FINANCE

TOPICS

- Best Deals

- Budgeting

- Income

  - Wages & Salary

  - Deductions

  - Income tax and allowances

- Foreign currency

- VAT and Insurance

- Hire Purchase

- Profit & Loss

- Interest

- Loans

BEST DEALS

FINANCE

WHAT ARE BEST DEALS?

- A **best deal** is a term to say we are making comparisons and decision based on a collection of information.

- Overall we are usually looking to **save money** while adhering to a list of demands.

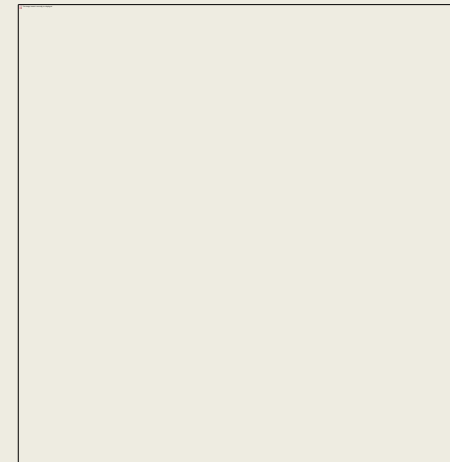8. DMS have 3 hire purchase options on offer for this 3-seater sofa bed.
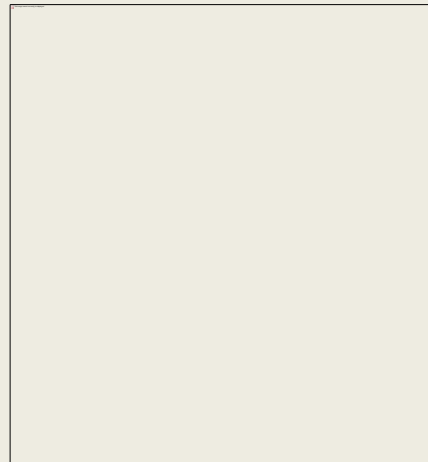
£1240

- Pay a deposit of 15% and make 12 payments of £88·50.
- Pay no deposit and pay it up with 24 payments at £52·50.
- Pay a deposit of 12·5% and pay it over 3 years at £32 per month.

Which method works out cheapest?

WHICH IS THE BEST DEAL?

£ 1.50

$1.5 \begin{cases} 119g : £1.50 \\ 79.3g : £1 \end{cases}$

$93g : £1$

$247g : £2$

$\begin{rcases} \end{rcases} ÷1.5 \quad 186g : £2$

$158.6g :· £2$

357g : £3

279g : £3

7. Mr Ralston needs a new phone line set up, and a new router.

RG Media charges £80 for a call-out, £30 for a router and £42·50 per hour to install.

Stirgin charges £47·50 per hour for labour with a £70 call-out fee and £25 router.

Sunbox charges £30 for a call-out, £40 per hour for labour and £75 for a router.

The job is scheduled to take 2 hours.

a   What would be Mr Ralston's cheapest option ?

b   If the work was to run into a third hour, would this option still be the cheapest ?

RG	Stirgin	Sunbox
Router £30	£25	£75
Call out £80	£70	£30
Labour £85	£95	£80
£195	£190	£185
+42·50	+ 47·50	+ 40
237·50	237·50	£225

PURCHASING A NEW TABLET

Device A

DOWNLOADS
500Mb/month included
5p/Mb additional, free wifi

VIDEOS
6 months free
£6.99/month

ACCESSORIES
£70

£299

Insurance: £60 per year

Device B

DOWNLOADS
500Mb/month included
3p/Mb additional, free wifi

VIDEOS
£2 each

ACCESSORIES
Included

£299

Insurance: £55 per year

Device C

DOWNLOADS
500Mb/month included
5p/Mb additional, free wifi

VIDEOS
6 months free
£9.99/month

ACCESSORIES
£95

£250

Insurance: £75 per year

Requirements:
- up to 300Mb of data per month.
- access to 5 videos a month on average
- keyboard accessory
- annual insurance

- To make comparisons, find the total cost of each option (after any further charges or deductions have been made)

	Cost	Videos	Acc.	Ins.	Total
Option A	299	6.99×6 $= 41.96$	70	60	470.96
Option B	299	$5 \times 12 = 60$ $60 \times £2 = 120$	—	55	474
Option C	250	9.99×6 $= 49.5$ 59.94	95	75	479.94

Option A is cheaper as £470.96 < £474, £479.94

TIMED QUESTION

- Leckie and Leckie book
- Question 3 (starts on pg 45 and goes over onto pg 46 and 47)
- Complete work on blank paper.
- You may use a calculator.
- You have **20 minutes.**
- **Work in exam conditions**

BUDGETING

FINANCE

CALCULATE MISS O'BRIENS MONTHLY EXPENDITURE

£550

£60.50

£26.50

£35.50

£50

£450

£150

£17

£100

£15

TOTAL EXPENDITURE

£1454.50

- What else might I have to pay for?

