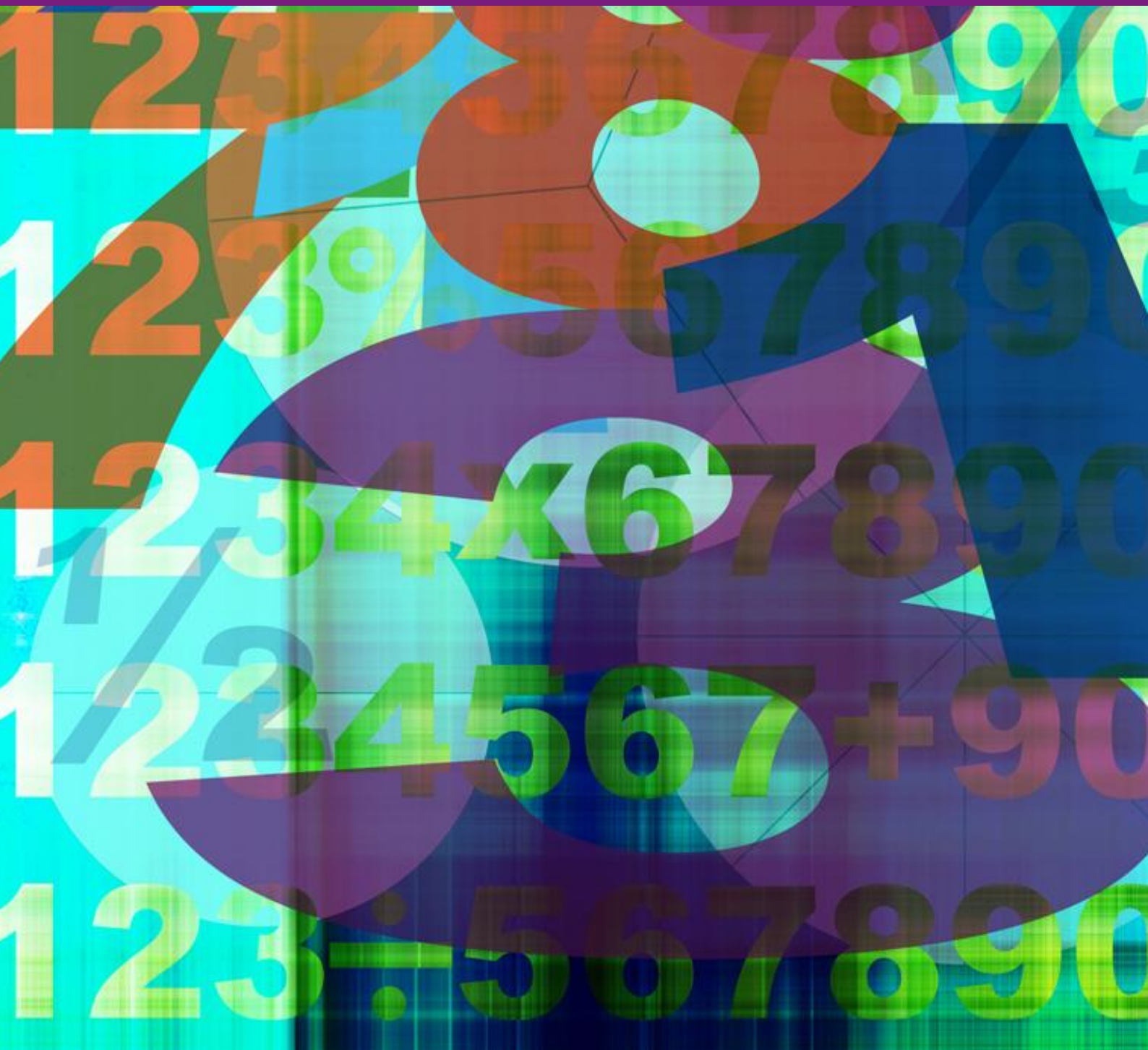
Learner Pack

Level 4: Mathematics
Unit 3: Algebra



Activity # Keeping the Score in Rugby **Code A1**

This activity links to award learning outcome 3.1.

Introduction

Rugby is one of the most popular field games played in Ireland. It dates back to 1854. Despite the country's small size, the national team competes very well on the international stage. There are various methods of scoring in the game and it is important for both spectators and players to be able to compute scores. If we allow different variables to represent the numerical value of different scores then we could use this expression to calculate the score of any game of rugby.

Materials you will need

- Pen and paper

Learning Outcomes

1. Understand the concept of a variable.
2. Recognise the presence of variables in real life situations.
3. Replace variables with values through substitution.

