CreateWorld 2012
5-7 December    Griffith University    Brisbane
Using Digital Resources for Teaching and Learning

Ro Bairstow
King’s College
Mathematics
I will share ways in which the students use their iPads, the Apps of value and experiences gained in rolling out a BYOD iPad programme for students.

I will talk about my experiences with the creation of educational Apps and iBooks. I will also cover running e-learning courses, including delivering “live” online lessons with Blackboard Collaborate.
My Background

Teaching 35 years in New Zealand

Both State and Independent Schools
King’s College, Auckland

Independent school
750 boys, Years 9-13
200 girls, Years 12 and 13
Multi-national staff
Superb lunches
Written course materials in a range of media:

- Text books
- Computer programs
- Websites
- Powerpoints
- Podcasts
- Apps
- Games
- iBooks
On a range of devices
THE DIGITAL AGE

THE WAY WE WERE TO WHERE WE ARE NOW
“If you always do what you always did, you always get what you always got!”
art, teaching, collaboration, learning, reflective, supportive, science, evidence, authentic, instruction, perceptions, method, personalized, engaged, evidence, delivery, relevant, research, wisdom, teaching-strategies, relationship, teach-to-learn, knowledge, learners, groups, shared, contexts, attitude, listening, purposeful, shared-understanding, hearing, learning, inquiry, method, connected, connected, developing, dispositions, responding, changes, knowing, meta-cognition, challenging, risk-taking, discourses, theory, involving, design, involved, thinking, engaged, relationship, teaching-strategies, engaged, engaged.
In a typical day I might teach three different types of class:

The traditional didactic method

iPad class

Remotely, on-line
Intended to convey instruction and information as well as pleasure and entertainment

A teaching method that follows a consistent scientific approach or educational style to engage the student’s mind.

When people are didactic, they’re teaching or instructing. This word is often used negatively for when someone is acting too much like a teacher.
King’s College
Online
Mathematics
Bridging Course
Each lesson may consist of the following:

Lesson Outline (a Word document)
Lesson Details (a Powerpoint)
Test (ScholarNet)
Assessment (a Word document)
Podcast
On-line lesson

These files are sent to students via e-mail and are available on the Bridging Course website.
\[ x^2 + 4x + 1 = 0 \]

\[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

\[ a = 1, \ b = 4, \ c = 1 \]

\[ x = \frac{-4 \pm \sqrt{16 - 4 \times 1 \times 1}}{2 \times 1} = \frac{-4 \pm \sqrt{12}}{2} = \]
Why do it?
Lots of people are doing it.

Homework, the Flipped classroom
Catch-up sessions, the Khan Academy
Distance/Industry learning
Hobby courses
Revision courses
Tertiary courses
I could not connect.

Sir, I cannot give you a good explanation, I'll admit, I forgot

Then thought I needed a webcam and microphone
to talk on a computer (which I didn't have).

I was not able to use a computer.

I did not have access to a computer

My computer was getting repaired & Internet had some problems.

I went on at 7:30 and nothing was there.

My internet at home was down.

I was quite busy on Tuesday and so forgot to attend the class.

I was busy doing the two tests and Latin revision.

My computer was broken and won't be available till next month

I did not attend because I had competitive swim training
Assessment

Number of Students:

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
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<td>35</td>
<td>33</td>
<td>31</td>
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</table>
Welcome to the Mathematics Bridging Course 2011.

My name is Ro Bairstow. If you want to know why I am able and qualified to teach you this course visit ABOUT ME.

This course is designed to cover some topics you may not have done in NCEA Level 1 and covers some topics in a bit more depth to prepare you for next year. It should also help with your current course.

I have split the course into 11 Topics which means one topic per week until the end of November. Click here for COURSE DETAILS.

The website we will be using is:
**Assessment**

You can get Assessment Seven either:

- As an attachment from your weekly e-mail
- From the Blackboard website.

Show as much working as you can.

Please e-mail the solutions to me as a Word document by the evening of Thursday, 1 November.
Podcasts

A **podcast** is a digital file broadcast to people and played back on iPod, MP3-type player or computer. Podcasts can be just sound files. Enhanced podcasts can have sound, images and video.
Scholarnet

• The Year 7 to Year 13 curriculum content website,

• At www.scholarnet.co.nz

• Contains notes, exercises, quizzes, tests, animations and much more.

