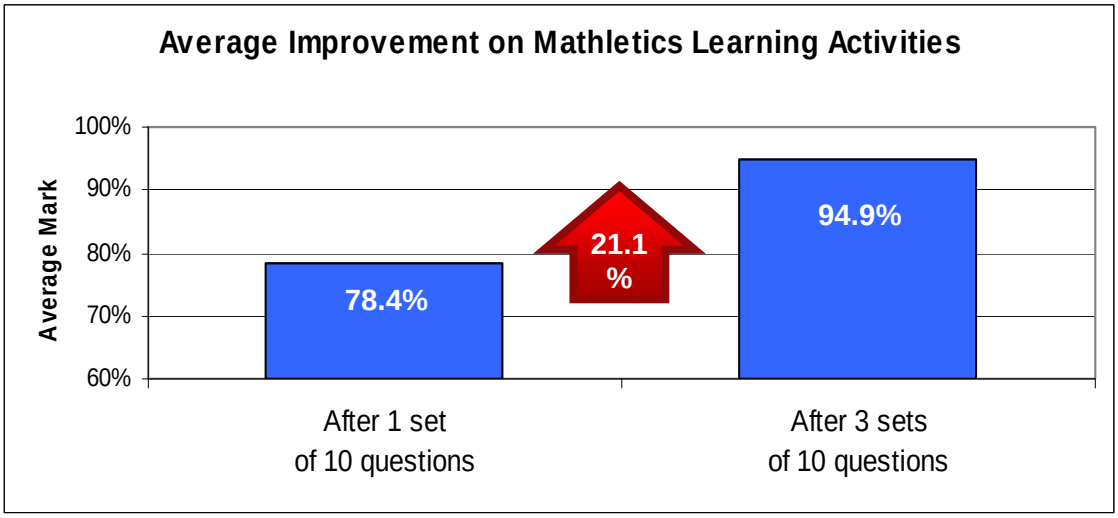
August 2007

Mathletics - Improvement Analysis

Dear Parents and Teachers,

At Mathletics everything we do is focused on helping students improve their Maths.

We have recently analysed over 1.1 billion answers from students who have used Mathletics. We focused on the data of students who have completed three or more sets of 10 questions within the *Curriculum* section. The *Curriculum* section contains over one thousand learning activities ranging from *Adding to 10* in Kindergarten to *Integration of Trigonometric Functions* in Year 12. Typically a set of 10 questions takes a student about 10 minutes and there is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set.



The group average mark after three sets of questions rose by 21.1% from 78.4% to 94.9% - a huge improvement. Perhaps the most gratifying result is the overall average of 94.9% which represents almost complete mastery amongst the entire group. The students and teachers deserve to be congratulated wholeheartedly on these results!

The results are significantly higher than that normally expected by educational programs. The key learning pedagogies built in to Mathletics that have been instrumental in bringing this about include:

Motivating Students – unsurprisingly one of the most critical aspects of any successful educational program is its ability to motivate students. With Mathletics we have focused on tapping into things that intrinsically motivate students, like recognising and rewarding good performance and making the students feel part of a global learning community.

Instant Feedback and Support - students receive instant feedback for every question. We believe this is fundamentally important because it overcomes the problem of students continuing on blindly reinforcing incorrect methods, getting frustrated and thinking that Maths is too hard or something to be avoided. The Teaching Lab provides step-by-step animated instruction of every concept. This helps link understanding and improvement to the immediate question the student has been attempting.

Tangible Improvement - students thrive in an environment where they quickly see that they are making progress; this in turn motivates them to continue on to achieve further success. Conversely it's common for students in traditional class settings to feel that they aren't progressing (even though they usually are) and to become frustrated and to lose motivation.

Progress at Their Own Pace - Mathletics enables students to move forward at a pace that meets their individual needs. For some students this is extremely swift and for others it's slower. Mathletics creates a pace that is customised to the individual student within the context of their classroom.

Formative Information to the Teacher – Teachers receive real time formative data about their students. This means that they target their teaching on both a class and individual basis to where it is most needed within their customised curriculum plan.

Weekly Reports Emailed to Parents – help create a positive and direct link about the improvement and activities of each child.

This report contains samples of the results from our ongoing research.

I encourage any teacher or parent to contact us to discuss any aspect of these results as our core goal is about helping students improve their Maths.

Please feel welcome to contact me directly on shane.hill@3PLearning.com

Kind regards,

Shane Hill
Founder and General Manager

"Mathletics is a product worth 'shouting from the roof-tops' about" - Bronwyn Nowitzke – Head of Mathematics, Croydon High School, United Kingdom

A Sample of the 2,000+ Schools Using Mathletics

Australia
Anglican Church Grammar School
Camberwell Primary School
Geelong Grammar School
Gordon East Primary School
Hale School
Knox Grammar School
Methodist Ladies' College
Penrhos College
Radford College
Woodvale Senior High School

New Zealand
Albany Junior High School
Avondale Intermediate
Cobham Intermediate
Huntley School
Murrays Bay Intermediate
Newlands Intermediate
Paremata School
Scots College
St Kentigern College
Wellington College

United Kingdom
Birchwood Community High School
Centre Academy London
Dulwich College Preparatory School
Glenarm College
King William's College
Lyndhurst Junior School
Ocklynge Junior School
St Edmund's College
St Mary & St Thomas Aquinas Catholic Primary School
Sycamore Junior School

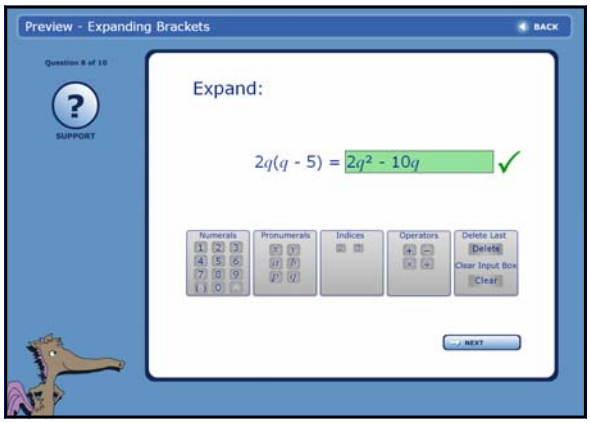
United States
Ross Middle School
P T Coe Elementary School
Crescent Elementary -Jr High School
Beverlye Middle School
W R Thomas Middle School
Bassett Middle School
Douglas Middle School
William A Chapman Elem School
Tuolumne Elementary School
Wiggs Middle School

International Schools
Abu Obaida Independent Preparatory School for Boys
Australian International School Hong Kong
Christina Alliance International School
Ecole International de Genéve
International School of Monaco
International School of Panama
International School of Schaffhausen
International School of Stuttgart
Nanjing International School
Yew Chung International School of Shanghai

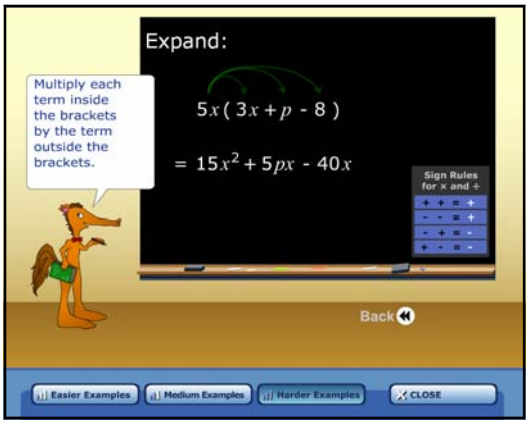
Expanding Brackets, Year 8

About the Activity

Expanding Brackets is contained within the Expanding and Factorising topic of the Year 8 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