Key Learning Points

1. Variables
2. Substitution

What do you need to know before you start?

Maths

A variable is a letter or a symbol that represents a number (unknown quantity). A variable can be any letter of the alphabet and its value can change depending on the problem or situation. We use substitution to replace a variable with a number.

Rugby

You need to know the different methods of scoring in rugby and the numerical value of each type of score.

How can you find this out?

- Ask a friend.
- Ask your tutor.
- Find instructions on the internet.
- Watch a game of rugby on You tube,TV or DVD.
- Learn by playing with friends.
- Any other way that suits you.

Task 1: Use of variable to represent numerical values

Example

There are four different ways to score in rugby:

- try
- conversion
- drop goal
- penalty goal

Allow a different variable to represent each of these scores.

Remember:

- A **variable** can be any letter of the alphabet.

Solution

For example, we could use the following letters as variables to represent the scores:

- try = a
- conversion = b
- drop goal = c
- penalty goal = d

Task 2: Writing Expressions

Example

In the last task we allowed different variables to represent the numerical values of different score in rugby.

For this example, we will use these variables:

- try = a
- conversion = b
- drop goal = c
- penalty goal = d
- score = S

With such variables in place, write an expression to represent the total possible score (S) a team can achieve.

Remember:

- The numerical values of each score in rugby are:

  Try = 5 points

  conversion = 2 points

  drop goal = 3 points

  penalty goal = 3 points

Solution

$$S = 5a + 2b + 3c + 3d$$

Task 3: Substitution

Example

In 2006 Munster won the European Heineken Cup for the first time in their history.

Over the course of the match they scored

- 2 tries
- 2 conversions
- 0 drop goals
- 3 penalties

Use the expression (S = 5a + 2b + 3c + 3d) to calculate Munster's total score.

_____

Solution

To calculate Munster's total score we must substitute in the numerical values for each variable.

S = 5(2) + 2(2) + 3(0) + 3(3)

S = 10 + 4 + 0 + 9

S = 23

Now you try this

In the same match Munster's opponents Biarritz scored

- 1 try
- 1 conversion
- 0 drop goals
- 4 penalties.

What was Biarritz's total score? _____

If Munster had only scored

- 1 try
- 1 conversion
- 1 drop goal
- 3 penalties

Who would have won the match? _____

Practise your skills

- Practice sheet A1 will help you develop your skills in **substitution of variables.**

Try this

Each year Irish Gaelic footballers participate in a Series of International Rules with AFL There are different methods of scoring, with various numerical values for each type of score. For example:

- a goal is worth 6 points
- an over is worth 3 points
- a behind is worth 1 point.

In 2010 the Series was held in Ireland, with the first test held in the Gaelic Grounds, Limerick and the second test held in Croke Park, Dublin. The winner of the series is whoever scores the most over the two tests.

In 2010, over the course of two tests

Ireland scored:	Australia scored:
~ 2 goals	~ 0 goals
~ 19 overs	~ 28 overs
~ 23 behinds	~ 18 behinds

Write an expression for total score (S) allowing different variables to represent the numerical value of different scores

Use this expression to calculate the total score of each team and find out who won the Series?

Activity Lifting Weights Code A2

This activity links to award learning outcome 3.1.

Introduction

The Bench Press is one of the most popular lifts in the gym. When lifting, it is important that there is an equal amount of weight on each side of the bar. In equations it is also important that the right hand side is equal to the left hand side.

Materials

- Pen and paper

Learning Outcomes

1. Understand the concept of an equation.
2. Solve linear equations of one variable.

Key Learning Points

1. Solving
2. Algebraic Equations

What do you need to know before you start?

Maths

An equation is a mathematical sentence with an equals sign (=). It states that two expressions are equal. An equation is like a balance scale. Everything must be equal on both sides.

Lifting Weights

The Bench Press is an upper body exercise which is used extensively in weight training, bodybuilding, and other types of fitness training to develop the chest. When lifting, it is important that there is an equal amount of weight on each side of the bar. This is vital for balance and ensures a similar build up of muscle on both sides of the body. In equations it is also important that the right hand side is equal to the left hand side.

Task 1: Solving Linear Equations

Example

In 2002 Arnold Schwarzenegger was the world Bench Press Champion. During training one day, Arnold's personal trainer set up the bench press putting an even amount of weights onto each side of the bar. Arnold noticed that some weights were bigger than the other, but the trainer assured him that there was the same weight on each side. However, Arnold noticed that he had 85 kg on the right hand side of the bar. On the left hand side he had 60g and an unknown weight with no marking on it.