MANAGING MONEY

- My salary (after taxes etc) is **£1642.58**

- When going through the month, I have to keep in mind what I've already spent and how much I have left.

- This can impact on what I can choose to do or buy.

- In some months I have to adjust what I can save in order to pay for things that are priorities.

Managing a Budget Scenario – pg 226

Eve has been carefully budgeting for some months and wants to begin saving for her family's future. She can only afford to save a small amount each month, but she hopes to be able to save more in 6 months when her credit card bill is paid off. She decides to visit her local bank to get some advice.

Exercise 3

1. Eve has £100 savings at the end of June 2015, and decides she can afford to save £50 per month from then and £120 per month once her credit card is paid off in 6 months time.

   a   After a year, how much money would Eve have in her savings ?

   b   The bank manager asks Eve how much access she needs to her savings. What does this mean ?

a) $(50 \times 6) + (120 \times 6) = 300 + 720 = 1020$

After 1 year she has £1120 in savings.

b) Whether Eve needs to be able to spend money from her savings account.

2. Eve wants to be able to take her money out in the event of an emergency, so the bank manager shows her what savings accounts are available.

FLEXIBLESAVER

1·5% variable interest per year	£1·00 only to open the account
Unlimited withdrawals	Card Account

Special Instructions :-
Account holder must be 16+ years

MIGHTYMONTHLY

2·5% variable interest per year	£100 needed to open the account
Unlimited withdrawals	Passbook Account

Special Instructions :-
£100 minimum balance
£20-£1000 to be paid monthly

ISASAVER ACCOUNT

4% fixed interest for 3 years	£500 needed to open the account
NO withdrawals	Online Account

Special Instructions :-
Tax Free Savings
Acc Holder must be 16+ years

a Which of the savings accounts do you think would be the most suitable for Eve ?

b State your reasons for choosing that account, pointing out why this is a better choice than either of the other two accounts ?

Q2.

Mighty monthy
- higher interest rate 2·5% >1·5%
- she has enough money to open the account (£100)
- She pays in the mini over the minimum amount

3. Eve opens a *MIGHTYMONTHLY* account with her £100 at the start of July 2015 and finds that interest is paid on the account after 6 months and after 1 year. (i.e. every 6 months).

a If she pays in £50 per month from 1st July for the first 6 months then £120 per month for the next 6 months, what will the balance in her account be at the end of :-

(i) December 2015

(ii) May 2016 ?   2.5% per year
                    $\frac{1}{2}$ interest

b Eve is disappointed to find that if she wishes to close her account, then the amount of interest she would receive would be slightly less than she expected.

Can you suggest a possible reason for this ? → Interest is taxed.

Dec 15 :
100 + 50×6
= 400
+   5
─────
£405

10% = 40
5% = 20
2.5% = 10
Interest = £5

May 16 :   405 + 120×5 = £1125

A. Here is the page showing Eve's savings in her passbook.

She increases the amount she pays into her account to £120 per month from 1st January 2016.

Write up the entries in the passbook to show how much Eve has in her account just after interest is added on the 30th June 2016.

	Paid In	New Balance
31/12/15	-	£405·00
01/01/16	£120·00	£525·00
01/02/16	£120·00	£6...
01/03/16		

01/02/16 £120.00 £645.00

01/03/16 120.00 765.00

01/04/16 120 885.00

01/05/16 120 1005.00

01/06/16 120 ~~1145.00~~

1125.00

30/06/16 14.06 £1139.06
(interest

10% of 1125 = 112.5

5%   = 56.25

2.5% (per year) = 28.125

6 months = 28.125 ÷ 2
          = 14.0625

5. At the end of the year, Eve decides to transfer £800 of her savings into a new account which will earn her a better rate of interest.

a Into which of the 3 accounts should Eve transfer her money ?

b List differences between this new account and her existing account.

a) ISA Saver

b) • 4 % > 2.5 %
   • tax free
   • she can't withdraw for 3 years.

6. The interest in this account is calculated at the end of each year and is **compounded**.
If Eve leaves her £800 in this account for the 3 years, how much will her savings in this account be worth at the end of that 3 year period ?