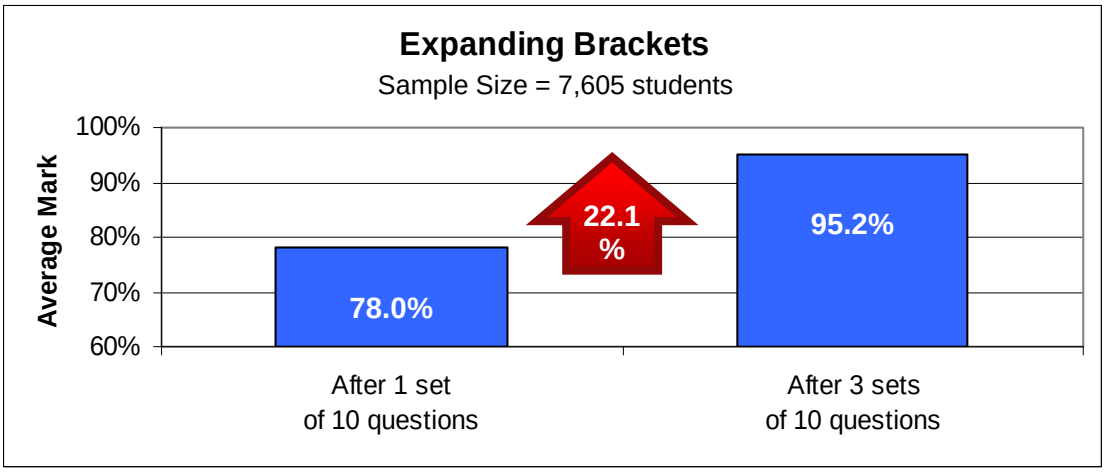
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 7,605 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 7,605 students on their first set of 10 questions was **78.0%**. After 3 sets of 10 questions the average mark of those same students now stands at **95.2%**. This represents an **overall improvement of 22.1%** for the 7,605 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

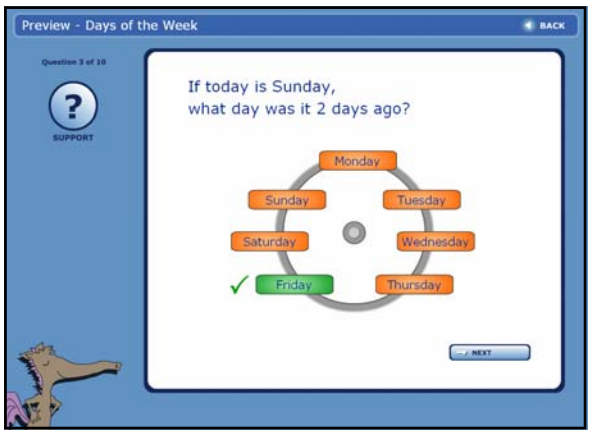
Level of Mastery

The 95.2% average of population sample of 7,605 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.4% of the sample were yet to attain 50%.

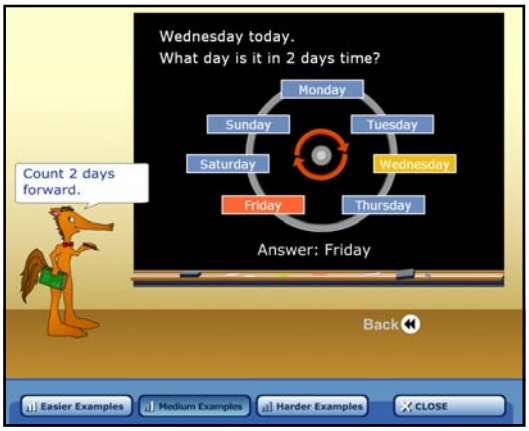
Days of the Week, Kindergarten

About the Activity

Days of the Week is contained within the Time and Data of the Kindergarten course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



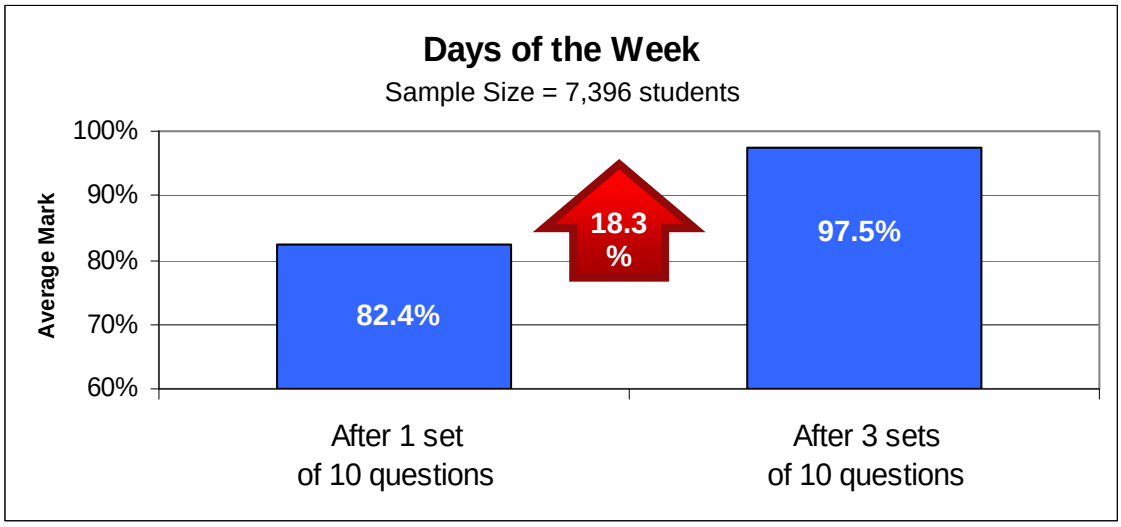
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 7,396 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 7,396 students on their first set of 10 questions was **82.4%**. After 3 sets of 10 questions the average mark of those same students now stands at **97.5%**. This represents an **overall improvement of 18.3%** for the 7,396 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

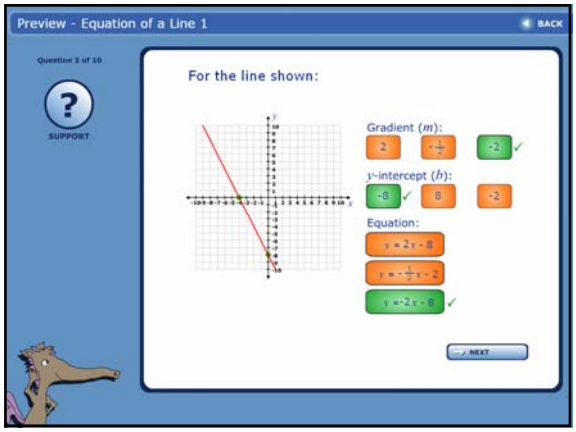
Level of Mastery

The 97.5% average of population sample of 7,396 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.6% of the sample were yet to attain 50%.

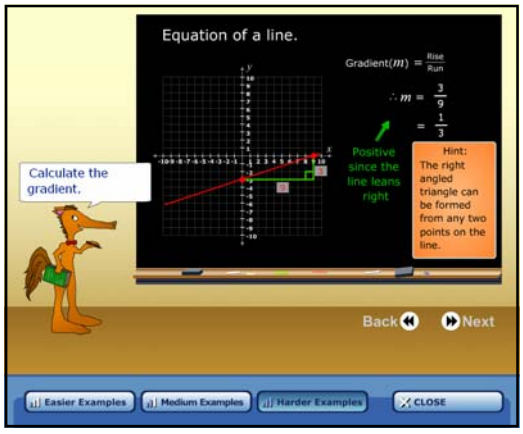
Equation of a Line 1, Year 10

About the Activity

Equation of a Line 1 is contained within the Coordinate Geometry topic of the Year 10 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