If we **let x stand for the unknown weight on the left hand side of the bar**, we could write this problem as follows: **x + 60 = 85.**

What is the unknown weight?

Remember:

We solve equations by **balancing.** The Golden Rule is:

**'Whatever we do to one side of an equation,
we must do the same to the other side.'**

Solution

$$x + 60 = 85$$

In order to solve this equation and find out what the unknown weight is we need to isolate the variable x on the left hand side of the equation by itself.

The opposite of adding 60 is subtracting 60.
If we subtract 60 from both sides, we will remove the + 60 on the left.

$x + 60 = 85$
$x + 60 - 60 = 85 - 60$
$x = 25$

The unknown weight on the left hand side of the bar is 25kg.

Now you try this

- In the next day's session Arnold observed that he had 88 kg on the right hand side of the bar. On the left hand side he had 58kg and an unknown weight with no marking on it. If we let x stand for the unknown weight on the left hand side of the bar, we could write this problem as

X + 58 = 88.

What is this unknown weight?

_____

- Later the same day, in a cool down session Arnold observed that he had 45 kg on the right hand side of the bar. However he noticed that the trainer had left an extra 25kg on the left hand side. If we let x stand for the current weight on the left hand side of the bar, we could write this problem as

x - 25 = 45

What is the current weight on the left hand side of the bar?

_____

Practise your skills

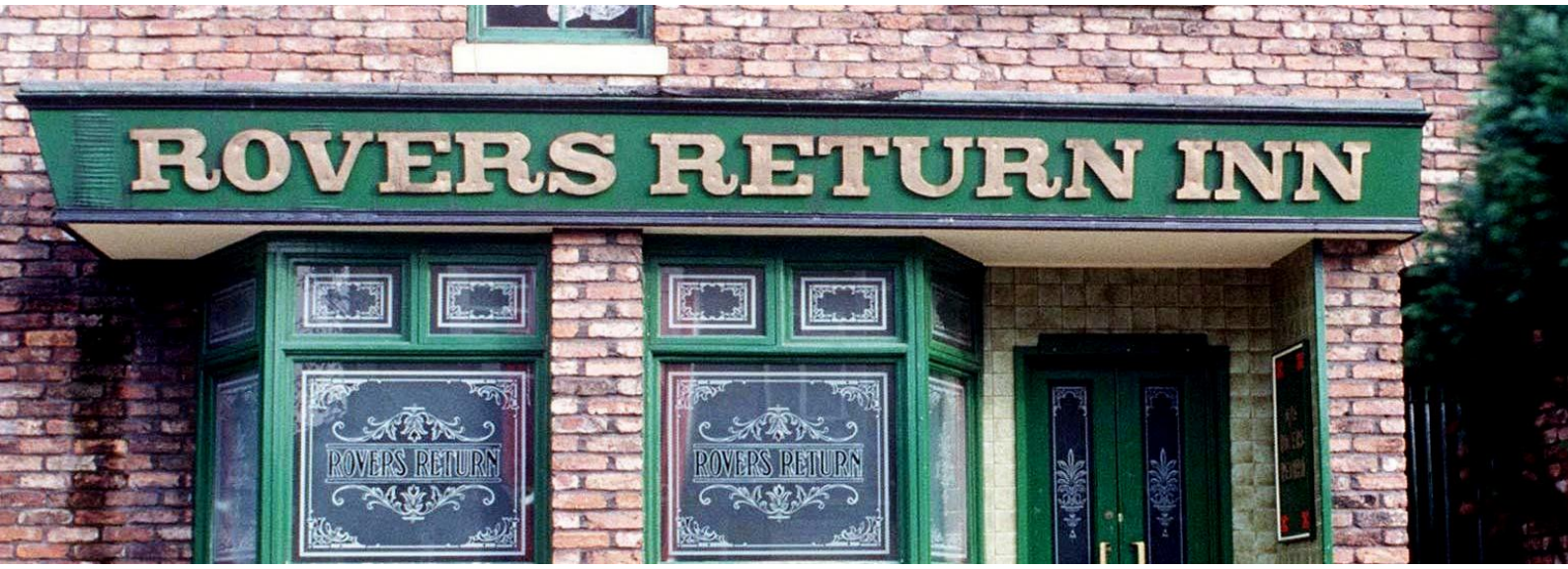
- Practice sheet A2 will help you develop your solving linear equation skills

- In Week 5 of the X Factor Mary received an impressive 565,000 votes from Britain. In the same show however, Matt received 780,000 votes in total. If Mary's votes from Ireland are added in, she received the same amount of votes altogether as Matt. If we let x stand for the number of votes Mary receives from Ireland, we could write this equation as

x + 565,000 = 780,000

Solve this equation for x and find out how many votes Mary received from Ireland.