4% 3 years   £800

$100 + 4 = 104$

$104 \div 100 = 1.04$

$800 \times 1.04^{3} = £899.8912$

$= £899.89$

7. Alfie opens an account to save his pocket money. The bank's YoungSaver account pays 6·5% per year with an annual 0·75% bonus paid if a minimum of £20 is paid into the account each month. Interest is credited to the account at the end of December.

a Alfie pays in half of his £50 monthly allowance on the 1st of each month from 1st July 2015 to 1st December 2015. How much is in Alfie's account on 2nd December?

b Does Alfie qualify for the interest bonus?

c How much will he have in his account at the end of December once interest is added?

a) $6 \times £25 = £150$

b) Yes

c) Interest : $6.5 + 0.75 = 7.25\%$

$150 \div 100 \times 7.25 = 10.875$

6 months interest $= 10.875 \div 2 = 5.4375$

End of december $= 150 + 5.44 = £155.44$

8. Eve inherits £2500 from her great aunt and decides to save the money towards the boys' university fees. She doesn't want to have access to the money until the boys start university and she wants the best savings interest rate for the money.

The best rates Eve could find are listed opposite :-

Name of Company	Type of Account	Int Rate
Initial Savings Bank	3 year fixed bond	3·75% pa
BAC Bank PLC	5 year fixed bond	4·5% pa
Thrifty Credit Union	10 year fixed bond	6·0% pa

a How much interest would Eve receive from each of the above accounts after 12 months ?

b Assuming the interest is compounded on each of the accounts, how much would Eve's money be worth at the end of each bond ?

c Alfie is 11 years old at present and will go to university when he is 18 years old.

Which bond do you think that Eve should put her money in ? Why do you think this ?

d What are the reasons that Eve might consider splitting the money and opening 2 separate accounts ?

a) Initial $= 2500 \div 100 \times 3.75 = £93.75$
   BAC $= 2500 \div 100 \times 4.5 = £112.50$
   Thrifly $= 2500 \div 100 \times 6 = £150$

b) Initial $= 2500 \times 1.0375^3 = £2791.93$
   BAC $= 2500 \times 1.045^5 = £3115.45$
   Thrifty $= 2500 \times 1.06^{10} = £4477.12$

UNSCRAMBLE THE WORDS TO FIND KEY TERMS TO DO WITH JOBS

inimmscoos
commission.

adaypy
Payday

wages
ewgsa

salary
ralyas

tax
xat

WAGES AND SALARY

WHAT'S THE DIFFERENCE BETWEEN A WAGE AND SALARY?

SALARY

a fixed regular payment, typically paid on a monthly basis but often expressed as an annual sum.

WAGE

a fixed regular payment earned for work or services, typically paid on an hourly basis

Which is better?

CALCULATING PAY

1. Jenny works as joiner. She earns a wage of £8·30 per hour.

    On one project she works 26 hours in total.

    How much does she earn?

    $8.30 \times 26 =$ £215.80

2. A teacher earns an average **annual** salary of £29 000.

    How much does this equate to

a) per month?

    $29000 \div 12 =$ £2416.67

b) per week?

    $29000 \div 52 =$ £557.69

CALCULATING PAY

3. On Saturdays Dan earns **time and a half** and on Sundays he earns **double time**. His standard wage per hour is £9·18.

One week he works 25 hours Mon-Fri, and then works an extra 5 hours on Saturday. On Sunday his boss asks him to work another 3 hours.

How much money does Dan earn overall during this week?

M-F $25 \times 9.18 = $ £229.50

Sat   Time + half $9.18 \times 1.5 = 13.77$

$5 \times 13.77 = $ £68.85

Sun   Double $9.18 \times 2 = 18.36$

$18.36 \times 3 = $ £55.08

Total = $229.50 + 68.85 + 55.08 = $ £353.43

STARTER

One week Grace works the following hours:

- Mon – Fri: 9am – 5pm with an hour unpaid lunch   *7 hours × 5*
- Sat: 12pm – 3pm   *3   T+½*
- Thurs: 5pm – 8pm   *3   DT*

Her normal wage is £6.40 per hour, but she is paid double time past 5pm and time and half at weekends.

How much does she earn overall?

• Mon-Fri = 7 × 5 × 6.40 = £224.   Total = £291.20

• Sat = 6.40 × 1.5 × 3 = £28.80

Thurs
• 8am = 6.40 × 2 × 3 = £38.40

COMMISSION

A clothing store pays commission on staff sales:-

Sales between £10,000 and £15,000   4.5%

Sales over £15,000   6.75%

a) Mark sells £12,500 and Paul sells £22,000. How much commission do they both earn?