• At least 50 topics for each year level (100 in Year 13).
### List of topics for Year 11

<table>
<thead>
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<th>Algebra</th>
<th>Geometry and Graphs</th>
<th>Trigonometry</th>
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<td>17</td>
<td>Arithmetic Series</td>
<td>35</td>
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<tr>
<td>18</td>
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<td>Non-right-angled Triangles</td>
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<td>Trigonometric Graphs</td>
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<td>41</td>
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<td>53</td>
<td>Scalar Product and the Ratio Theorem</td>
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</tbody>
</table>
Linear equation and a Circle

The line $y = 2x + 1$ and the circle $x^2 + y^2 = 1$ intersect in two places (see graph below).

To solve these two equations algebraically use the substitution method.

$y = 2x + 1 \quad \cdots \text{A}$

$x^2 + y^2 = 1 \quad \cdots \text{B}$

$x^2 + (2x + 1)^2 = 1$

(subst $y = x$ into B)

$x^2 + 4x^2 + 4x + 1 = 1$

(expanding)

$5x^2 + 4x = 0$

(re-arranging)

$x(5x + 4) = 0$

$x = 0$ or $x = -0.8$

When $x = 0$

$y = 2 \times 0 + 1 = 1$

(substituting into A)

When $x = -0.8$

$y = 2 \times (-0.8) + 1 = -0.6$

(substituting into A)

The solutions are $(0, 1)$ and $(-0.8, -0.6)$.

Linear equation and a Hyperbola

The line $2x + y = 7$ and the hyperbola $xy = 5$ intersect in two places (see graph below).
## Simultaneous Equations

### Unit Test #11

Select your answers to the following 10 questions from the pop-up menus in the right hand column. When you are satisfied with your answers, fill in your name in the space provided below the test, and click the "Submit Test" button. Clicking the "Begin Test Again" button will clear all the answers.

| Q1: The point that lies on both the lines $3x + 4y = 18$ and $x - 4y = -10$ is | A. $(6, 0)$  
B. $(2, -3)$  
C. $(4, 1.5)$  
D. $(2, 3)$ | Answer 1:  |
|---|---|---|
| Q2: What is the solution set for the following simultaneous equations $y = 5$ and $x = -2$? | A. $(5, -2)$  
B. $(-2, 5)$  
C. $(0, 5)$  
D. $(-2, 0)$ | Answer 2:  |
| Q3: What is the solution set for the following simultaneous equations $y = 2x$ and $y = -2x$? | A. $(0, 1)$  
B. $(1, 0)$  
C. $(0, 0)$  
D. $(-1, 1)$ | Answer 3:  |
| Q4: A point that lies on the graphs of both $x - y = 7$ and $xy = -12$ | A. $(4, -3)$  
B. $(2, -3)$  
C. $(4, -1.5)$  
D. $(2, 3)$ | Answer 4:  |
| Q5: Find the value of $x$ and $y$ which satisfies the simultaneous equations $2x + 3y = 0$ and $3x + 2y = 5$ | A. $(0, 4)$  
B. $(3, -2)$  
C. $(2, -3)$  
D. $(4, 0)$ | Answer 5:  |
Simultaneous Equations

Show all of your working.

Give your solution in the form \((x, y)\)

1. Solve each pair of simultaneous linear equations using the most appropriate method:
   
   a. \(x + y = 4\)  
      \(x - y = 2\)
   b. \(y + 2x = 7\)  
      \(4x - y = 11\)
   c. \(y - 5x - 1 = 0\)  
      \(y + 2x - 8 = 0\)
   d. \(2y = 7 - 3x\)  
      \(3y = 2x + 4\)
   e. \(5y + 4x = 47\)  
      \(y - 2x = -13\)
   f. \(7x - 5y = 45\)  
      \(2x + 3y = 4\)
   g. \(3x - 4y = 7\)  
      \(2x - y = 3\)
   h. \(y = -2x + 7\)  
      \(y = 4x - 11\)
   i. \(y + 6 = x\)  
      \(2y + 3 = x\)
   j. \(3x + 6y = 18\)  
      \(5x - y = 8\)
   k. \(x = 3 + y\)  
      \(2x + 4y = 12\)
   l. \(y = x - 4\)  
      \(3x + 2y = 2\)
   m. \(x - 3y = 2\)  
      \(2x + 3y = 7\)
   n. \(3x - 4y = 19\)  
      \(2x + y = 9\)
   o. \(y = 7x + 4\)  
      \(y = 2x - 1\)