Activity Soap Wars Code A3



This activity links to award learning outcome 3.2.

Introduction

There are three main British soap operas on TV: Coronation Street, Emmerdale and Eastenders. Since the broadcasting of all three shows there have been many ratings wars.

Materials you will need

- Pen and paper

Learning Outcomes

1. Understand the concept of an equation.
2. Solve linear equations of one variable.

Key Learning Points

1. Solving
2. Algebraic Equations

What do you need to know before you start?

Maths

An equation is a mathematical sentence with an equals sign (=) stating that two expression are equal.

An equation is like a balance scale. Everything must be equal on both sides.

Soap Wars

Coronation Street is the longest running and most watched British soap opera. It was first broadcast on 9th December 1960. Eastenders is another long-running British television soap opera set in Albert Square, first broadcast 19 February 1985. A third show, Emmerdale, is also a popular British soap opera that has been broadcast on ITV since 1972. It is set in the fictional village of Emmerdale in West Yorkshire, England. Since the broadcasting of all three shows there have been many ratings wars between them..

Task 1: Solving Linear Equations

Example

On the 19th February 2010, Eastenders broadcast a live episode marking the show's 25th anniversary celebrations. The episode was watched by twice the number of viewers than its rival show Coronation Street. The total number of viewers for both shows was 27 million.

If we let x stand for the number of Coronation Street viewers, we could write this problem as

$$x + 2x = 27$$

How many viewers watched each show?

Remember:

- We solve equations by **balancing.**

The Golden Rule is:

'Whatever we do to one side of an equation,

we must do the same to the other side.'

Solution

In order to solve this equation and find out what the number of viewers for each show we need to **isolate the variable x on the left hand side of the equation**:

$x + 2x = 27$

$3x = 37$

The opposite of multiplying by 3 is dividing by 3.
If we divide 3 into both sides, we will remove the + 3 on the left.

$x = 9$

Therefore 9 million viewers watched Coronation Street and 18 million viewers watched Eastenders.

Now you try this

In July 2006, ratings of Eastenders reached an all-time low when it was scheduled against an action packed hour long episode of Emmerdale. The episode of Emmerdale was watched by three times the number of people who watched Eastenders. The total number of viewers for both shows was 12 million.

If we let x stand for the number of Eastenders viewers, we could write this problem as

$$x + 3x = 12$$

How many viewers had each show?

_____

In December 1987, Coronation Street recorded the highest number of viewers ever for a UK soap opera, with nearly half the population tuning in. The episode was watched by four times the number of viewers than Emmerdale. The total number of viewers for both shows was 35 million.

If we let x stand for the number of Emmerdale viewers, we could write this problem as

$$x + 4x = 35$$

How many viewers had each show?

_____

Practise your skills

- Practice sheet A3 will help you develop your solving linear equation skills.

- The Irish Examiner is an Irish national daily newspaper. One of its main national rivals is The Irish Times. This is also an Irish daily newspaper and its origin dates back to 29 March 1859.

  According to recent surveys The Irish Times had twice the daily circulation of The Irish Examiner. That means it had twice as many buyers. Together both papers have a total daily circulation of 162,000.

  If we let x stand for the daily circulation of The Irish Examiner, we could write this problem as

  $$x + 2x = 162{,}000$$

Solve this equation for x and find out the daily circulation of each paper.

Activity How much is a ticket? Code A4

This activity links to award learning outcome 3.2.

Introduction

Different prices for different tickets are often charged at events. We can often use simultaneous equations to calculate the price of tickets if we know how many different type tickets are sold and the takings for each.

Materials you will need

- Pen and paper

Learning Outcomes

1. Understand the concept of simultaneous equations.
2. Solve simultaneous linear equations of two unknowns.

Key Learning Points

1. Simultaneous Equations

What do you need to know before you start?

Maths

Simultaneous equations are two equations which both have two unknowns (x and y). In order to solve such equations they must be simultaneously satisfied by particular values of x and y.

How much is a ticket?

Shamrock Rovers are a Dublin based football club who compete in the Premier Division of the League of Ireland and are the most successful club in Irish football history. They have won the League of Ireland title a record 16 times, including in 2010, and won the FAI Cup a record 24 times. Their home ground is the Tallaght Stadium which they moved to in 2009.

Like other stadiums such as Croke Park, Tallaght Stadium charges different prices for standing and seating tickets. Many cinemas also charge different prices for student and adult tickets.