Mark

Sells £12,500

Commissionable sales:
12500 - 10000 = 2500

2500×0.045
$= £112.50$

Commission = £112.50

Paul

Sells £22000

Commissionable sales:
- 5000 at 4.5%
- 22000 - 15000 = 7000 at 6.75%

$5000 \times 0.045 = £225$
$7000 \times 0.0675 = £472.50$

Commission = £697.50

COMMISSION

3. Ellen earned £1920 last month.

Her basic wage of £1100 was supplemented by commission from sales totalling £18,200. What percentage commission did Ellen get?

DEDUCTIONS

FINANCE

GROSS AND NET PAY

Gross Pay
This is the wage/salary that you are paid for your work

Deductions
taken off your gross pay

- Income Tax
- Pensions
- National Insurance

Net Pay
The amount you take home after deductions.

GROSS AND NET PAY

Charlie gets a job working in an sales office on a contract of 40 hours per week. One week he earns £642.

a) What is his hourly wage (rate of pay)?

He also works an extra 6 hours, paid at time and a half.

b) How much does he earn for overtime?

For his sales he earns 3% commission. Commission is only awarded to sales above £5000.

c) One week he sells £8500. How much commission does he get from this?

d) How much does Charlie get for his Gross Pay?

Charlie's payslip is shown at the side.
a) How much is taken off towards NI?

£9.38

Name	NI no.	Emp no.	Week
Charlie	RS 123 654	000564	6
Basic Pay	Overtime	Comm	Gross
642	144.48	105	891.48
NI	Income Tax	Pension	Deduct
9.38	170.76	35·65	215·79
		Total	675·69

He decides to pay in 4% of his gross pay into a pension.
b) Find the amount he will pay into a pension.

891.48 × 0·04 = 35·65

c) Calculate the total deductions Charlie will pay.

9·38 + 170·76 + 35·65 = 215·79

d) What percentage of his gross pay is this?

$\frac{215·79}{891·48} × 100 = 24·2\%$

e) Find Charlie's overall net (take home) pay.

891·48 − 215·79 = £675·69

INCOME TAX

FINANCE

HOW IS INCOME TAX CALCULATED?

Income Tax is calculated as a **percentage** of your wage.
The percentage rate is set by the government and is currently:

Band	Taxable income	Tax rate
Personal Allowance	Up to £11,500	0%
Basic rate	£11,501 to £45,000	20%
Higher rate	£45,001 to £150,000	40%
Additional rate	over £150,000	45%

The rate you pay depends on how much you earn, people over £150,000 pay all three rates of interest whereas someone earning below £45,000 only pays one rate.
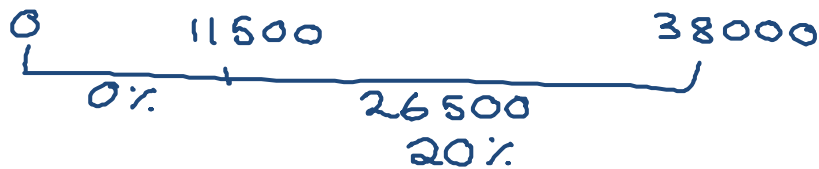There is also a **personal allowance** which is tax free.

WHAT PART OF MY WAGE IS TAXED?

Taxable income	Tax rate
Up to £11,500	0%
£11,501 to £45,000	20%
£45,001 to £150,000	40%
over £150,000	45%

Ben earns £38,000.

He will get a tax–free allowance of £11,500.

```
0        11500                    38000
|_____|_____|
    0%              26500
                     20%
```

26500 × 0.2 = £5300

Ben pays £5300 of tax

Exercise 3

1. Mr Fleming earns £23 650.

    He has a tax allowance of £8014.

    Calculate his income tax. Copy and complete :-

    £3127·20

    Taxable income is 23 650 - 8014 = £.......

    20% of £............ =   £ ....

    Total Income Tax due is   £ ....

2. Mr Bond works in IT and earns £28 400.

    He has a tax allowance of £10 566.

    Calculate how much income tax he is due to pay.

    £3566·80

3. Jim, the office boy, has an annual salary of £17 000.

    He has a £9520 tax allowance.

    Calculate his income tax bill.