2. Solve the following pairs of simultaneous equations:
   
   a. \(y = x^2\)  
      \(y = x + 2\)
   b. \(x^2 + y^2 = 10\)  
      \(xy = -12\)
   c. \(x = y - 7\)  
      \(y = -2x - 3 = 0\)
   d. \(y = 2x - 3\)  
      \(x^2 + y^2 = 9\)
   e. \(xy = 6\)  
      \(y = x - 5\)
   f. \(y = 2x^2 + 5x + 4\)  
      \(y = -2x - 3 = 0\)
   g. \(y = x^2 - 7x + 18\)  
      \(y = 3x - 7\)
   h. \(x^2 + y^2 = 13\)  
      \(y = x + 1\)
   i. \(i + \frac{6}{x}\)  
      \(y = x - 2\)
   j. \(x = y - 3\)  
      \(y = \frac{1}{x + 1}\)
   k. \(8 - 3x + 2y = 0\)  
      \(y^2 = 3x\)
   l. \(y = 24 + 2x - x^2\)
   m. \(y = 12 - 2x\)

For each of the following word problems, write a pair of simultaneous equations and then solve them before writing your answer as a statement.

3. Six pies and sixteen cokes cost $44, and two pies and four cokes cost $12.
   What is the cost of:
   (a) One pie (b) One coke

4. The cost of developing 20 large photographs and 24 small photographs is $232.
   Twelve large photographs and 32 small photographs cost $192. What would be the cost of developing:
   (a) One large photograph
   (b) One small photograph

5. Five CDs and two tapes cost $196.
### Simultaneous Equations

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>a</td>
<td>(3, 1)</td>
<td>b</td>
</tr>
<tr>
<td>d</td>
<td>(1, 2)</td>
<td>e</td>
</tr>
<tr>
<td>g</td>
<td>(1, -1)</td>
<td>h</td>
</tr>
<tr>
<td>j</td>
<td>(2, 2)</td>
<td>k</td>
</tr>
<tr>
<td>m</td>
<td>(3, 1/3)</td>
<td>n</td>
</tr>
</tbody>
</table>

2. a. (4, 16) and (1, 1)  
   b. (-3, -1) and (1, 3)  
   c. (-4, 3) and (-3, 4)  
   d. (0, -3) and (12/5, 9/5)  
   e. (6, 1) and (-1, -6)  
   f. (-1/2, 2) and (-1, 1.5)  
   g. (5, 8)  
   h. (-3, -2) and (2, 3)  
   i. (4, 2) and (-2, -4)  
   j. (-2, 1)  
   k. (16/3, 4) and (4/3, -2)  
   l. (6, 0) and (-2, 16)

3. A pie costs $2 and a coke costs $2.

4. A small photograph costs $3 and a large photograph cost $8.

5. Three CDs and four tapes cost $168.

6. The two numbers are 38 and 74.


8. A kg of bananas costs $2 and a kiwifruit costs 50 cents.

9. The two numbers are 100 and 68.

10. The number is either 2 or -8.
Click on the question you wish to answer, in any order.
The questions in RED are about TRIGONOMETRY.
The questions in BLUE are about GEOMETRY AND GRAPHS.
The questions in GREEN are about ALGEBRA.
The questions in BROWN are about CALCULUS.
The questions in PURPLE are about PROBABILITY AND STATISTICS.

If you need help on a particular question, click on the HINT button.
Random Student Comments

“Downloading it was really good, I actually preferred it to normal classes!

“I found it really great being able to work at my own pace, and everything was really self-explanatory.”

“The biggest problems I encountered would have to be confusion over questions and skills, and being unable to talk it through with someone in person.”

“I found the course was well-organised, it was good having it all on-line, which made it easy to contact you with problems and questions.”
Student Problems

Downloading assessments and lessons but I think it was our computer more than anything else.

Trying to manage the extra work with exams and work.

The emails with all of the attachments were really large and so took up most of the space on my email account.

I found it difficult to type in some of my answers for assessments into the computer, because I had no idea how to use the Equation Editor program.
Advice for Teachers

Make sure you get clear e-mail addresses that students use regularly (preferably no hotmail addresses).

