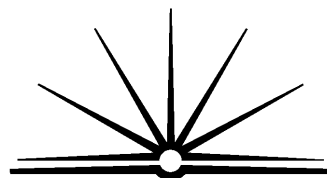


Overview of the Mathematics K–6 Syllabus



Implementation

- **K–6 Syllabus:**
determined by systems
- **Years 7–10 Syllabus:**
 - 2004 – Years 7 and 8
 - 2005 – Years 7 to 9
 - 2006 – Years 7 to 10

Continuum of learning K–10

- overview of key ideas
- illustrates prior learning and pathways for future learning
- content is not repeated

K–10 Mathematics continuum

The table is titled 'K-10 Mathematics continuum' and is organized into several sections. The top row lists stages from 'Early Stage 1' to 'Stage 6.3'. The first section is 'Working Mathematically', which includes 'Reasoning' and 'Problem Solving' across all stages. Below this are four 'Continuum of Key Ideas' sections: 'Number', 'Patterns and Algebra', 'Data', and 'Measurement'. Each section contains a grid of key ideas mapped against stages and classes. The 'Number' section includes key ideas like 'Number Systems', 'Number Properties', 'Number Operations', and 'Number Relationships'. The 'Patterns and Algebra' section includes 'Patterns', 'Algebraic Thinking', and 'Algebraic Structures'. The 'Data' section includes 'Data Representation', 'Data Interpretation', and 'Data Analysis'. The 'Measurement' section includes 'Length', 'Area', 'Volume', 'Mass', and 'Time'. The 'Space and Geometry' section includes 'Shape and Space', 'Measurement', and 'Probability'. The table uses color coding to indicate the progression of learning across different levels.

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The new K–10 Mathematics Syllabuses

- programming
- Working Mathematically
- Essential Content and Additional Content
- assessment *for* learning/
assessment *of* learning

K–10:

Essential Content in six strands

■ *process strand* :

Working Mathematically

■ *content strands* :

Number, Patterns and Algebra *,

Data *, Measurement,

Space and Geometry

Support for Mathematics K–6

- Principal's Package
- Introduction for Parents/Community Members
- Sample Units of Work
- CD-ROM:
 - all print documents
 - assessment activities with annotated work samples
- all materials available:
 - K–6 website: www.bosnsw-k6.nsw.edu.au
 - email: clientservices@boardofstudies.nsw.edu.au

K-6 CD-ROM

...1

Early Stage 1 Assessment Activities and Work Samples

- ACTIVITY 1 Construct a tower
 - Work Sample 1
 - Work Sample 2
 - Work Sample 3
- ACTIVITY 2 Comparing length
 - Work Sample 1
 - Work Sample 2
- ACTIVITY 3 How many dots?
- ACTIVITY 4 Where's the number?
- ACTIVITY 5 Favourite Fruit
- ACTIVITY 6 Peg Cards
- ACTIVITY 7 Spotty Henry
- ACTIVITY 8 Halves

Stage 1 Early Stage 1

Stage 1 Assessment Activities and Work Samples

- ACTIVITY 1 Chelsea at the zoo
 - Work Sample 1
 - Work Sample 2
 - Work Sample 3
- ACTIVITY 2 Time of day
- ACTIVITY 3 Wake up
- ACTIVITY 4 The beach
- ACTIVITY 5 Hidden number

Early Stage 1

Stage 2 Assessment Activities and Work Samples

- ACTIVITY 1 Ordering fractions and decimals
 - Work Sample 1
 - Work Sample 2
 - Work Sample 3
- ACTIVITY 2 Survey
- ACTIVITY 3 Helping hand
- ACTIVITY 4 Flag design
- ACTIVITY 5 Is it fair?
- ACTIVITY 6 Recording my strategies

Early Stage 1

Stage 3 Assessment Activities and Work Samples

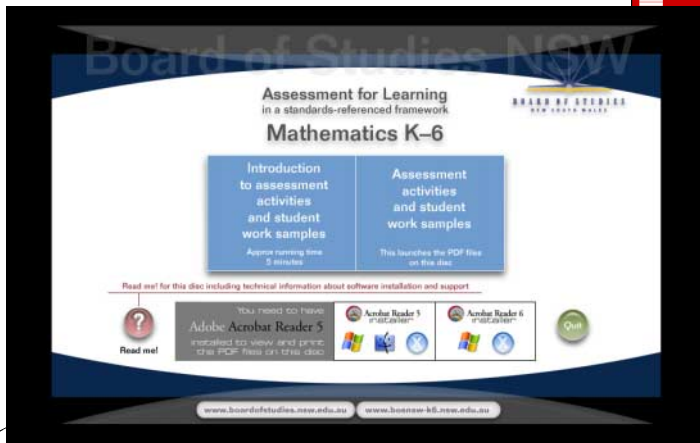
- ACTIVITY 1 Rectangular prisms
 - Work Sample 1
 - Work Sample 2
 - Work Sample 3
- ACTIVITY 2 A day in my life
- ACTIVITY 3 What's the problem?
- ACTIVITY 4 Changing rectangles
- ACTIVITY 5 Triangles
- ACTIVITY 6 Interpret the graph