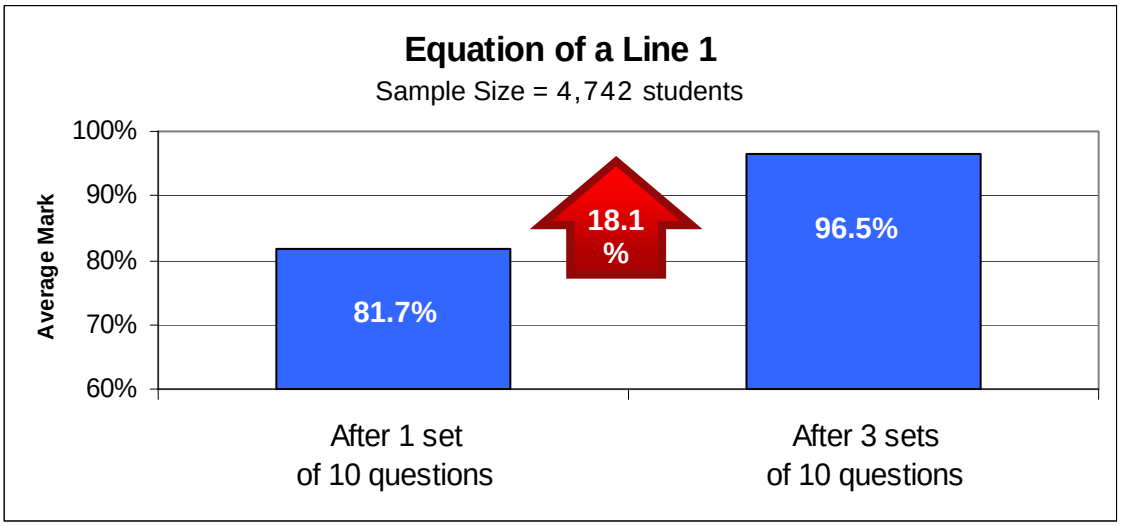
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 4,742 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 4,742 students on their first set of 10 questions was **81.7%**. After 3 sets of 10 questions the average mark of those same students now stands at **96.5%**. This represents an **overall improvement of 18.1%** for the 4,742 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

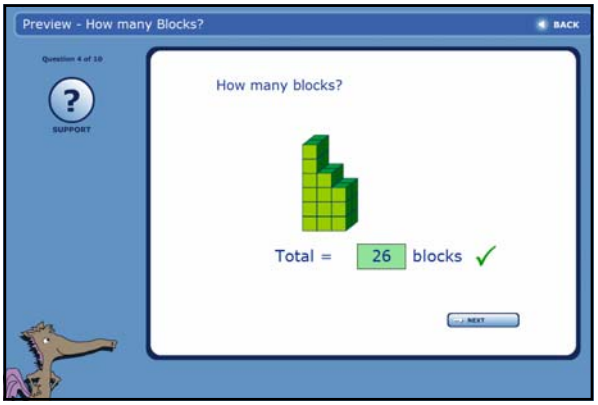
Level of Mastery

The 96.5% average of population sample of 4,742 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.8% of the sample were yet to attain 50%.

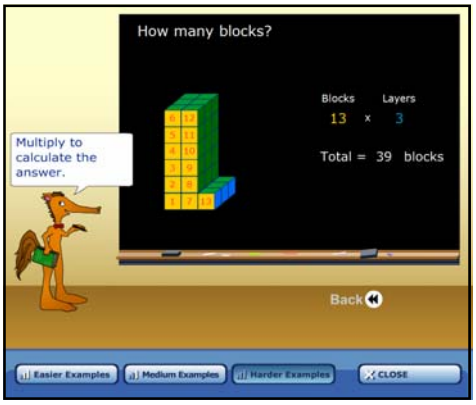
How many Blocks? Year 4

About the Activity

How many Blocks? is contained within the Comparing and Sorting topic of the Year 4 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



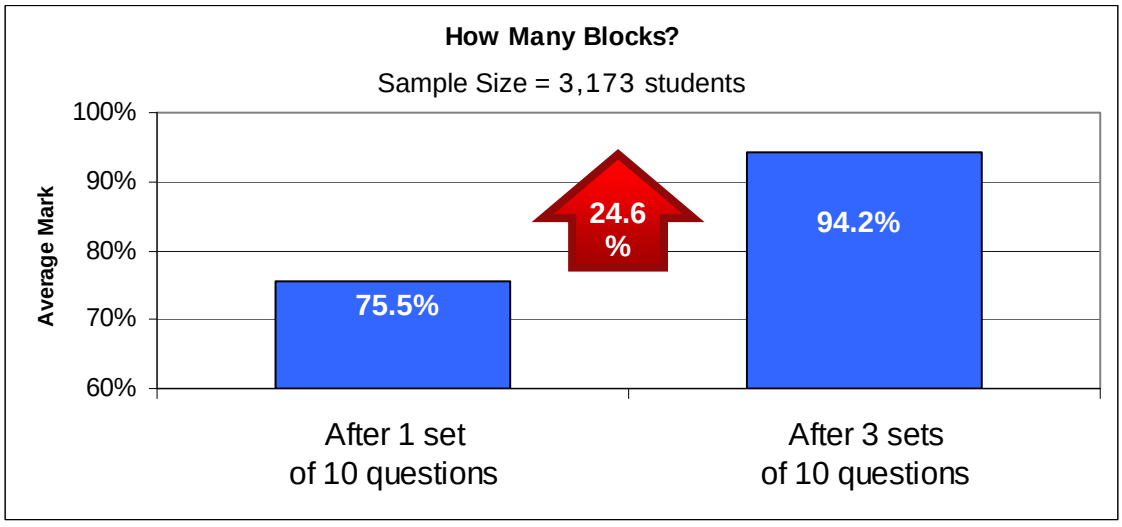
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 3,173 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 3,173 students on their first set of 10 questions was **75.5%**. After 3 sets of 10 questions the average mark of those same students now stands at **94.2%**. This represents an **overall improvement of 24.6%** for the 3,173 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

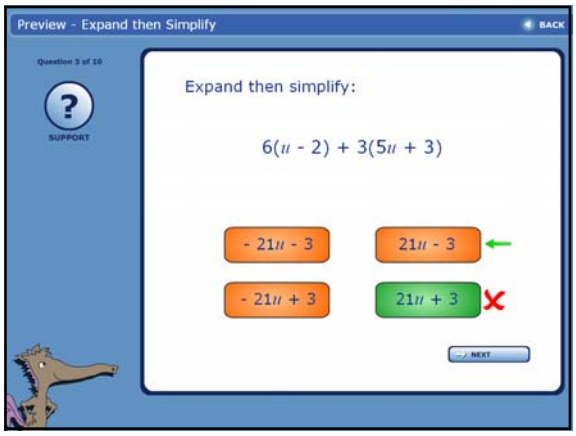
Level of Mastery

The 94.2% average of population sample of 3,173 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.4% of the sample were yet to attain 50%.

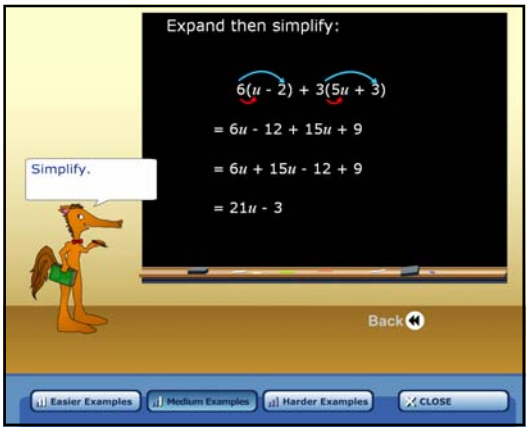
Expand then Simplify, Year 9

About the Activity

Expand then Simplify is contained within the Expanding and factorising topic of the Year 9 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