Task 1: Solving Simultaneous Equations

Example

Shamrock Rovers are trying to decide how much to charge for seating and standing tickets at Tallaght Stadium for an upcoming game. If 250 standing tickets and 550 seated tickets are sold, the takings will amount to €6,750. However if 500 standing tickets and 300 seated tickets are sold, the takings will amount to €5,500. If we let x stand for the cost of a standing ticket and y stand for the cost of seated ticket, we could write two simultaneous equations as

$$250x + 550y = 6750$$
$$500x + 300y = 5500$$

How much does a standing ticket (x) cost and how much does a seated ticket (y) cost?

Solution

Step 1: Label the equations A and B

$250x + 550y = 6750$ [A]

$500x + 300y = 5500$ [B]

Step 2: Get the same coefficients for either x **or** y

If we multiply equation [A] by 2 then we will have the same x coefficients

$500x + 1100y = 13500$ [A]

$500x + 300y = 5500$ [B]

Step 3: Make sure the chosen coefficients have opposite signs (i.e. + and -). If we multiply equation [B] by -1 then we will have opposite signs

$500x + 1100y = 13500$ [A]

$-500x - 300y = -5500$ [B]

Step 4: Add the two equations together

$500x + 1100y = 13500$ [A]

$-500x - 300y = -5500$ [B]

Step 5: Solve for y.

$$800y = 8000$$

Divide both sides by 800

$$y = 10$$

Step 6: Replace y in either equation to solve for x.

$$500x + 300y = 5500$$

$$500x + 300(10) = 5500$$

$$500x + 3000 = 5500$$

If we subtract 3000 from both sides, we will remove the + 3000 on the left.

$$500x + 3000 – 3000 = 5500 – 3000$$

$$500x = 2500$$

Divide both sides by 500.

$$x = 5$$

Therefore:

the cost of a seated ticket (y) = €10.

the cost of a standing ticket(x) = €5.

Now you try this

- The film Batman 3 'The Dark Knight Rises' is to be released in 2011. On the night of its first viewing Storm Cinema forecast that if 150 student tickets and 350 adult tickets are sold, the takings will amount to €4,200. However if 200 student tickets and 300 adult tickets are sold, the takings will amount to €4100.

  If we **let x stand for the cost of a student ticket and y stand for the cost of an adult ticket**, we could write **two simultaneous equations** as follows:

$$150x + 350y = 4200$$
$$200x + 300y = 4100$$

How much does a student ticket (x) cost and how much does an adult ticket (y) cost?

_____

- The All Ireland club football and hurling finals take place at Croke Park on St. Patrick's Day every year. If 2,000 standing tickets and 20,000 seated tickets are sold, the takings will amount to €320,000. However if 3000 standing tickets and 19,000 seated tickets are sold, the takings will amount to €315,000.

If we let x stand for the cost of a standing ticket and y stand for the cost of a seated ticket, we could write two simultaneous equations as:

$$2000x + 20000y = 320000$$
$$3000x + 19000y = 315000$$

How much does a standing ticket (x) cost and how much does a seated ticket (y) cost?

_____

Practise your skills

- Practice sheet A4 will help you develop your solving simultaneous equation skills.

Try this

- The new Apple iPod Nano 8000MB (i.e. 8GB) can hold up to 2000 songs and 8 hours of videos.