Early Stage 1

Stage 4 Assessment Activities and Work Samples

- ACTIVITY 1 Operations with Fractions
 - Work Sample 1
 - Work Sample 2
- ACTIVITY 2 Diagonals of a Quadrilateral
 - Work Sample 1
 - Work Sample 2
- ACTIVITY 3 A4 Paper Cylinder
 - Work Sample 1
 - Work Sample 2

Stage 1 Stage 2 Stage 3 Stage 4 Early Stage 1



Activity 2 Time of day

K-6 Mathematics
STAGE 1

Strands

Measurement, Working Mathematically

Outcomes

Time (MS1.5)

Compares the duration of events using informal methods and reads clocks on the half-hour

Communicating (WMS1.3)

Describes mathematical situations and methods using everyday and some mathematical language, actions, materials, diagrams and symbols

Prior Learning

Students have had experience associating everyday events with particular hour and half-hour times, and describing the position of the hands on a clock.

Students are familiar with the terms 'o'clock' and 'half-past'.

Students are familiar with analog and digital clocks and have had practice reading and recording times on the half-hour.



Syllabus Content page

113

Description of activity

Students draw a picture of an activity they enjoy doing at school, at home or in the community.

In the picture, they are asked to show the time on both an analog and digital clock.

Extension : Students select three events during the day and show the time on both analog and digital clocks.



Individual



20 minutes



Unit Middle

Possible prompts to assist student engagement

- What time does your clock say?
- What can you add to your drawing to show that time of day?
- If half an hour went by what time would your clock say? Can you show me that time on a clock?

Activity 2 Time of day

K-6 Mathematics
STAGE 1

Suggested Materials

Pencils, blank paper.

Indicators

The student, for example:

- reads half-hour time on analog and digital clocks
- associates everyday events with particular hour or half-hour times
- draws a diagram to show how an answer was obtained.

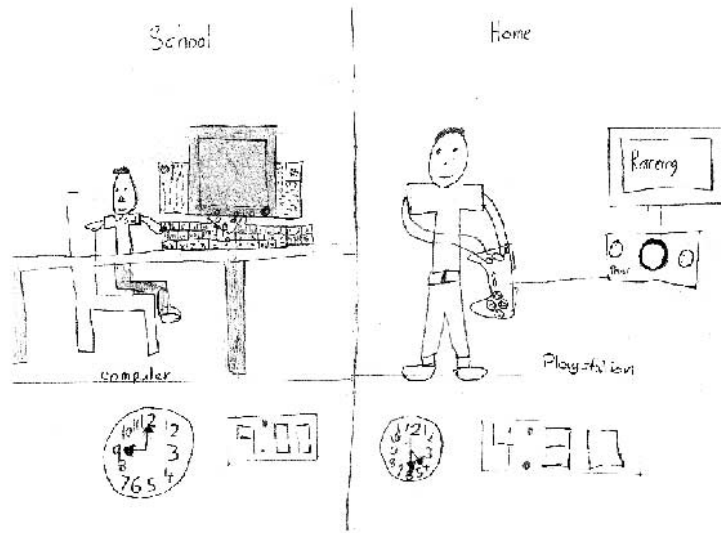
Feedback

Feedback to students may include:

- possible prompt questions related to the assessment activity to assist their engagement
- feedback (oral and/or written) on individual responses to indicate evidence of the ability to read, represent and explain the features of analog and digital clocks
- specific advice about strategies to further consolidate knowledge, skills and understanding, and suggestions for completing related additional activities
- oral feedback (to the class and individuals) related to the overall understanding of the concepts and misconceptions about the mathematical ideas.

