% per annum, r = 3.45
- t represents the number of years.

a. Sienna invests $2,400 at a compounding interest rate of 3.75%. How much money will she have after 3 years?

b. Jacques invests $750 at a compounding interest rate of 2.5%. How much money will he have after 5 years?

c. Anaru has a choice of two options:

- $1,200 invested at a simple (non-compounding) rate of 4.25% per year for 5 years
- $1,200 invested with a compounding interest rate of 3.75% for 5 years.

  Which option should he take? Explain your reasoning and support it with calculations and mathematical statements.

d. Wayne is going to invest some money in a term deposit for 6 years with a compound interest rate of 3.75%. How much money should he invest to have a final amount of $5,000?

Topic 4, Activity 3

Meleane is currently earning $24 an hour. She usually works 5 hours a day, 5 days a week.

a. What is Meleane's fortnightly gross pay?

b. Meleane invests 4% of her pay in KiwiSaver each fortnight. Her employer contributes 3% of Meleane's gross pay and the government puts in 50 cents for every dollar Meleane contributes (up to a maximum of $521 per year).

i. How much money does Meleane put into her KiwiSaver fund each fortnight?

ii. Is Meleane contributing enough money each week to get the maximum government contribution of $521 a year?

iii. Assuming Meleane's pay rate and hours don't change, how much money goes into Meleane's KiwiSaver account each year, including the employer and government contributions?

Topic 4, Activity 4

David wants to become a plumber and he has managed to get an apprenticeship immediately after completing NCEA Level 3. As an apprentice plumber, he will be paid $18 per hour and will usually work 8 hours a day, 5 days a week. He wants to start paying into a Kiwisaver account immediately so that he can save for a deposit on a home.

a. How much will David earn before tax each week?

b. How much will he earn a year? (There are 52 weeks a year.)

c. How much will David contribute to Kiwisaver each year if he chooses to contribute 6% of his salary?

d. David knows that buying a home or apartment will require a minimum 10% deposit. What deposit will he need for an apartment in Auckland that costs $550,000?

e. David contributes 8% of his salary to Kiwisaver, his employer contributes 3%, and the government matches David's contributions at 50 cents for every dollar (up to $521 a year). Based on an annual salary of $37,400, how much will go into David's KiwiSaver account each year?

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Topic Four:

Tools that support financial decisions

Topic 5, Activity 1

Joe is a year 11 student who wants to buy a car. He has a part-time job at a supermarket after school in term time that pays him the minimum wage ($18.90 per hour). He can sometimes pick up overtime work at the weekends and during holidays.

Over the past 5 months, his total take-home pay was $2,600. From that, he has saved $1,800. He wants to increase his savings to $4,500 in the next 6 months in order to pay for a car.

a. Is Joe's goal achievable and realistic in the timeframe he has set himself?

b. What advice could you provide that will help Joe to achieve his goal? Support your response with calculations.

Topic 5, Activity 2

Here are the fortnightly expenses for a flat shared by five people:

Expenses	Fortnightly
Groceries – Including toiletries	$1,200
Cat Food	$30
Savings for end of year party	$10
Other fortnightly costs	$50

Monthly Expenses:

Expenses	Monthly
Rent to landlord	$4,900
Electricity	$350
Internet	$100
Media Subscriptions (Netflix, Sky, etc)	$80
Contents insurance	$100
TV Hire	$45

a. Work out the total fortnightly expenses.

b. How much should each flatmate contribute fortnightly if the expenses are shared equally?

c. The rooms in the flat are different sizes and one room is shared by a couple. The ratio of rent per room is 4:3:3:2. How much is the monthly rent for the smallest room?

Topic 5, Activity 3

Arlo needs to buy a new fridge for his flat. The fridge he wants costs $978 and the delivery fee is $89. Arlo doesn't have the money to pay for the fridge up front, so he is going to use hire purchase. He discovers that there is a $55 set up fee for the loan and a monthly service fee of $1.80. The first 12 months of the hire purchase are interest-free. After that, the interest is 22.3% per year. Arlo agrees to pay the hire purchase off in 4 years (48 months).

a. The monthly repayments are $31.64. How much will Arlo have paid in interest and fees after 48 months?

b. What is the percentage increase on the cost of the fridge (including the delivery fee)?