    £1496

4. Calculate the income tax due, at 20%, on each of the following :-

    a   Mr Dahl earns £19 780 per annum. He has a tax allowance of £4108. **£3134·40**
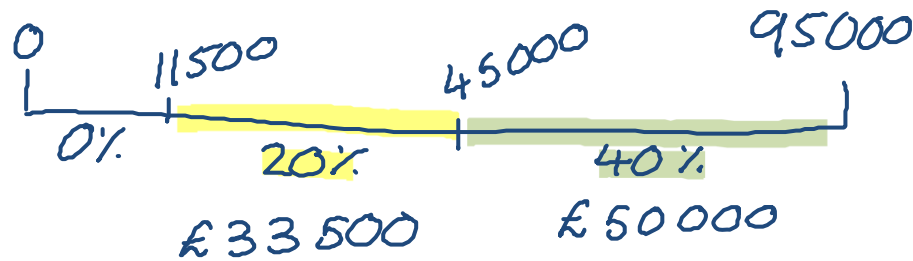
    b   Matilda earns £2200 each month. She has a monthly tax allowance of £345. **£371·**

    c   Charlie has a tax allowance of £97·60 on his weekly wage of £568. **£94·08**

David earns £95,000.

He will get a tax–free allowance of £11,500.

Taxable income	Tax rate
Up to £11,500	0%
£11,501 to £45,000	20%
£45,001 to £150,000	40%
over £150,000	45%

0   11500   45000   95000

0%   20%   40%

£33 500   £50 000

33 500 × 0.2 = 6700

50 000 × 0.4 = 20 000

Total tax = £26 700

Louise earns £165,000.

She will get a tax–free allowance of £11,500.

Taxable income	Tax rate
Up to £11,500	0%
£11,501 to £45,000	20%
£45,001 to £150,000	40%
over £150,000	45%

0   11500   45000   150000   165000

0%   33,500   105,000   15,000

20%   40%   45%

- 33500 x 0.2 = 6700
- 105000 x 0.4 = 42000
- 15000 x 0.45 = ~~6700~~ 6750
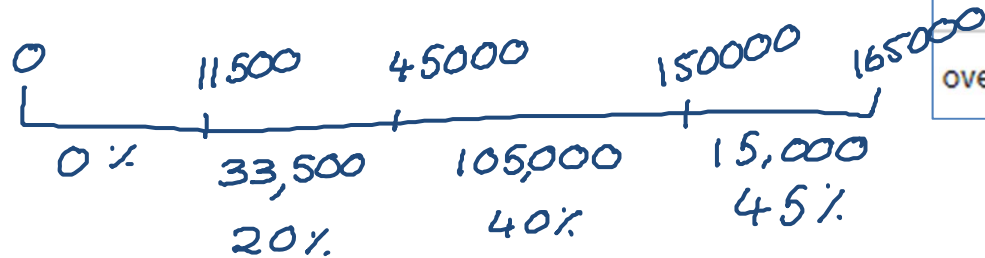
$$\frac{}{55450} +$$

7. Calculate the income tax due on each   below :-

   a   Mr Kenobi - £29 780   Ms. Leia - £32 000

   c   Mr Yoda - £51 360   Mr Solo - £$\frac{1}{4}$ million.

8. "Jabba" earned two point five million pounds as a singer
   last year and had a taxable allowance of £12 560.

   Calculate how much income tax she had to pay.

9.   Mr Ford owns his own joinery firm and has a taxable income of £142 400.

      He completed his income tax form and sent off a cheque for £40 603.

      Did he pay the correct amount ? Explain.

REVISION HOMEWORK

DUE THURS 30TH NOV

End of Chapter Assessments:

- **Chapter 3 (percentages)**   **page 35**
- **Chapter 4 (fractions)**   **page 43**
- **Chapter 7 (ratio/proportion)**   **page 71**

If you have any problems or questions you must come and ask - Mondays or Wednesdays after-school, Thursday lunch.

VAT

FINANCE

REVISION HOMEWORK

DUE THURS 30TH NOV

End of Chapter Assessments:

- **Chapter 3 (percentages)**   page 35
- **Chapter 4 (fractions)**   page 43
- **Chapter 7 (ratio/proportion)**   page 71

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WHAT IS VAT?

VAT stands for Value Added Tax.
It is added onto goods and services, usually before you buy them.
The standard rate of VAT is 20% however some items have lower VAT rates, for example heating, medicines, children's clothes and school equipment.

Example

Richard takes his scooter to a garage for a repair. The garage charges £24·50 per hour and the new parts cost £256·70.
The garage takes 4 hours and adds 20% VAT to the cost.
What is the final bill?