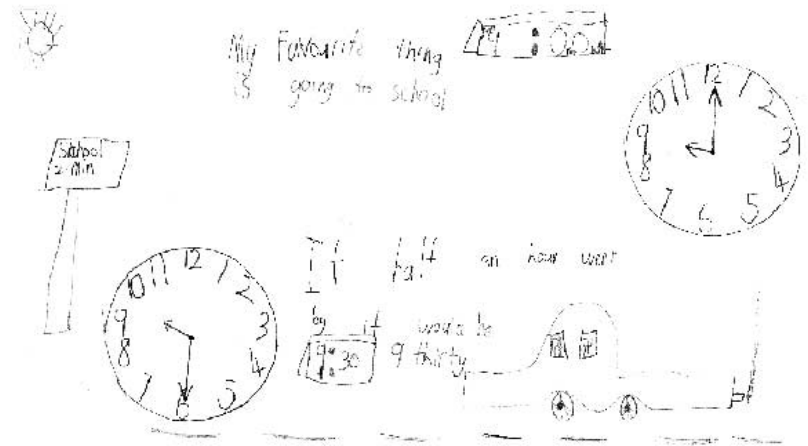
Stage 1
Activity 2
Work Sample 2

VIEW ANNOTATIONS



Stage 1
Activity 2
Work Sample 3

VIEW ANNOTATIONS



Activity 2 – Work Sample 2
Time of day

K-6 Mathematics
STAGE 1

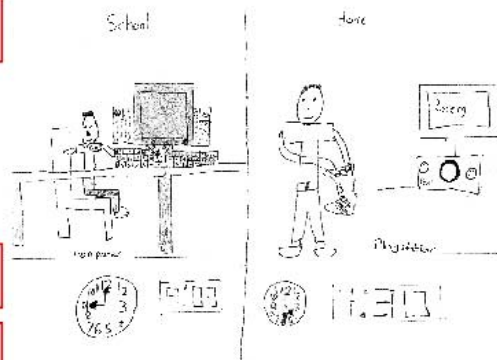
[LINK TO ACTIVITY](#)

[LINK TO PRINTABLE ANNOTATIONS](#)

3 The student associates an everyday ...

1 The student demonstrated features on ...

4 The student attempts to relate digital ...



5 The spelling error in the work sample does ...

2 The student understands that when the ...

Where to from here?

Get the student to list activities that occur on the half-hour, then match these activities to analog and digital clocks. Discuss and demonstrate to the student how the minute hand points to the 6 when it is half-past the hour and how the hour hand has also moved to half-way between two numbers.

Activity 2 – Work Sample 2
Time of day

K-6 Mathematics
STAGE 1

[LINK TO ACTIVITY](#) | [LINK TO ANNOTATED WORKSAMPLE](#)

[VIEW SAMPLE](#)

Annotations

- 1 The student demonstrated features on analog and digital clocks.
- 2 The student understands that when the minute hand points to 6, the hour hand has moved to half-way between two numbers.
- 3 The student associates an everyday event with the time that it occurs.
- 4 The student attempts to relate digital and analog time.
- 5 The spelling error in the work sample does not affect its mathematical quality.

K–6... Number

- ↪ number concepts strengthened
- ↪ focus on visualisation and mental computation
- 5 substrands : Whole Numbers, Addition and Subtraction, Multiplication and Division, Fractions and Decimals, Chance
- ① money
- ↪ negative numbers on the number line
- ① page 59: should read: $-2 - 3 = -5$
 $-3 + 6 = 3$

K–6... Patterns and Algebra

- pre-algebra concepts developed from Early Stage 1
- importance of early number learning in the development of algebraic thinking
- emphasises number patterns and number relationships
- ➔ completing a table of values

K–6... Data

- understand, interpret and analyse data displayed in tabular or graphical forms
- collection, organisation, display and analysis of data
- real-life contexts using concrete materials
- use of technology: spreadsheets, databases, software packages, Internet
 - finding the mean
 - comparison of different displays
 - misleading representation

K–6... Measurement

- compare and order objects
- approximation and estimation
- use of appropriate unit and device in measuring a particular attribute
- 5 substrands: Length, Area, Volume and Capacity, Mass, Time
- ① temperature *not* a substrand
- surface area of a rectangular prism

K–6... Space and Geometry

- representation of shape, pattern, position and movement of objects
- develop angle concepts
- 3 substrands: Three-dimensional Space, Two-dimensional Space, Position
 - ➔ identify and name parts of a circle
 - ➔ determine the *order* of rotational symmetry

Stage 4: Number

- recognises the properties of special groups of whole numbers and applies a range of strategies to aid computation
- compares, orders and calculates with integers
- operates with fractions, decimals, percentages, ratios and rates
- solves probability problems involving simple experiments

Stage 4: Patterns and Algebra

- uses letters to represent numbers and translates between words and algebraic symbols
- creates, records, analyses and generalises number patterns using words and algebraic symbols in a variety of ways
- uses the algebraic symbol system to simplify, expand and factorise simple algebraic expressions
- uses algebraic techniques to solve linear equations and simple inequalities
- graphs and interprets linear relationships on the number plane

Stage 4: Data

- constructs, reads and interprets graphs, tables, charts and statistical information
- collects statistical data using either a census or a sample, and analyses data using measures of location and range

Stage 4: Measurement

- uses formulae and Pythagoras' theorem in calculating perimeter and area of circles and figures composed of rectangles and triangles
- calculates surface area of rectangular and triangular prisms and volume of right prisms and cylinders
- performs calculations of time that involve mixed units

Stage 4: Space and Geometry

- describes and sketches three-dimensional solids including polyhedra, and classifies them in terms of their properties
- identifies and names angles formed by the intersection of straight lines, including those related to transversals on sets of parallel lines, and makes use of the relationships between them
- classifies, constructs, and determines the properties of triangles and quadrilaterals
- identifies congruent and similar two-dimensional figures stating the relevant conditions