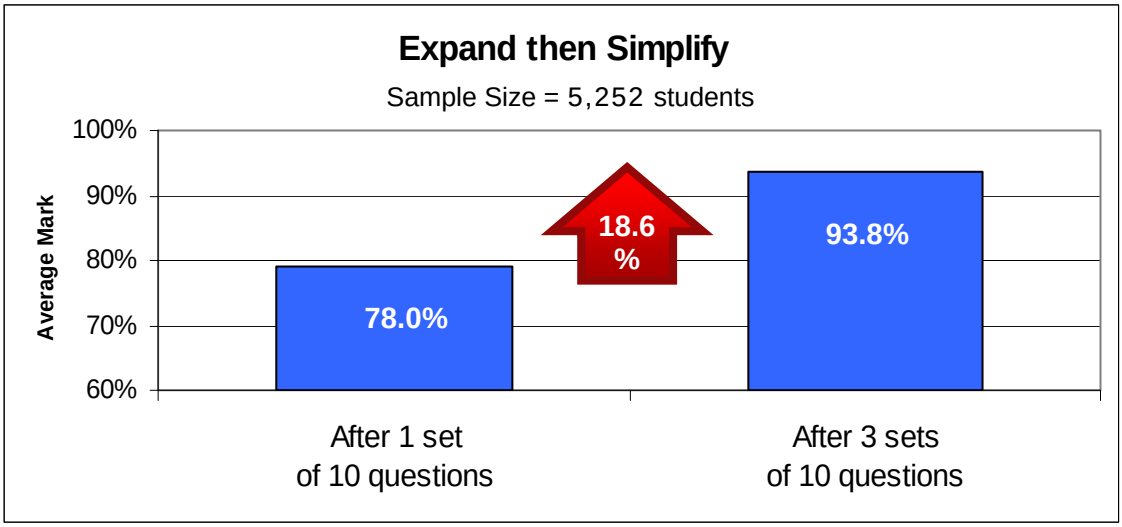
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 5,252 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 5,252 students on their first set of 10 questions was **78.0%**. After 3 sets of 10 questions the average mark of those same students now stands at **93.8%**. This represents an **overall improvement of 18.6%** for the 5,252 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

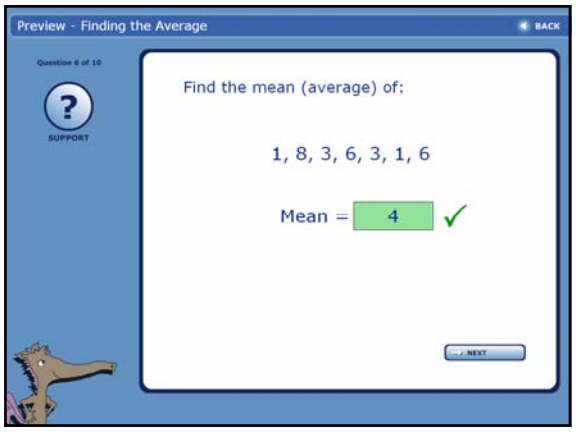
Level of Mastery

The 93.8% average of population sample of 5,252 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 1.8% of the sample were yet to attain 50%.

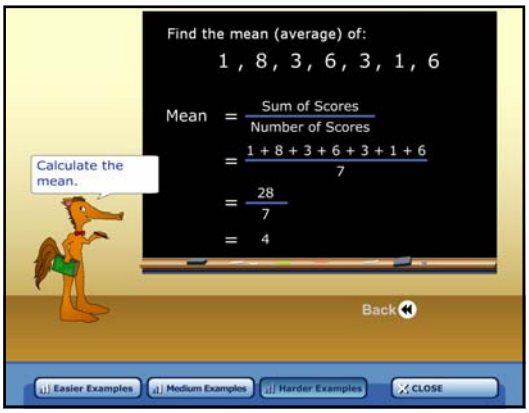
Finding the Average, Year 5

About the Activity

Finding the Average is contained within the Chance and Data topic of the Year 9 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



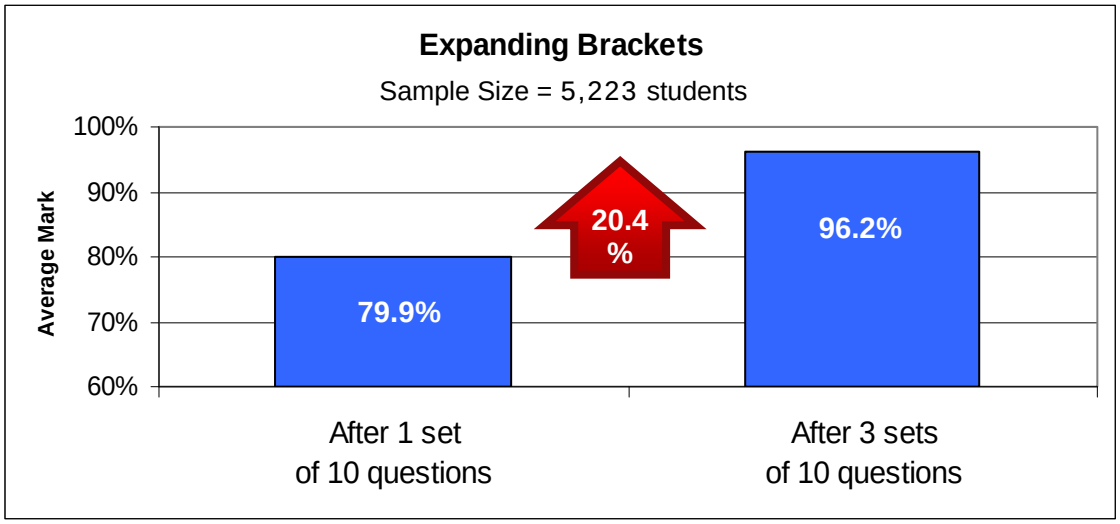
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 5,223 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 5,223 students on their first set of 10 questions was **79.9%**. After 3 sets of 10 questions the average mark of those same students now stands at **96.2%**. This represents an **overall improvement of 20.4%** for the 5,223 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

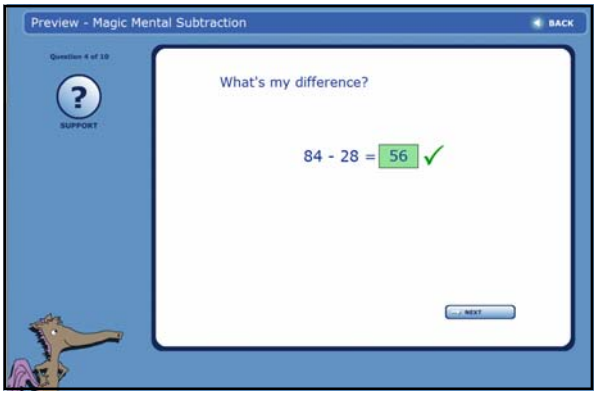
Level of Mastery

The 96.2% average of population sample of 5,223 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 2.1% of the sample were yet to attain 50%.

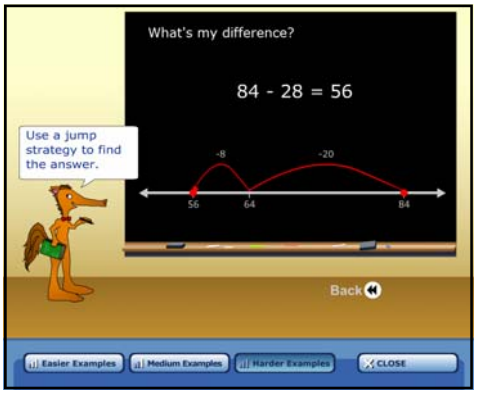
Magic Mental Subtraction, Year 3

About the Activity

Magic Mental Subtraction is contained within the Addition and Subtraction topic of the Year 3 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