Labour : 24·50 x 4 = 98
Parts : 256·70
Before Tax = 98 + 256·70 = 354·70
20% of 354·70 = 70·94.
Final bill = 354·70 + 70·94 = £425·64

HIRE PURCHASE

FINANCE

REVISION HOMEWORK

DUE THURS 30TH NOV

End of Chapter Assessments:

- **Chapter 3 (percentages)**   **page 35**
- **Chapter 4 (fractions)**   **page 43**
- **Chapter 7 (ratio/proportion)**   **page 71**

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WHAT IS HIRE PURCHASE?

Hire Purchase is buying goods through the process of:
- Making an initial deposit (sometimes a fixed amount or a percentage of the total cost)
- Paying off the remaining cost with weekly/monthly payments

It would usually be applied to large purchases, like furniture or appliances.

Hire purchase schemes usually end up costing more money overall.

EXAMPLE 1

Katie buys a sofa by making a £150 deposit and agreeing to pay 24 monthly instalments of £35.
The original price of the sofa was £800.
How much more did Katie pay?

Deposit   Monthly payments
150   +   (24 × 35)

= 150   +   840

= £990

990 - 800 = 190

She paid £190 more.

EXAMPLE 2

Paul buys a car worth £6500 through hire purchase. It cost him £7315 in total.
He paid a deposit and 24 monthly payments of £210.

a) Calculate the deposit he paid.

Monthly payments $24 \times 210 = 5040$

$\underset{\text{Total}}{7315} - \underset{\text{payments}}{5040} = \underset{\text{deposit}}{2275}$

His deposit was £2275

b) Express this deposit as a percentage of the cars original value.

$\dfrac{\text{deposit}}{\text{original value}} \times 100 = \dfrac{2275}{6500} \times 100 = 35\%$

EXAMPLE 3

Lisa bought a new kitchen valued at £3000.

She paid a 20% deposit and 12 equal monthly payments.

She calculated that she had paid 30% more than the original price.

How much were her monthly payments?

She paid 30% more than £3000
10% = 300 ⟶ 30% = 900
Total cost = 3000 + 900 = £3900

Deposit: 20% of 3000 = 600
Total 3900 − Deposit 600 = £3300
Monthly Payment = 3300 ÷ 12 = £275

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PROFIT & LOSS

FINANCE

REVISION HOMEWORK

DUE THURS 30TH NOV

End of Chapter Assessments:

- **Chapter 3 (percentages)**   page 35
- **Chapter 4 (fractions)**   page 43
- **Chapter 7 (ratio/proportion)**   page 71

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To calculate profit and/or loss, we find the overall difference between the buying cost and selling price.

The context of the question tells you whether it is a profit or loss.

We often express profit and loss as a percentage of the original value:

$$\% \ \text{Profit/Loss} \ = \ \frac{\text{Profit/Loss}}{\text{Original Value}} \ \times 100$$

EXAMPLE 1

A shop buys box of 50 DVDS priced at £175 each and sells them all at a price of £6.90 each.

How much profit do they make overall?

Express the profit as a percentage of the original cost price.

$$\text{Total selling price} = 50 \times 6.90 = £345$$

$$\text{Profit} = 345 - 175 = \underline{£170}$$

$$\% \text{ Profit} = \frac{170 \;(\text{profit})}{175 \;(\text{original})} \times 100 = 97\%$$

EXAMPLE 2

Kieran buys and sells shares through an online stockbroker.
He buys 200 shares of an oil company for £2.40 each.
A moth later he sells them for a 15% loss.
He has to pay his stockbroker 2.5% commission for carrying out the sale.

How much of a loss did he have?

Buying Price = 200×2.40 = £480

$10\% = 48$
$5\% = 24$ $\longrightarrow 15\% = £72$

Selling Price = $480 - 72 = £408$

Commission:
$408 \div 100 \times 2.5 = £10.20$

Overall Loss = $72 + 10.20 = £82.20$

SIMPLE INTEREST

FINANCE

REVISION HOMEWORK
DUE TODAY

End of Chapter Assessments:

- **Chapter 3 (percentages)**   **page 35**
- **Chapter 4 (fractions)**   **page 43**
- **Chapter 7 (ratio/proportion)**   **page 71**

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There are many different types of bank accounts.

Banks provide interest rates as an incentive to bank with them.

These rates are usually given as percentages.

EXAMPLE 1

A bank has different interest rates depending on the amount in the account.

Up to £5000	1.4%
£5000 - £10000	2.3%
Over £10000	2.5%

Janice invests £6500 into an account.
After 1 year, how much interest would she have accrued?
How much money would be in her account in total?