Make passwords and usernames to websites clear and easy to remember.

Encourage them to use Equation Editor and to format answers mathematically.

Prepare model answers to save having to write too many corrections.
To summarise

✓ There is a need to be digitally well-organised
✓ The work-load is high
✓ You have to cover all types of hardware/software
✓ Be aware of different levels of student ICT expertise
✓ It is easy for students to fall by the wayside
✓ It’s fun and a bit different and generally students seem to like it.
Finally...

Find the y-values:
As $y = 2x - 6$
When $x = 4$, $y = 2(4) - 6 = 2$
So one solution is $(4, 2)$

When $x = 2$, $y = 2(2) - 5 = -1$
The other solution is $(2, -1)$
Next year two Year 9 classes, a top stream and a middle stream class and two Year 10 classes will be asked to bring an iPad to school.
<table>
<thead>
<tr>
<th>Dr Ruben Puentejura – <strong>SAMR model (2011)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENHANCEMENT</strong></td>
</tr>
<tr>
<td>Technology used to do things more efficiently (productivity).</td>
</tr>
<tr>
<td><strong>Substitution</strong></td>
</tr>
<tr>
<td>Technology acts as a direct tool substitute with no functional change or improvement.</td>
</tr>
<tr>
<td><strong>Augmentation</strong></td>
</tr>
<tr>
<td>Technology acts as a direct tool substitute with functional improvement.</td>
</tr>
<tr>
<td><strong>TRANSFORMATION</strong></td>
</tr>
<tr>
<td>Technology used to extend the <em>reach</em> of teaching and learning or the task.</td>
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<tr>
<td><strong>Modification</strong></td>
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<tr>
<td>Technology allows for significant task <em>redesign</em>.</td>
</tr>
<tr>
<td>Technology used as a transformational device</td>
</tr>
<tr>
<td><strong>Redefinition</strong></td>
</tr>
<tr>
<td>Technology allows for creation of new tasks previously inconceivable.</td>
</tr>
</tbody>
</table>
Impacts of ICT on Teaching and Learning

- Investigating reality and building knowledge
- Promote active learning and authentic assessment
- Engage students by motivation and challenge
- Provide tools to increase student productivity
- Provide scaffolding to support higher level thinking
- Increase learner independence
- Promote collaborative and co-operative learning
- Tailoring learning to the learner
- Overcome physical disabilities
Welcome to the wiki and blog for students and parents participating in the 2013 iPad project. This is the major means of communicating aspects of the project to you.

Contents

Preparation
- Background
- Research
- Goals
- iPads Elsewhere
- Mobile Learning

Technical Support
- iPad Configuration
- iTunes Account
- Required Apps [Students]
- Hints and Tips
- WebDAV

iPads in Practice
- Using the Apps
- Resources
- 9 Protocols for iPad Use
9 iPad Protocols

1. Be organised:
   1.1. When sending documents to teachers or handing in work, name the document as follows:
       Surname_Name of work.pdf [e.g. Smith_Caecilius Exercises.pdf]
   1.2. Send files as PDF files unless instructed otherwise. Google limits mail attachments to 25MB.
   1.3. Create subject folders in each of the productivity apps and file your work appropriately.

2. Be careful: back up to iCloud regularly (at least every day).

3. Be sensible: do not carry the iPads in your hand or use them during the school day between lessons: keep them securely in your bag and never leave your iPad unattended.

4. Be responsible: do not lend your iPad to another person or allow anyone to access your iPad, and keep your Passcode and KCUsers password secret.

5. Be proactive: when your teacher instructs you to put "Lids on," do so immediately.

6. Be on task: playing games or visiting social sites such as Facebook in class or between classes is inappropriate use, unless you've been specifically instructed to do so by your teacher. Similarly, using Messages, FaceTime or the camera in class or prep time is inappropriate use, unless you've been specifically instructed to do so by your teacher.

7. Be original: do not plagiarise, either from another student or from the internet. Although it is easier when using computers, it is much more obvious to spot. You will get caught.
Section 1 Basic Number Theory

Question 1.1 Types of numbers
Write 17 370 000 in standard form.
A. $1.737 \times 10^7$
B. $1.737 \times 10^6$
C. $1.737 \times 10^5$
D. $1.737 \times 10^4$

Question 1.2 Venn Diagrams
Which expression shows the shaded region?