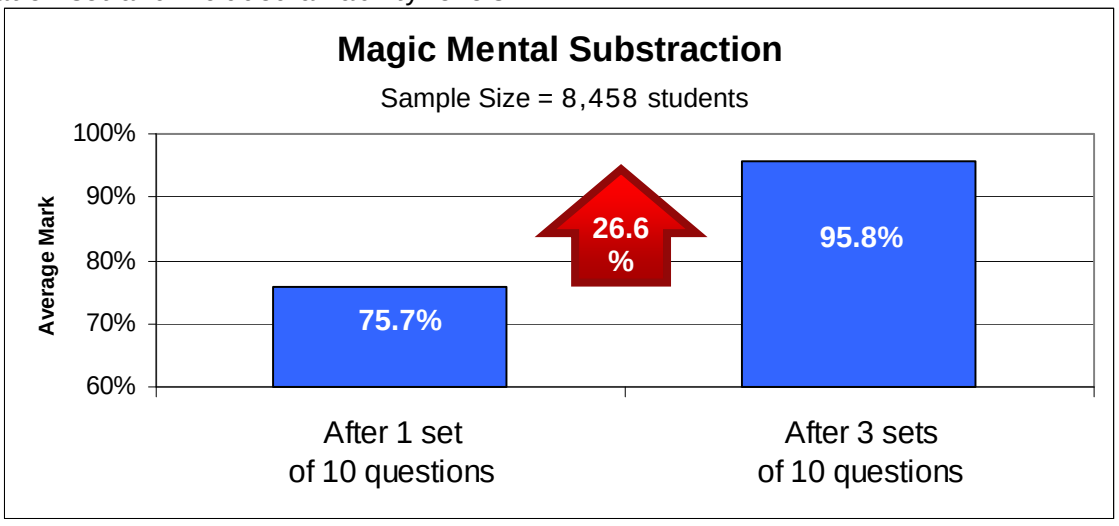
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 8,458 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 8,458 students on their first set of 10 questions was **75.7%**. After 3 sets of 10 questions the average mark of those same students now stands at **95.8%**. This represents an **overall improvement of 26.6%** for the 8,458 students.

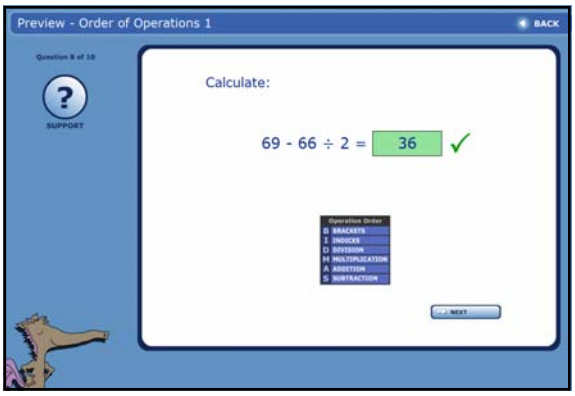
It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

Level of Mastery

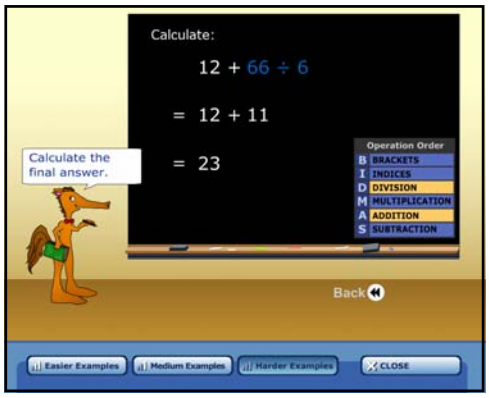
The 95.8% average of population sample of 8,458 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.8% of the sample were yet to attain 50%.

Order of Operations 1, Year 6

About the Activity
Order of Operations 1 is contained within the Number Rules topic of the Year 6 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.

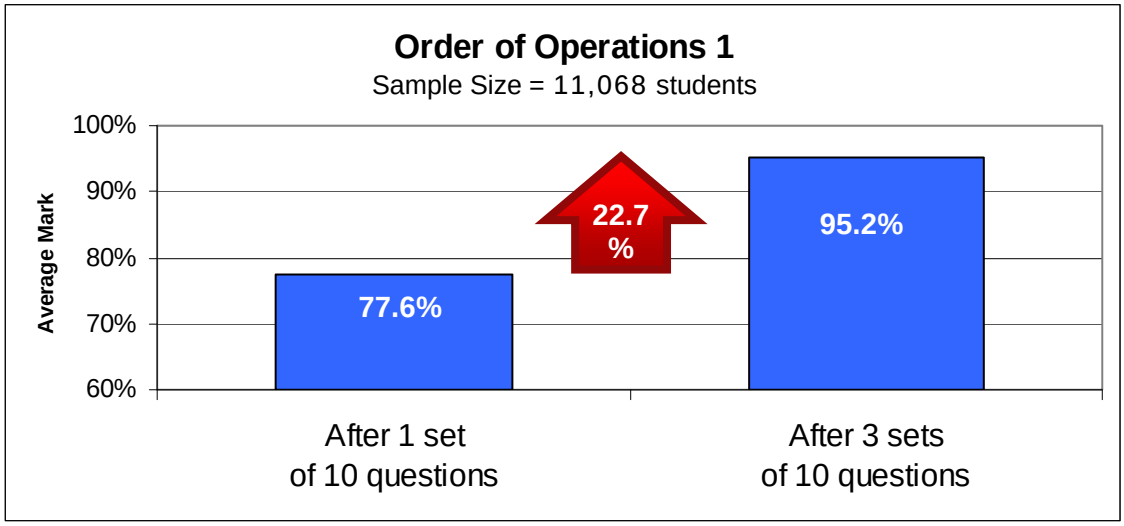


Question and Answer section



Teaching Lab

Improvement Analysis
This study considered the 11,068 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



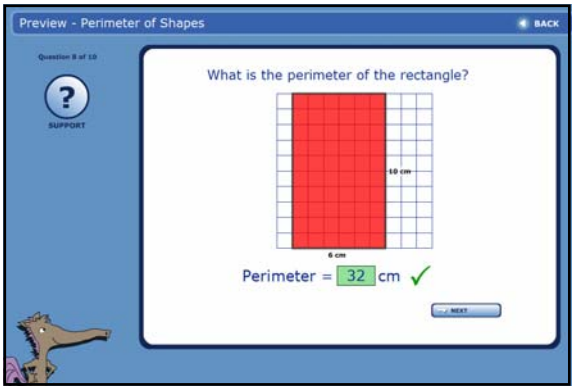
The average mark of the 11,068 students on their first set of 10 questions was **77.6%**. After 3 sets of 10 questions the average mark of those same students now stands at **95.2%**. This represents an **overall improvement of 22.7%** for the 11,068 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

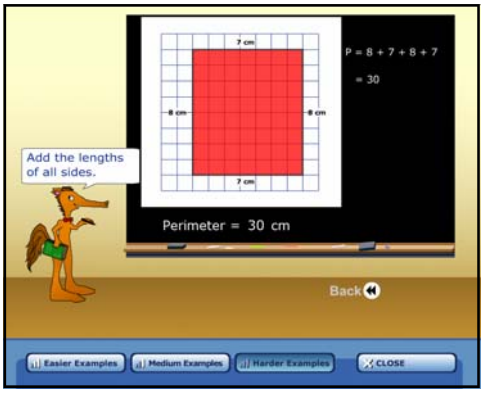
Level of Mastery
The 95.2% average of population sample of 11,068 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.8% of the sample were yet to attain 50%.

Perimeter of Shapes, Year 3

About the Activity
Perimeter of Shapes is contained within the Perimeter of Shapes topic of the Year 3 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.

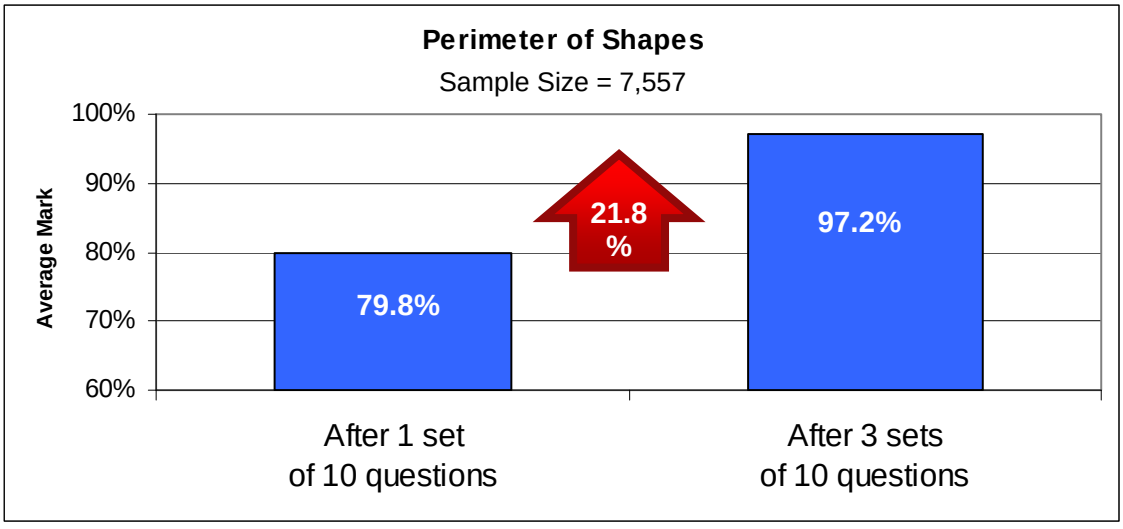


Question and Answer section



Teaching Lab

Improvement Analysis
This study considered the 7,557students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 7,557 students on their first set of 10 questions was **79.8%**. After 3 sets of 10 questions the average mark of those same students now stands at **97.2%**. This represents an **overall improvement of 21.8%** for the 7,557 students.