6500

1% = 6500 ÷ 100 = 65
2% = 65 × 2 = 130
0.1% = 65 ÷ 10 = 6.5
0.3% = 6.5 × 3 = 19.5
Interest = 130 + 19.5 = £149.50

↳ In total = 6500 + 149.50
= £6649.50

$$\begin{array}{r} 6.5 \\ \times\ 3 \\ \hline 19.5 \end{array}$$

EXAMPLE 2

Laura deposited £8,400 into a savings account.
At the end of one year she had gained £21.50 in interest.

What was the interest rate of her account?

percentage

$$\text{Interest rate} = \frac{\text{interest}}{\text{original value}} \times 100$$

$$= \frac{21.50}{8400} \times 100$$

$$= 0.255\ldots$$

$$= 0.26\%$$

pg 212
All Questions.
Q2 + 3 Non-Calc.

COMPOUND INTEREST

FINANCE

Compound interest is gained through banking money in the same account for a number of years.

You need three piece of information:

| Starting Value: | Interest rate: | Time scale: |

Example:
Kevin deposits £600 into a savings account with a 3% per annum interest rate.
How much will he have after 2 years?
How much interest did he gain?

Non-Calculator Method

Year 1
Start : £600
1 % of 600 = 6 ⟶ 3% = 18
End : £600 + 18 = £618

Year 2
Start = £618
1% of 618 = 6.18 ⟶ 3% = 18.54
End : 618 + 18.54 = £636.54

At the end of 2 years Kevin has £636.54.
He has gained £36.54 in interest.

PERCENTAGE MULTIPLIERS

When we are finding interest we assume we increasing the value in the account.

If we think of the initial deposit as 100%, then the interest rate is added onto this. We divide this new percentage by 100 to find the multiplier.

Examples

Interest rate of 4%: $100\% + 4\% = 104\% \longrightarrow 1.04$

Interest rate of 12% $100\% + 12\% = 112\% \longrightarrow 1.12$

Interest rate of 6.3% $100\% + 6.3\% = 106.3\% \longrightarrow 1.063$

* Using percentage multipliers means we can use the following formula with a calculator.

Final value = Starting Value x (Interest Rate)$^{\text{Time}}$

Calculator Method

Kevin deposits £600 into a savings account with a 3% per annum interest rate.
How much will he have after 2 years?
How much interest did he gain?

Step 1:
Find the percentage multiplier

$$100\% + 3\% = 103\% \xrightarrow{\div 100} 1.03$$

Step 2:
Use the formula

$$\text{Final value} = \text{Starting value} \times \text{Interest rate}^{\text{years}}$$
$$= 600 \times 1.03^2$$
$$= £636.54$$

Step 3:
Calculate the interest

$$£636.54 - 600 = £36.54$$

Final value = Starting Value x (Interest Rate)^{Time}

Task

Work out the problem without a calculator first.

Then check using the formula method.

Fred deposits £7800 into a savings account with a 2% per annum interest rate.

How much will he have after 3 years?

Handwritten correction: £7000

LOANS AND INTEREST

FINANCE

LOANS

- If you take out a **loan**, you are given an amount of money from a bank or finance company. When you do this, you agree to repay the money borrowed, along with interest, in a specified time.

- If you take out a loan you will be asked to sign a **credit agreement.** This is a legal contract which outlines the rules and regulations of the loan, including when payments must be made and the amount of **interest** that must be paid on the loan.

INTEREST

- **Interest** is an amount added to the loan by the bank or finance company. The bank will calculate the interest for the whole period of the loan.

- The loan plus the interest is usually repaid in equal monthly payments which are called **instalments**.

- Interest is calculated as a percentage of the loan for each year of the loan agreement. This is sometimes referred to as **per annum** (p.a.) which means 'for each year'.

There are two main types of interest:

- **Simple interest** is calculated as a percentage of the loan, and the amount of interest added is the same each year.

EXAMPLE 1

Scott wants to buy a new car which costs £16 505. The car dealership offers three finance agreement options at a fixed rate of 11.2% per annum.

Option 1 : 24 months $\rightarrow$ 2 years   Interest = 1848.56 × 2 = 3697.12

Option 2 : 36 months $\rightarrow$ 3 years   Interest = 1848.56 × 3 = 5545.68

Option 3 : 48 months $\rightarrow$ 4 years   Interest = 1848.56 × 4 = 7394.24

1. Calculate the monthly repayments for each of the three loan options.

11.2% of £16505 = 16505 ÷ 100 × 11.2 = 1848.56

Option 1 : 16505 + 3697.12 = 20202.12

Monthly payments = 20202.12 ÷ 24 = 841.755 = £841.76

2. How much more does he pay monthly if he takes out the loan over 24 months rather than 36 months?

24 monthly payments = 841.76

36 " " = 612.52

229.24

£229.24 more.