A. $A \cap B'$
B. $A' \cap B$
C. $A \cup B'$
D. $A' \cup B$

Question 1.3 Integers
During one week in August at Milford Sound, New Zealand, the daily minimum temperatures were:

<table>
<thead>
<tr>
<th>$-3^\circ$C</th>
<th>$0^\circ$C</th>
<th>$-1^\circ$C</th>
<th>$-2^\circ$C</th>
<th>$-5^\circ$C</th>
<th>$-6^\circ$C</th>
<th>$1^\circ$C</th>
</tr>
</thead>
</table>

Which is the lowest of these temperatures?
A. $0^\circ$C
B. $-6^\circ$C
C. $-1^\circ$C
D. $1^\circ$C

Question 1.4 Proportion
Eva changed 500 dollars ($) into pounds (£) when the exchange rate was $1 = £0.55.$
She later changed all the pounds back into dollars when the exchange rate was $1 = £0.75.$
How many dollars did she receive?
# Algebra Revision

These are the type of questions that more than 40% of you got wrong in the recent algebra tests.  
FIND OUT HOW and GET THEM RIGHT!

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<tr>
<th>Question 1 *</th>
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</thead>
<tbody>
<tr>
<td>Simplify $\frac{5p}{8} \times \frac{2p}{15}$</td>
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</table>

<table>
<thead>
<tr>
<th>Question 2 *</th>
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<tbody>
<tr>
<td>Expand and simplify $5q(3q + 4) - 4q(2q - 3)$</td>
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</table>

<table>
<thead>
<tr>
<th>Question 3 *</th>
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<tbody>
<tr>
<td>Factorise $p^2 - 6p - 7$</td>
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Before you begin *
Type in your e-mail address AND your name
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<th>A</th>
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<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>Question 5</td>
<td>Question 6</td>
<td>Question 7</td>
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<td>Question 10</td>
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<td>6/4/2012 22:24:20</td>
<td>Mr Bairstow</td>
<td>12</td>
<td>4x</td>
<td>0</td>
<td>1</td>
<td>4x^2 - 6x</td>
<td>3x/y</td>
<td>2x^2 + 3x - 10</td>
<td>x^2 + 3x - 10</td>
<td>9x^2 - 2x - 15x</td>
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<tr>
<td>3</td>
<td>6/4/2012 22:31:51</td>
<td>Alex Qu</td>
<td>14</td>
<td>4x</td>
<td>0</td>
<td>x^2</td>
<td>2x^2 - 6x</td>
<td>-3x^2(2x-1)</td>
<td>3x^2 + 2x - 15x</td>
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<td>4</td>
<td>6/4/2012 22:33:22</td>
<td>Sajid A.</td>
<td>14</td>
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<td>0</td>
<td>x^2</td>
<td>2x^2 - 6x</td>
<td>-3x^2(2x-1)</td>
<td>3x^2 + 2x - 15x</td>
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<td>x^2 + 3x - 10</td>
<td></td>
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9iR Revision Questionnaire

Fill in these questions to help me organise your revision programme. Use this list to select the 3 topics most in need of revision for you.

Prime Factors, Standard form, Significant figures, Ratios, Fractions, Decimals, Percentages, Linear Equations, Expanding, Factorising Quadratics, Common Factors, Quadratic Equations, Straight line Graphs, Pythagoras Theorem, Trigonometry, Probability, Tree diagrams, Area of shapes, Volume of objects, Metric Units, Geometry. Any other topic please type in.

1 *
What is your name?

2 *
Revision Need 1

3 *
Revision Need 2

4 *
Revision Need 3

5 *
Why did you not attend the On-line Revision Class on Tuesday evening at 8.30pm?
The Basic Apps

**General Apps**
Pages (word processing)
Numbers (spreadsheet)
Keynote (presentation)
Remarks (PDF reader / note taking)
Adobe Reader

**Maths Apps**
Math! (Your Teacher)
Quick Graph (graphing calculator)
Maths Flyer
Wolfram Alpha
IGCSE Tester
Maths365

**iBooks**
Pearson’s Barton Series
BestMaths Series (IGCSE)
  - Basic Number Theory
  - General Geometry
  - Measurement and Trigonometry
  - Algebra and Equations
  - Functions and Graphs
  - Probability and Statistics
  - Transformation Geometry, Matrices and Vectors