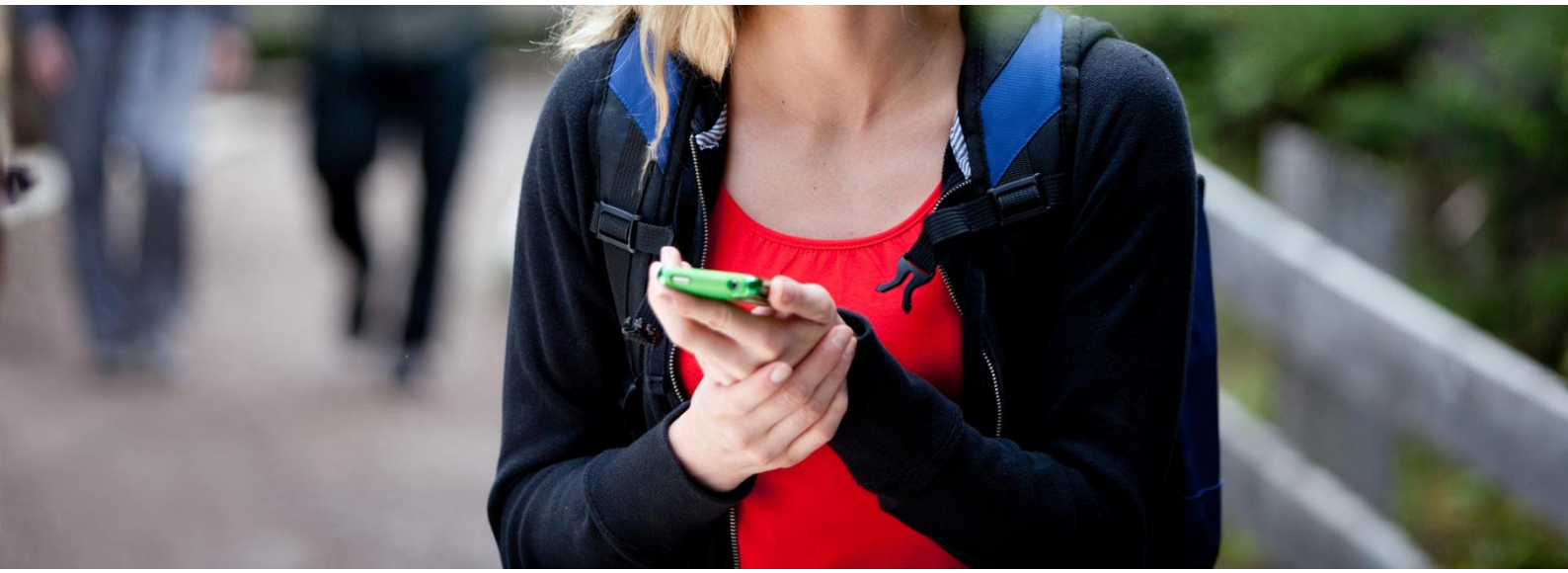
  If I have 900 songs and 4 hours of videos, the used space on my iPod Nano will amount to 3800 MB. However, if I have 1150 songs and 2 hours of videos, the used space will amount to 2600MB.

  If we let x stand for the MB size of a song and y stand for the MB size of a video, we could write two simultaneous equations as

  $$900x + 4y = 3800$$
  $$1150x + 2y = 2600$$

  How many MB in a song (x) and how many MB in a video (y)?

Activity How many text messages can I send? Code A5



This activity links to award learning outcome 3.2.

Introduction

Meteor, Vodafone and 02 are the top three mobile communication networks in Ireland. Each network has a value plan which allows their customers to make unlimited calls and send a limited number text messages for a fixed price per month. We can use i**nequalities** to calculate how many text messages customers can send using each network without being charged.

Materials you will need

- Pen and paper

Learning Outcomes

1. Understand the concept of inequalities.
2. Solve linear inequalities of one variable.

Key Learning Points

1. Solving
2. Linear inequalities

What do you need to know before you start?

In A2 we learned that in an equation everything must be equal on both sides. However in an inequality, one side is not equal to the other side and hence we get a set of solutions as opposed to just one solution. '

$x + 3 = 6$ (Equation)

$x + 3 \geq 6$ (Inequality)

There are four different inequality signs:

- $x > 2$ means ‘x is greater than 2’.
- $x < 2$ means ‘x is less than 2’.
- $x \geq 2$ means ‘x is greater than or equal to 2’.
- $x \leq 2$ means ‘x is less than or equal to 2’.

Task 1: Solving Inequalities

Example

John has currently signed up to Meteor's new value plan. For €40 a month, it includes a standard charge of €30 for all calls. The remaining €10 allows customers to send a limited number of text messages. Text messages are charged at €0.10 each. If customers exceed this €10 worth of text messages, they will be charged extra.

John does not wish to spend any more than €40 per month on his mobile phone bill.

If we allow 'x' to stand for the amount of text messages John sends, we can represent this information mathematically through the inequality**:** **$0.10x + 30 \leq 40$**

How many text messages can John send per month without being charged extra?

Remember:

In order to solve a linear inequality we use similar methods as solving equations. There are extra rules when using multiplication and division. You may multiply or divide both sides by a positive number. However, when you multiply or divide both sides by a negative number, you must turn the inequality sign around.

Solution

$$0.10x + 30 \leq 40$$

In order to solve this inequality we need to **isolate the variable x on the left hand side of the inequality**:

$$0.10x + 30 - 30 \leq 40 - 30$$
$$0.10x \leq 10$$

The opposite of multiplying by 0.10 is dividing by 0.10.
If we divide 0.10 into both sides, we will remove the + 0.10 on the left.

$$x \leq 100$$

Therefore John can send 100 text messages per month without being charged extra.