3. If he takes out the loan over 48 months, how much more than the cash price does he pay?

£7394.24 more.

EXAMPLE 2

- The supermarket chain Kings offers financial services through its own bank called Kings Bank. Kings Bank offers loans at different rates.

1. Calculate the percentage interest per annum if you take out a loan of:

A) £10 000 over 5 years and pay £193.17 per month

B) £5000 over 5 years and pay £102.83 per month.   5 years = 60 months

A) 60 payments = 193.17 × 60 = 11 590.20
   Total interest = 11590.20 - 10000 = 15 90.20
Interest per year = 1590.20 ÷ 5 = 318.04
% Interest = $\frac{\text{Interest p.a}}{\text{original value}} \times 100 = \frac{318.04}{10000} \times 100 = 3.184 \%$

2. Why do you think the percentage interest is more for a £5000 than a £10 000 loan?

CREDIT& STORE CARDS

FINANCE

CREDIT CARDS

- Credit cards are provided from banks and finance companies. You can use the card to pay for things, but you have to pay back the money to the bank.

- The amount you owe is called the balance.

- You do not have to pay off all the balance each month, but there is usually a minimum payment required.

- There is often a **(compound)** interest rate added each month or year too.

- If you do not keep up with minimum payments it can affect your credit rating.

STORE CARDS

- A store card follows the same general rules as a credit card, but you can only use it in one particular store.

- There are often offers and promotions for store card holders.

EXAMPLE

- James wants to buy a new computer for £1200.

He has two options:

A – He uses his credit card which charges 15.4% interest per annum on the balance.

B – He uses a store card which charges 20.2% per annum on the balance. The store card offers a discount of 10% off the product.

* If he repays after 1 year, which is the cheapest option?

Option A
Interest:
$1200 \div 100 \times 15.4$
$= £184 \cdot 80$

Total cost:
$1200 + 184.80$
$= £1384.80$

Option B
Price : 10% of 1200 = 120
        1200 - 120 = 1080
Interest : $1080 \div 100 \times 20.2 = 218.16$
Total cost : 1080 + 218.16
            $= £1298.16$
The store card is cheaper by £86.64.

EXAMPLE 2

Karen buys a washing machines for £650 using her credit card.

The company charges 2.65% monthly.

a)   If she does not make any payments, what is her balance at the
        end of one year.

b)   Express the increase as a percentage of her old balance
        and state the annual percentage rate (APR).

a) $100\% + 2.65\% = 102.65\% = 1.0265$

$650 \times 1.0265^{12} = \underline{£889.65}$

b) Increase $= 889.65 - 650$

$= 239.65$

$\% = \dfrac{239.65}{650} \times 100 = 36.87\%$

APR $= 36.87\%$

Exercise 5B

1 a   £52.84
   b   £78.45
   c   Store card cheaper
   d   £15.41

2   £2953.26

3   £143.35

COMPARING LOANS AND CREDIT CARDS

A new bathroom suite costs £3000.

- Option A: Take out a loan charging 3.2% per month paid in monthly instalments over 1 year.

- Option B: Use a credit card charging 2.8% per month to pay for the suite and pay back at the end of one year.

Which is the cheaper option?

INSURANCE

FINANCE

INSURANCE

- People buy insurance to cover the cost of something bad happening.

- You can get insurance on most things: cars, homes, life, phones, possessions.

- Life insurance can be called **assurance.**

- You make a monthly payment (**premium**) to a company depending on the value of what you are insuring.

House and Contents insurance

(Monthly premiums per £10 000)

Group	Building Ins.	Contents Ins.
1	£1·90	£5·90
2	£2·80	£6·20
3	£3·25	£8·00

These groupings depend on the area you live in, how likely you are to be burgled etc.

Life Assurance

25 year term policy - monthly premiums
(for every £100 000 insured)

Age		Non-smoker	Smoker
Male	Female		
16-24	16-31	£6·10	£11·40
25	32	£6·50	£11·60
26	33	£6·65	£11·80
27	34	£6·80	£12·50
28	35	£7·10	£12·70
29	36	£7·40	£12·90
30	37	£7·70	£13·80
31	38	£8·20	£14·50

Building - Group 1
  worth £160,000
  contents £40,000

16 × 1.90 = _____
4 × 5.90 = _____