**Games**
BestMaths Series (All courses - iPad/iPhone)
  - Number Nightmare
  - Multiple Madness
  - Siggy Figgy
  - Silly Circles
  - Get Set
  - Trig Terror
  - Stunning Stats
BestMaths

BEGIN

\[ y = \frac{2}{3}(x)(x-6) \]
\[ y = \frac{1}{3}(x^2 - 6x) \]
\[ y = \frac{1}{3}x^2 - 2x + \frac{1}{3} \]

Solve:
1. \( 4 + 3 = 7 \)
2. \( 1 + 12 = 1 \)
3. \( 7m - 4 = 6 \)
4. \( 4 \left( \frac{9}{3} \right) = 40 \)
5. \( 3(2m+8) = 60 \)
Basic Number Theory

Babbage’s Difference Engine - one of the earliest calculators.
Order of Operations

In calculations involving several operations, the word **BEDMAS** shows the order in which each operation should be carried out.

**BEDMAS** means:

- **Brackets**: Work out the value of any expressions inside brackets.
- **Exponents**: Work out the value of any numbers or expressions with exponents or indices. Sometimes shown as ‘of’ meaning multiply.
- **Division**
- **Multiplication**

> If these two operations occur together, work from left to right.

**Addition**

**Subtraction**

> If these two operations occur together, work from left to right.

**Integers**

Use a number line when adding and subtracting integers. The first integer is the starting point on the number line.

**Addition**

- When adding a positive integer, move to the **right**.
  - eg 4 + 2 = 6

- When adding a negative integer, move to the **left**.
  - eg 4 + (-2) = 2
Exercise 1.1 Order of Operations and Integers

(a) \( 10 - (5 + 2) \)
(b) \( 10 - 5 + 2 \)
(c) \( 70 / 7 + 2 \)
(d) \( 70 - 10 + 5 \)
(e) \( 3 + 4^2 \)
(f) \( 14 - 5 \times 2 + 6 \)
(g) \( 8 - (6 + 2) \)
(h) \( 8 \times 2 + 4 \)
(i) \( 4 \times 2 - (3 + 8) \)
(j) \( 3 - 2 \times (6 - 6) \)
(k) \( 14 \times 13 - 14 \times 3 \)
(l) \( (3 - 2) \times 4 + 2 \)

2. Calculate:
   (a) \( 3 + 2 \)
   (b) \( 8 + 5 \)
   (c) \( 2 + 3 \)
   (d) \( 3 \times 2 \)
   (e) \( 14 - 2 \)
   (f) \( 4 - 2 \)
   (g) \( 2 - 3 \)
   (h) \( 8 \times 2 \)
   (i) \( 8 + 4 \)
   (j) \( (2)^3 \times 4 \)
   (k) \( 2 \times 3 \times 4 \)
   (l) \( 3 - 2 + 5 \)

3. Evaluate, if \( p = 3 \) and \( q = 2 \):
   (a) \( \frac{12}{p} \)

Try to do these without a calculator!
The table illustrates these rules:

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John Napier (1550-1617)

John Napier was born in Edinburgh in Scotland. As a Laird he was well educated in France spending most of his early years studying agriculture on his farms. He was an inventor and he invented war machines such as a tank-like chariot, guns with a range of 4 miles and "burning mirrors" to stop a Spanish Armada. Mathematics was his main area of interest and he studied methods for extracting all real roots of positive numbers and began to consider imaginary roots. His major work, however, was concerned with calculating methods. One such method was using numbered rods, known as Napier's Bones to perform
Describe the TYPE of number

Choose from: Square, cube, prime, even, odd, whole, rational, irrational, integer. Give ALL of the types above for each number.
Describe the TYPE of number

Number 3
125 is cube, odd, whole, rational and an integer

Choose from: Square, cube, prime, even, odd, whole, rational, irrational, integer. Give ALL of the types above for each number.
Some *Special* Sequences

A selection of *Sequences with Special Properties*
The Fibonacci Sequence of numbers is 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, ...

Each number in the sequence is made by adding the two previous numbers.

A formula, called the recursive relation, that produces the sequence can be written

$$F_n = F_{n-1} + F_{n-2}$$

The Fibonacci Sequence has many interesting properties including the Golden Ratio.
Write in order, from largest to smallest, the following numbers: 0.1..., 0.11, 10/99, 1111 \times 10^{-4}