

NAME:-

WORKING SPACE

1 Mary borrowed \$2500 from her grandmother to go on a French class trip to New Caledonia. Her grandmother said:

'This is the deal: pay me back everything in three years' time. I want 4% per annum simple interest'

How much did Mary have to pay back altogether?

\_\_\_\_\_

\_\_\_\_\_

2 Pauline paid \$450 simple interest to borrow \$20 000. The interest rate was 6% p.a. For what time period did she borrow the money?

\_\_\_\_\_

\_\_\_\_\_

3 Hamish borrowed \$5000 for 3 years. He paid \$1650 simple interest. What was the rate of interest per annum?

\_\_\_\_\_

\_\_\_\_\_

4 Use the simple interest formula to work out:  
a What amount, when invested for 3 years at 8% per year, yields simple interest of \$576?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3 Calculate the loss in value over a 5-year period of a printing press that is worth \$660 000 when new and that depreciates at 12% per annum.

\_\_\_\_\_

\_\_\_\_\_

4 Alphabank offers an account where compound interest is calculated every six months. The interest rate is 5% per annum.

Betabank also pays 5% compound interest. It is calculated yearly.

A customer has \$4000 to invest over a period of 5 years. How much extra money will they make if they decide to invest with Alphabank instead of Betabank?

\_\_\_\_\_

\_\_\_\_\_

**3** A yacht is advertised for sale at \$85 000 with finance offered as in this advertisement:

WORKING SPACE

12% p.a. reducible interest. Easy monthly repayments of \$1680 over a 6-year period.

a Calculate the total repayments.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

b Calculate the total amount of interest paid.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

c What is the equivalent flat interest rate for this loan?

\_\_\_\_\_

\_\_\_\_\_

Home loans are usually expressed with reducible interest rates and monthly repayments. Most lenders will only let homeowners borrow up to 80% or 90% of the value of the house.

This table gives monthly repayments in the nearest dollar for different interest rates and loan terms for a loan amount of \$100 000.

Interest rate	Term of loan		
	15 years	20 years	25 years
7%	\$899	\$775	\$707
7.5%	\$927	\$806	\$739
8%	\$956	\$836	\$772
8.5%	\$985	\$868	\$805
9%	\$1014	\$900	\$839

For different loan amounts the repayments are proportional, so for example monthly repayments on a loan of \$200 000 would be twice as much as those in the table.

What is the monthly payment for a loan of \$100 000 taken over 20 years at an interest rate of 8.5%? \_\_\_\_\_

Carol can afford monthly repayments of up to 30% of her monthly gross income. She earns \$93 000 p.a.

a What is Carol's monthly gross income? \_\_\_\_\_

b What is the largest monthly repayment she can afford? \_\_\_\_\_

c What is the most she can borrow for a home loan at a 9% interest rate over a 25-year period? Give your answer correct to the nearest thousand dollars.



NAME:- Mary Mahid

WORKING SPACE

1. Mary borrowed \$2500 from her grandmother to go on a French class trip to New Caledonia. Her grandmother said:

'This is the deal: pay me back everything in three years' time. I want 4% per annum simple interest.'

How much did Mary have to pay back altogether?

Mary had to pay back  
\$2800 in total. ✓

$$0.04 \times \$2500 \times 3$$

$$= \$300 \checkmark$$

$$\$2500 + \$300$$

$$= \$2800 \checkmark$$

2. Pauline paid \$450 simple interest to borrow \$20 000. The interest rate was 6% p.a. For what time period did she borrow the money?

She borrowed it  
for 4 1/2 months. ✓

$$0.06 \times 20000 \times x = \$450$$

$$1200x = \$450$$

$$x = 4 \frac{1}{2} \text{ months}$$

3. Hamish borrowed \$5000 for 3 years. He paid \$1650 simple interest. What was the rate of interest per annum?

The interest per annum  
was 11%. ✓

$$5000 \times \frac{x}{100} \times 3 = 1650$$

$$15000x = 165000$$

$$x = 11\% \checkmark$$

4. Use the simple interest formula to work out:

a. What amount, when invested for 3 years at 8% per year, yields simple interest of \$576?

\$2400 per year.

yields simple interest  
of \$576. ✓

$$0.08 \times 3x = \$576$$

$$0.24x = \$576$$

$$x = \$2400$$

3. Calculate the loss in value over a 5-year period of a printing press that is worth \$660 000 when new and that depreciates at 12% per annum.

The loss in value would  
be \$311 696.94. ✓

$$\$660\,000 \left(1 - \frac{0.12}{100}\right)^5$$

$$= \$348\,303.10 \checkmark$$

$$\$660\,000 - \$348\,303.10$$

$$= \$311\,696.94 \checkmark$$

4. Alphabank offers an account where compound interest is calculated every six months. The interest rate is 5% per annum.

Betabank also pays 5% compound interest. It is calculated yearly.

A customer has \$4000 to invest over a period of 5 years. How much extra money will they make if they decide to invest with Alphabank instead of Betabank?

They will make an extra  
\$15.21. ✓

Alphabank =

$$\$4000 \left(1 + \frac{0.05}{2}\right)^{10}$$

$$= \$5120.34 \checkmark$$

Beta bank =

$$\$4000 (1.05)^5 \checkmark$$

$$= \$5105.13$$

Saving =

$$\$5120.34 - \$5105.13$$

$$= \$15.21 \checkmark$$

A yacht is advertised for sale at \$85 000 with finance offered as in this advertisement:

2914.20

WORKING SPACE

12% p.a. reducible interest. Easy monthly repayments of \$1680 over a 6-year period.

a Calculate the total repayments.  
\$120 960 is the  
amount of total  
repayments.

~~(4114.20 x 12 x 6)~~  
~~(4114.20 x 6)~~  
~~= \$106474.80~~  
 $1680 \times 12 \times 6$   
 $= \$120 960$

b Calculate the total amount of interest paid.  
Total amount  
of interest paid  
\$35 960.

$120 960$   
 $- 85 000$   
 $\hline$   
 $35 960$  ✓

c What is the equivalent flat interest rate for this loan?  
7.05% equivalent  
flat rate interest

~~1680~~ =  $35960 = 85000 \times 6 \times \frac{x}{100}$   
 $3596000 = 510000x$   
 $x = 7.05\%$

Home loans are usually expressed with reducible interest rates and monthly repayments. Most lenders will only let homeowners borrow up to 80% or 90% of the value of the house. This table gives monthly repayments in the nearest dollar for different interest rates and loan terms for a loan amount of \$100 000.

Interest rate	Term of loan		
	15 years	20 years	25 years
7%	\$899	\$775	\$707
7.5%	\$927	\$806	\$739
8%	\$956	\$836	\$772
8.5%	\$985	\$868	\$805
9%	\$1014	\$900	\$839

For different loan amounts the repayments are proportional, so for example monthly repayments on a loan of \$200 000 would be twice as much as those in the table.

What is the monthly payment for a loan of \$100 000 taken over 20 years at an interest rate of 8.5%? \$868

Carol can afford monthly repayments of up to 30% of her monthly gross income. She earns \$93 000 p.a.

a What is Carol's monthly gross income? \$7750 ✓

b What is the largest monthly repayment she can afford? \$2325 ✓

c What is the most she can borrow for a home loan at a 9% interest rate over a 25-year period? Give your answer correct to the nearest thousand dollars

$93000 \div 12$   
 $= 7750$  ✓

$839 \times 300$   
 $= 252000$