Now you try this

- Aoife has currently signed up to Vodafone's new value plan. For €45 a month, it includes a standard charge of €30 for all calls. The remaining €15 allows customers to send a limited number of text messages. Text messages are charged at €0.12 each. If customers exceed this €15 worth of text messages, they will be charged accordingly.

  Aoife does not wish to spend any more than €45 per month on her mobile phone bill. How many text messages can she send per month without being charged extra?

If we allow 'x' to stand for the amount of text messages Aoife sends, we can represent this information mathematically through the inequality: $0.12x + 30 \leq 45$

How many text messages can Aoife send per month without being charged extra?

_____

- Fiona has signed up to O2's new value plan. For €50 a month, it includes a standard charge of €32 for all calls. The remaining €18 allows customers to send a limited number of text messages. Text messages are charged at €0.09 each. If customers go over this €18 worth of text messages, they will be charged extra.

  Fiona does not wish to spend any more than €50 per month on her mobile phone bill. How many text messages can she send per month without being charged extra?

  If we allow 'x' to stand for the amount of text messages Fiona sends, we can represent this information mathematically through the inequality: $0.09x + 32 \leq 50$

How many text messages can Fiona send per month without being charged extra?

Practise your skills

- Practice sheet A5 will help you develop your solving inequality skills.

Try this

- Matt is looking to sell his ticket for Bon Jovi. He will sell it for any price as long as he does not make a loss. The ticket cost €65 and there was a credit card charge of €3.

  Allow ‘x’ to stand for the selling price of the ticket and represent this information mathematically through an inequality.

  Solve for ‘x’ and discover what price Matt will sell the ticket for?

Activity How many Number 1 hits had The Beatles? Code A6

This activity links to award learning outcome 3.4.

Introduction

The Beatles were a highly influential English rock 'n' roll band from Liverpool, who dominated the music era of the 1960's. To this day, they remain one of the most critically acclaimed and commercially successful popular music bands in history. They had many Number 1 hits in many countries.

Materials you will need

- Pen and paper

Learning Outcomes

1. Construct algebraic equations for real life situations.
2. Use correct terminology.
3. Solve the equation through rearrangement.

Key Learning Points

1. Construction of algebraic equations
2. Solving equations

What do you need to know before you start?

In order to construct an algebraic equation for a real life situation we allow a variable to stand for our unknown value and we construct the equation around this. We solve it using algebraic procedures to isolate the variable on one side of the equals sign (See Activity A2).

Task 1: Constructing Equations

Example

If you add 14 to the amount of Number 1 hits The Beatles achieved in the US, the result is 35.
How many Number 1 hits did the band have in the US?

Remember:

We allow a **variable t**o stand for the unknown.

Solution

Step 1: Let x stand for the amount of Number 1 hits.

Step 2: Form the equation

Remember: When 14 is **added** to the amount of Number 1 hits the result is 41.

$x + 14 = 35$

Step 3: Solve:

$x + 14 – 14 = 35 – 14$

$x = 21$

Therefore the Beatles had 21 Number 1 Hits in the US.

Now you try this

- If you add 26 to the amount of Number 1 hits The Beatles achieved in the UK, the result is 43.

How many Number 1 hits did the band have in the UK?

_____

- If you subtract 11 from the amount of Number 1 hits The Beatles achieved worldwide, the result is 16.

How many Number 1 hits did the band have worldwide?

_____

Practise your skills

- Practice sheet A6 will help you develop your constructing equations skills.

Try this

- U2 are one of the most successful international rock bands of all time. They have sold over 150 million records and been nominated for 34 Grammy Awards. These are awards presented annually by the National Academy of Recording Arts and Sciences of the United States for outstanding achievements in the music industry. When 17 is added to the amount of Grammy Awards they have won, the results is 39.

  Construct an algebraic equation to represent this information.

  Solve this equation and find out how many Grammy Awards U2 have won.

Activity How successful are Manchester United? Code A7

This activity links to award learning outcome 3.4.

Introduction

Manchester United is an English professional football club and is one of the wealthiest and most widely supported football teams in the world. Each year they compete in the Premier League which is England's primary football competition. The league was only founded in 1992 and although it is contested each year by 20 clubs, only four have won the title. Manchester United is one of those four. They also compete in many other competitions such as the FA Cup and the League Cup, as well as European competitions.

Materials you will need

- Pen and paper

Learning Outcomes

1. Construct algebraic equations for real life situations.
2. Use correct terminology
3. Solve the equation through rearrangement.

Key Learning Points

1. Construction of algebraic equations
2. Solving equations

What do you need to know before you start?

In order to construct an algebraic equation for a real life situation we allow a variable to stand for our unknown value and we construct the equation around this. Once constructed we solve it using algebraic procedures to isolate the variable on one side of the equals sign (See Activity A2).