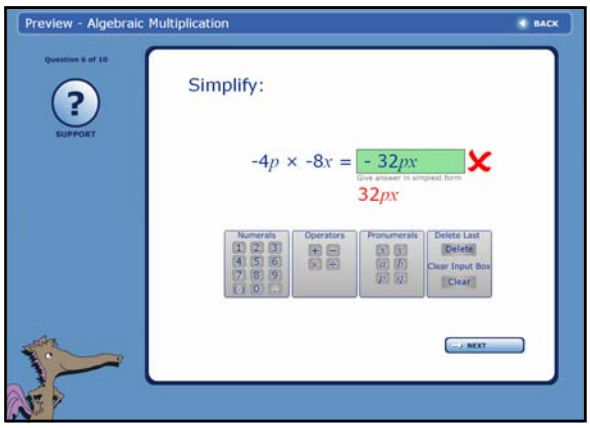
It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

Level of Mastery
The 97.2% average of population sample of 7,557 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.6% of the sample were yet to attain 50%.

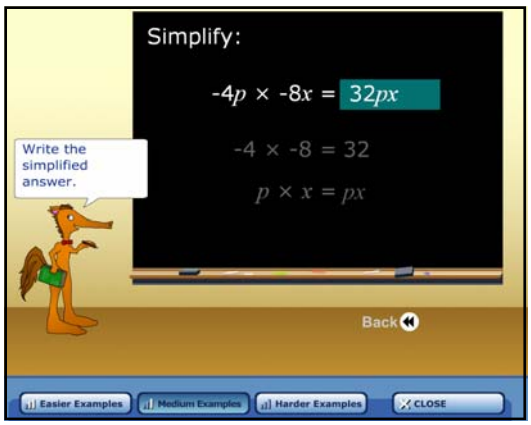
Algebraic Multiplication, Year 7

About the Activity

Algebraic Multiplication is contained within the Algebraic Expressions topic of the Year 8 course. Mathletics activities contain a *Question and Answer* section and a *Teaching Lab*. Students receive step-by-step instruction of the concept within the *Teaching Lab*.



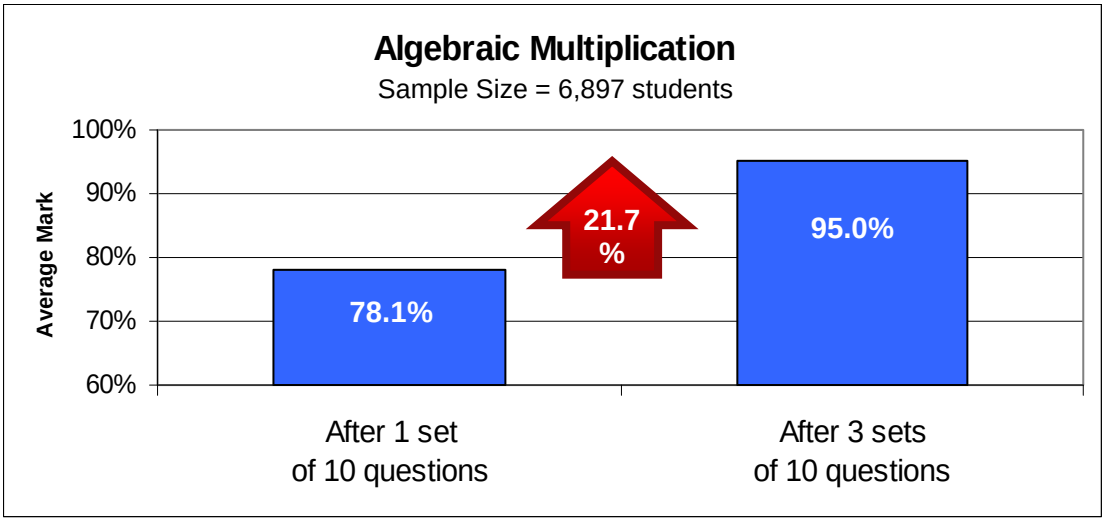
Question and Answer section



Teaching Lab

Improvement Analysis

This study considered the 6,897 students who have completed 3 or more sets of 10 questions within this learning activity. Typically a set of 10 questions takes a student about 10 minutes. There is no possibility students can simply memorise answers as the questions are randomly generated from a very large question set at each attempt. Analysis involved the entire population set and included all ability levels.



The average mark of the 6,897 students on their first set of 10 questions was **78.1%**. After 3 sets of 10 questions the average mark of those same students now stands at **95.0%**. This represents an **overall improvement of 21.7%** for the 6,897 students.

It is also worth noting that this is an adaptive activity which means that the questions become increasingly difficult as success increases. Thus the questions faced by students on their third set of 10 questions are more complex than their first.

Level of Mastery

The 95.0% average of population sample of 6,897 students shows a comprehensive knowledge of this mathematical skill. After 3 sets of 10 questions only 0.4% of the sample were yet to attain 50%.

