

# Variables in Mathematics

## Variables & Equations

$$3x + 4 = 2x + 6$$

$$4x + 2y = 8$$

## Another Way to View Math

- Variables are just empty boxes holding something
- Mathematical expressions are just *sentences*:
  - Numbers are *nouns* and sometimes *adjectives*
  - Variables are *pronouns* and sometimes *adjectives*
  - Operators (like +, -, x and /) are *verbs*
  - Parentheses mark off *clauses*
  - Connectors (like =,  $\cong$ ,  $\geq$ ,  $\leq$  and  $\neq$ ) are *conjunctions*

# Viewing Equations

## *I Am Your Father!*

If “I” refers to *me*, “Your” is one of my two sons

If “I” refers to *my father*, “Your” is me or one of my two brothers

If “I” refers to Darth Vader, “Your” is Luke Skywalker or Leah Organa

## Solving an Equation

$$3x + 6 = 2x + 4$$

$$\begin{array}{r} -2x \qquad -2x \\ \hline \end{array}$$

$$x + 6 = \qquad +4$$

$$\begin{array}{r} -6 \qquad -6 \\ \hline \end{array}$$

$$x \qquad = \qquad -2$$

## Solving an Equation

$$4x + 2y = 8$$

$$\underline{\quad -2y \quad \quad -2y}$$

$$4x \quad \quad = 8 - 2y$$

$$x \quad \quad = 2 - \frac{1}{2} y$$

## Solving an Equation

$$4x + 2y = 8$$

$$\begin{array}{r} -4x \qquad \qquad \qquad -4x \\ \hline \end{array}$$

$$2y = 8 - 4x$$

$$y = 4 - 2x$$

## Playing with Parentheses

$$(x+4) * (y-7)$$

$$x * (y-7) + 4 * (y-7)$$

$$xy - 7x + 4y - 28$$

$$y * (x+4) - 7 * (x+4)$$

$$(y-7) * (x+4)$$

## Exponents

$$x * x = x^2$$

$$x * x * x = x^3$$

$$x * x * x * x = x^4$$

$$x * x * x * x * x * x * x = x^7$$

$$x * x * x * x * x * x * x * x * x * x * x = x^{11}$$

## Exponents

$$x^5 * x^4 = x^9$$

$$x^2 * x = x^3$$

$$x^{10} / x^5 = x^5$$

$$x^3 / x^2 = x$$

$$x^4 / x^6 = x^{-2}$$

# Exponents

$$x^{-2} = 1 / x^2$$

$$x^{-1} = 1 / x$$

$$x^{-5} = 1 / x^5$$

$$x^{10} / x^5 = x^{10} * x^{-5} = x^5$$

$$x^3 / x^2 = x^3 * x^{-2} = x^1 = x$$

$$x^4 / x^6 = x^4 * x^{-6} = x^{-2} = 1 / x^2$$

$$x^2 / x^2 = x^2 * x^{-2} = x^0 = 1$$

## Budgets

This is planning out how your money will be spent in comparison to what you earn

It is not a *prison*, it is a *guide*

It tells you where the money is *coming from*, and where it is *going to*.

# Budgets

- Housing (rent, mortgage, etc)
- Utilities (electricity, natural gas, telephone, water, etc.)
- Food (Groceries bought, restaurants visited, vending machine purchases, etc.)
- Transportation (Payments on the vehicle loan, fuel, repairs, oil changes, tires, etc.)
- Insurance (Life, health, homeowners, automobile or motorcycle, etc.)
- Clothing
- Entertainment (Movies, books, vacations, hobbies, cable, etc.)
- Tithes & Offerings (Giving to church, to para-church organizations, etc.)
- Savings
- Education
- Miscellaneous (All those things for which you have no other category)

# Budgets

## **Fixed vs. Variable Expenses**

**Fixed expenses:** Those things that are the same, or very nearly so, every month and over which you have little control: rent or mortgage payments, insurance, utilities, vehicle payments

**Variable expenses:** Things that vary from month to month, like entertainment, entertaining, clothing, subscriptions to magazines or internet sources

# Budgets

- Cash leakage
- Spending beyond your limits
- Luxuries pretending to be necessities
- Tithe yourself as well as God
- Don't count on windfalls
- Beware of cost creep

# Debt

Borrowing is not forbidden, but it is discouraged in Scripture

Some purchases—a house or an automobile—are so large that it is hard to save enough money to make them without borrowing

In any situation where money is borrowed to be paid back with interest over time, more money is paid than borrowed, often several times as much

Debt is easy to incur, and hard to escape

## Getting Out of Debt

- **Make a list of your debts, with interest rates**
- **Figure out where your money goes**
- **Cut out the extras**
- **Lower your fixed expenses**
- **Try to boost your income**
- **Transfer high-interest balances**
- **Pay off the debt with the highest rate first**
- **Move down the list**

# SCAMS!

## How to spot a scam

### Be very suspicious if:

- Something sounds too good to be true - like free stuff or quick, easy money
- You're asked to give out personal or bank account information
- You aren't given long to make a decision, or you feel pressured into making one immediately
- You're contacted unexpectedly by a company or person of whom you have never heard—whether by post, email, phone, text or on the doorstep
- You're asked to pay anything up-front
- The only contact details are a mobile phone number and a PO box address

## Avoiding Being Scammed

- Never give out personal information, PIN numbers, account numbers, or passwords to an unsolicited contact—telephone, eMail, face to face, etc
- Check the “From” line
- Hover and discover on all links
- Contact the supposed source and check the claim
- Make use of anti-virus, anti-malware & firewall software
- Password protect your computer