Task 1: Constructing Equations

Example

Manchester United have 8 Premier league titles more than Arsenal. Together, both clubs have won the title a total of 14 times.

How many times have Manchester United won it?

Remember:

Allow a variable to stand for the unknown

Solution

Step 1: Let x stand for the number of titles won by Manchester United

Let (x - 8) stand for the number of titles won by Arsenal

Step 2: Form the equation

$x + x - 8 = 14$

Step 3: Solve

$2x - 8 + 8 = 14 + 8$

$2x = 22$

$x = 11$

Manchester United have won the Premier League 11 times.

Now you try this

- Manchester United have 5 FA Cup titles more than Chelsea. Together, both clubs have won the FA Cup a total of 17 times.

How many times have Manchester United won it?

_____

- Liverpool have 3 League Cup titles more than Manchester United. Together, both clubs have won the League Cup a total of 11 times.

How many times have Manchester United won it?

_____

Practise your skills

- Practice sheet A7 will help you develop your constructing equations skills.

Try this

- Brian Cowen became Taoiseach on 7 May 2008.. His predecessor Bertie Ahern is 11 years older than Brian. At the time of writing this, the sum of their ages is 107.

  Construct an algebraic equation to represent this information.

  Solve this equation to find out: what age is Brian Cowen?

Activity How wide was that ship? Code A8

This activity links to award learning outcome 3.4.

Introduction

Ships can serve a wide range of purposes, for example commercial, naval and fishing. They can range in size depending on the purpose.

Materials you will need for this activity

- Pen and paper

Learning Outcomes

1. Construct algebraic equations for real life situations.
2. Use correct terminology.
3. Solve the equation through rearrangement.

Key Learning Points

1. Construction of algebraic equations
2. Solving equations

What do you need to know before you start?

In order to construct an algebraic equation for a real life situation we allow a variable to stand for our unknown value and we construct the equation around this. Once constructed we solve it using algebraic procedures to isolate the variable on one side of the equals sign (See Activity A2).

Task 1: Constructing Equations

Example

The Titanic was the largest passenger ship in the world when she set off on her maiden voyage from England to New York. Four days into the crossing, on 14 April 1912, she struck an iceberg and sank. 1,517 people died as a result. It was the largest and most luxurious ship of its time and many had thought it was unsinkable.

The length of the main deck of the ship was approximately 263 metres more than its width. The perimeter of the deck was 638 meters.

What was the width of the ship?

Remember:

Perimeter = 2(width) + 2(length)

Solution

Step 1: Let width = x

Let length = x + 263

Step 2: Form the equation (Represent perimeter in terms of x)

Perimeter = 2(width) + 2(length)

= 2(x) + 2(x+263)

= 2x + 2x + 526

Perimeter = 4x + 526

Step 3: Fill in remaining information and solve (i.e. Perimeter = 638)

4x + 526 = 638
4x + 526 – 526 = 638 - 526
4x = 112
x = 28

Therefore the Titanic was 28 metres wide.

Now you try this

- The USS Arizona was an American battleship which was destroyed in the Japanese attack on Pearl Harbour in 1941. 1,177 people died in that attack. This event helped bring about U.S. involvement in World War II.

  The length of the main deck of the USS Arizona was approximately 150 metresmore than its width. The perimeter of the deck was 420 meters.

Find the width of the ship USS Arizona.

_____

- Yamato, a Japanese battleship, was the largest battleship ever built. The ship held special significance for the Empire of Japan as a symbol of the nation's naval power. US aircraft sank it in the final days of World War II. The length of the main deck of the ship was approximately 216 metres more than its width. The perimeter of the deck was 592 metres.

Find the width of the ship Yamato.

_____

Practise your skills

- Practice sheet A8 will help you develop your constructing equations skills.

- Basketball is one of the most popular and widely viewed sports in the world. It is a team sport in which two teams of five players try to score points by throwing a ball through the top of a hoop while following a set of rules. The game can be played on indoors or outdoors on a court which has a hoop at either end.

  The length of a basketball court is 13 metres more than its width. The perimeter of a court is 86 metres.

  Construct an algebraic equation to represent this information.

  Solve the equation.

  How wide is a basketball court?

Acknowledgements

This Learner Pack and the accompanying Tutor Guide were commissioned by FAS to assist learners in FAS Community Training Centres (CTCs) to develop knowledge, skills and competence in mathematics and to achieve FETAC certification in Level 4 Mathematics.

Similar resources were developed to support CTC learners in working towards FETAC certification in Level 3 Application of Number.

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