Appendix 1: Mathletics Improvement Figures*

Learning Activity	Year Group	Sample Size	After 1 set of 10 Questions	After 3 sets of 10 Questions
1 to 30	K	6,423	90.7%	**99.2%**
1st to 31st	1	4,058	86.1%	**98.3%**
24 Hour Time	5	7,746	79.3%	**96.1%**
Add: Common Denominator	6	6,985	88.5%	**98.8%**
Add: No Common Denominator	6	5,533	75.1%	**93.6%**
Addictive Addition	2	4,195	90.7%	**99.0%**
Adding and Subtracting Decimals	7	5,436	80.8%	**95.6%**
Adding and Subtracting Surds	10	4,324	84.9%	**97.7%**
Adding Colossal Columns	5	9,629	82.6%	**97.2%**
Adding Decimals	5	7,177	78.4%	**95.0%**
Adding to Ten	K	9,466	90.5%	**99.2%**
Algebraic Fractions 1	9	4,775	81.5%	**95.9%**
Algebraic Fractions 2	9	4,225	85.1%	**97.6%**
Algebraic Multiplication	7	6,897	78.1%	**95.0%**
Angle Sum of a Quadrilateral	7	4,556	83.1%	**97.1%**
Angle Sum of a Triangle	7	5,707	78.0%	**94.7%**
Angles and Parallel Lines	8	6,116	75.9%	**93.8%**
Angles in a Revolution	8	5,169	81.0%	**96.4%**
Are they Parallel?	10	4,429	83.9%	**96.8%**
Are they Perpendicular?	10	4,160	85.1%	**97.8%**
Area of Shapes	3	7,595	81.5%	**97.7%**
Area Problems	10	4,078	85.8%	**98.2%**
Area Rule 1	10	4,065	86.1%	**98.3%**
Area Rule 2	10	4,060	86.1%	**98.3%**
Area: Circles	8	5,223	79.4%	**96.1%**
Area: Composite Shapes	8	5,273	77.2%	**93.9%**
Area: Ellipse	12	4,086	85.9%	**98.3%**
Area: Quadrilaterals	9	4,713	82.8%	**97.2%**
Area: Right Angled Triangles	7	5,508	77.2%	**94.0%**
Area: Sectors	12	4,097	86.0%	**98.3%**
Area: Squares and Rectangles	6	8,023	78.8%	**95.7%**
Area: Triangles	6	6,754	75.1%	**94.0%**
Arranging Numbers	1	6,313	89.2%	**99.2%**
Australian Time Zones	6	4,802	82.6%	**96.8%**
Average Speed	8	4,193	85.2%	**97.8%**
Balancing Act	2	10,491	89.6%	**99.4%**
Bearings	10	4,253	84.6%	**97.2%**
Best Buy	9	4,415	84.1%	**96.7%**
Biggest Shape	1	9,291	84.6%	**97.8%**
Box-and-Whisker Plots 1	9	4,506	84.9%	**98.0%**
Box-and-Whisker Plots 2	9	4,423	85.3%	**97.9%**
Budgeting	9	4,135	85.5%	**98.2%**
Calculating Dividends	11	4,057	86.1%	**98.3%**
Calculating Income Tax	9	4,219	85.2%	**98.1%**
Calculating Interquartile Range	10	4,126	85.5%	**98.0%**
Calculating Percentages	5	7,377	77.5%	**93.7%**
Calculating Standard Deviation	10	4,116	85.7%	**98.2%**
Capacity Addition	6	5,049	80.9%	**95.6%**
Capacity Word Problems	8	4,239	84.7%	**97.7%**
Capture Recapture Technique	11	4,072	86.0%	**98.3%**
Centimetres and Metres	4	8,591	82.0%	**98.1%**
Changing the Subject	10	4,290	84.4%	**97.5%**
Checking Solutions	8	4,427	84.6%	**97.2%**
Circle Terms	9	4,744	84.2%	**97.4%**
Circumference: Circles	8	5,824	76.9%	**95.8%**
Classifying Angles	5	11,170	87.4%	**98.9%**
Collect More Shapes	3	10,785	83.8%	**97.7%**
Collect the Objects	2	9,258	83.6%	**98.0%**
Collect the Shapes	K	9,321	86.9%	**98.7%**
Colour Patterns	2	9,405	85.5%	**98.0%**
Column Addition	4	5,131	77.2%	**95.7%**
Column Graphs	3	10,276	84.6%	**98.3%**
Columns that Add	3	8,686	87.1%	**98.8%**
Columns that Subtract	3	7,198	85.5%	**98.4%**
Commission	9	4,360	84.5%	**97.5%**
Common Denominator	7	5,915	78.6%	**92.7%**
Comparing Angles	3	8,247	80.8%	**96.8%**
Comparing Decimals	4	5,110	72.1%	**93.6%**
Comparing Home Loans	10	4,180	85.3%	**97.9%**
Comparing Length	1	8,244	82.9%	**97.8%**
Comparing Loans	10	4,256	84.9%	**97.7%**
Complementary Events	8	5,094	81.3%	**95.1%**
Completing the Square	10	4,230	85.8%	**98.3%**
Complex Substitution	8	5,124	79.1%	**94.3%**
Compound Interest	9	4,245	84.9%	**98.1%**
Compound Interest by Formula	10	4,361	84.1%	**97.6%**
Congruent Triangles	8	6,010	76.5%	**95.1%**
Conversion Graphs	11	4,087	86.0%	**98.3%**
Convert from Roman Numerals	5	5,834	80.5%	**96.1%**
Convert to Roman Numerals	6	8,688	76.7%	**95.0%**
Converting cm and mm	3	7,251	80.7%	**97.8%**
Converting Mixed and Improper	7	5,547	82.8%	**97.0%**
Converting Rates	9	4,696	81.3%	**95.0%**
Converting Units of Area	8	5,745	77.6%	**93.8%**
Converting Units of Length	6	8,302	74.9%	**92.5%**
Converting Units of Mass	6	5,612	81.9%	**96.0%**
Converting Volume	8	4,700	82.2%	**96.2%**
Cos A	10	4,254	84.8%	**97.7%**
Cosine Rule 1	10	4,093	85.8%	**98.1%**
Cosine Rule 2	10	4,072	85.9%	**98.2%**
Counting Backwards	K	5,849	87.3%	**98.5%**
Counting by Twos	1	6,037	86.4%	**98.5%**
Counting Forwards	K	7,489	88.6%	**98.7%**
Counting Techniques 1	11	4,176	85.6%	**98.2%**
Counting Techniques 2	11	4,105	85.6%	**98.2%**
Creating a Sector Graph	11	4,064	86.0%	**98.3%**
Cumulative Frequency Histogram	11	4,101	85.6%	**97.9%**
Cumulative Frequency Table	9	4,415	85.6%	**98.3%**
Data Terms	10	4,768	83.1%	**97.2%**
Days of the Week	K	7,396	82.4%	**97.5%**
Decimal by Decimal	7	4,840	80.7%	**96.1%**
Decimal by Whole Number	6	6,306	80.5%	**96.2%**
Decimal Order	5	7,895	81.0%	**96.1%**
Decimal to Percentage	7	10,743	72.9%	**91.4%**
Decimals on a Number Line	5	7,815	79.2%	**95.2%**
Decimals to Fractions 1	6	8,174	88.5%	**99.0%**
Decimals to Fractions 2	7	6,311	77.5%	**92.6%**
Decreasing Patterns	3	5,476	84.6%	**97.8%**
Deductions and Tax Instalments	11	4,067	86.0%	**98.3%**
Degrees and Minutes	10	4,603	84.0%	**97.8%**
Depreciation	10	4,151	85.7%	**98.2%**
Describing Patterns	6	6,133	82.8%	**96.3%**
Determining a Rule for a Line	8	4,771	81.0%	**95.8%**
Dice and Coins	10	4,465	84.6%	**97.7%**
Directed Numbers	7	7,498	82.9%	**97.0%**
Distance Between Two Points	10	4,373	83.9%	**97.0%**
Distance Travelled	8	4,154	85.5%	**97.9%**
Divide Decimals: 10, 100, 1000	6	7,552	78.3%	**95.4%**

Learning Activity	Year Group	Sample Size	After 1 set of 10 Questions	After 3 sets of 10 Questions
Divided Bar Graphs	6	5,548	79.0%	**94.4%**
Dividing a Quantity in a Ratio	8	4,502	84.6%	**97.9%**
Dividing Expressions	7	5,111	80.9%	**96.3%**
Dividing Fives	3	8,095	86.4%	**98.8%**
Dividing Fractions	7	4,545	83.1%	**96.6%**
Dividing Surds	10	4,375	84.8%	**97.7%**
Dividing Tens	3	9,195	89.6%	**99.2%**
Dividing Twos	3	7,598	88.3%	**98.9%**
Divisibility Tests	7	5,140	80.0%	**94.3%**
Division Facts	4	5,834	85.4%	**97.8%**
Dot Plots	11	4,266	85.8%	**98.3%**
Elevation and Depression	10	4,392	84.0%	**97.3%**
Elevations	11	4,166	85.3%	**98.2%**
Equal Angles	2	4,848	72.8%	**91.1%**
Equal Areas	4	8,470	84.5%	**98.7%**
Equal, Complement or Supplement?	8	7,421	79.0%	**97.1%**
Equation from Point and Gradient	9	4,360	84.7%	**97.2%**
Equation from Two Points	10	4,106	85.8%	**98.1%**
Equation of a Line 1	10	4,742	81.7%	**96.5%**
Equations to Solve Problems	8	4,420	83.4%	**96.2%**
Equations with Decimals	8	4,268	84.3%	**97.3%**
Equations with Fractions	8	4,447	85.0%	**97.6%**
Equations with Grouping Symbols	8	4,834	80.4%	**94.4%**
Equivalent Fractions	5	6,432	74.9%	**91.6%**
Equivalent Ratios	8	4,649	82.6%	**96.4%**
Estimating Angles	5	7,302	74.5%	**89.5%**
Estimating Cube Roots	7	4,899	78.9%	**94.8%**
Estimating Square Roots	7	6,265	71.4%	**92.1%**
Estimation: Add and Subtract	6	6,186	77.4%	**93.2%**
Estimation: Multiply and Divide	6	6,133	76.6%	**92.7%**
Euler's Formula	7	5,434	81.9%	**96.8%**
Everyday Length	K	6,334	87.4%	**98.6%**
Everyday Mass	K	5,456	85.4%	**98.3%**
Everyday Money	K	10,947	88.6%	**99.0%**
Exact Trigonometric Ratios	10	4,117	85.9%	**98.3%**
Expand then Simplify	9	5,252	79.1%	**93.8%**
Expanded Notation	5	5,790	86.8%	**98.7%**
Expanding Binomial Products	10	4,481	84.1%	**97.1%**
Expanding Brackets	8	7,605	78.0%	**95.2%**
Expanding Surd Expressions	10	4,231	84.7%	**97.6%**
Expanding with Negatives	8	4,490	83.8%	**97.5%**
Exterior Angles of a Triangle	8	4,958	82.9%	**97.5%**
Faces, Edges and Vertices	5	10,150	75.5%	**93.7%**
Factorising	9	4,579	84.0%	**97.5%**
Factorising Expressions	8	4,662	83.0%	**96.9%**
Factorising Quadratics 1	10	4,743	82.9%	**97.1%**
Factorising Quadratics 2	10	4,379	84.6%	**97.8%**
Factorising with Indices	9	4,217	85.0%	**97.9%**
Factorising with Negatives	8	4,305	84.3%	**97.8%**
Field Diagrams	11	4,059	86.0%	**98.3%**
Fill the Jars	1	10,416	85.2%	**98.6%**
Filling Fast!	2	15,160	87.8%	**99.3%**
Find the Missing Number 1	5	8,135	83.6%	**96.9%**
Find the Missing Number 2	6	4,803	83.6%	**97.1%**
Find the Mistake	8	4,729	81.3%	**95.4%**
Find the Pattern Rule	7	5,446	77.5%	**93.5%**
Find Unknown Angles	10	4,406	84.6%	**97.5%**
Find Unknown Sides	10	4,756	82.1%	**96.3%**
Finding the Average	5	5,223	79.9%	**96.2%**
Floor Plans	11	4,078	86.0%	**98.3%**
Following Directions	3	8,040	86.1%	**98.5%**
Fraction by Whole Number	6	5,487	87.2%	**98.7%**
Fraction of an Amount	7	4,564	84.1%	**97.2%**
Fraction to Terminating Decimal	7	4,680	81.4%	**96.2%**
Fraction Word Problems	7	4,567	84.0%	**97.0%**
Fractional Indices	10	5,207	82.0%	**97.4%**
Fractions of a Collection	3	7,588	76.8%	**93.4%**
Fractions to Decimals	6	7,519	83.1%	**98.5%**
Frequency Histograms	8	5,191	80.6%	**95.8%**
Future Value of Investments 1	11	4,056	86.1%	**98.3%**
General Form of a Line	10	4,205	85.1%	**97.7%**
Going Down	2	7,690	88.6%	**98.8%**
Going Up	2	8,734	90.0%	**99.1%**
Gradient	10	5,220	78.8%	**94.1%**
Gradients for Real	11	4,105	85.5%	**98.0%**
Grams and Kilograms	4	7,682	80.9%	**96.7%**
Graphing Circles	10	4,142	85.8%	**98.2%**
Graphing Cubics	10	4,135	85.8%	**98.2%**
Graphing Exponentials	10	4,223	85.3%	**98.2%**
Graphing from a Table of Values	7	5,226	82.6%	**97.6%**
Graphing Hyperbolas	10	4,145	85.8%	**98.2%**
Graphing Inequalities 1	8	4,479	84.7%	**98.2%**
Graphing Parabolas	10	4,373	85.6%	**98.1%**
Graphs from Bills	11	4,057	86.1%	**98.3%**
Greater Than or Less Than?	4	6,304	81.9%	**98.7%**
Grouping in Pairs	10	4,305	84.6%	**97.6%**
Groups of Eight	3	4,989	86.2%	**98.3%**
Groups of Four	3	5,803	86.5%	**98.4%**
Groups of Nine	3	5,183	86.5%	**98.4%**
Groups of Seven	3	5,130	86.5%	**98.3%**
Groups of Six	3	5,589	86.1%	**98.3%**
Groups of Three	3	6,411	86.2%	**98.5%**
Groups of Two	1	6,492	86.8%	**98.6%**
GST	11	4,067	86.0%	**98.3%**
Half Hour Times	1	9,239	78.8%	**97.7%**
Halve it!	3	6,654	81.8%	**96.5%**
Halves and Quarters	1	11,855	85.1%	**98.3%**
Highest Common Algebraic Factor	8	5,183	81.3%	**96.9%**
Highest Common Factor	7	8,222	72.1%	**90.3%**
Histogram or Polygon?	11	4,105	85.7%	**98.1%**
Horizontal and Vertical Lines	10	4,490	86.4%	**98.4%**
Hour Times	K	6,292	87.4%	**98.8%**
Hours and Minutes	7	5,192	78.6%	**95.5%**
House Plan Symbols	11	4,195	85.3%	**98.3%**
How Full?	K	11,362	88.6%	**99.0%**
How Heavy?	1	7,544	89.9%	**99.4%**
How Long is That?	2	11,660	82.4%	**98.1%**
How many Combinations?	3	11,019	82.3%	**98.8%**
How many Faces?	2	4,372	83.7%	**98.5%**
How Many?	K	7,632	89.4%	**98.8%**
How much Change?	2	10,397	86.7%	**98.5%**
Hypotenuse, Adjacent, Opposite	10	6,537	82.8%	**98.0%**
I am Thinking of a Number!	5	6,323	78.8%	**94.1%**
Identifying Graphs	10	4,668	86.0%	**98.4%**
Improper to Mixed	6	5,265	82.7%	**96.8%**
Increasing Patterns	3	6,697	83.9%	**97.6%**
Index Form to Numbers	9	5,592	80.2%	**95.5%**
Index Laws and Algebra	9	5,290	83.1%	**97.3%**

* Activities shown contain a minimum sample size of 4,000 students

Learning Activity	Year Group	Sample Size	After 1 set of 10 Questions	After 3 sets of 10 Questions
Index Laws with Brackets	9	5,001	82.0%	**97.2%**
Index Notation	7	8,544	88.8%	**99.0%**
Index Notation and Algebra	8	5,781	87.7%	**98.6%**
Integers: Add and Subtract	7	7,032	79.1%	**96.0%**
Integers: Multiply and Divide	7	5,382	80.8%	**96.1%**
Integers: Order of Operations	7	5,924	73.5%	**92.1%**
Intercepts	9	4,694	82.2%	**95.3%**
Interior and Exterior Angles	10	4,635	82.0%	**97.4%**
Interpreting Standard Deviation	10	4,186	84.9%	**97.5%**
Intersecting Linear Regions	10	4,132	85.4%	**97.9%**
Intersecting Non Linear Regions	10	4,071	85.9%	**98.2%**
Kilogram Conversions	3	6,133	87.4%	**98.8%**
Kilometre Conversions	5	5,294	86.9%	**98.6%**
Labelling Angles	7	9,758	83.6%	**98.4%**
Labelling Circles	6	14,249	85.6%	**98.8%**
Leave Loading	11	4,066	86.0%	**98.3%**
Left or Right?	1	9,135	91.1%	**99.4%**
Like Terms: Add and Subtract	7	10,257	63.0%	**84.3%**
Line Graphs: Interpretation	5	7,329	75.5%	**90.7%**
Linear Regions	10	4,241	85.0%	**97.8%**
Litre Conversions	3	5,220	87.3%	**98.6%**
Long Division	7	5,055	79.6%	**94.8%**
Long Multiplication	6	5,599	79.1%	**94.1%**
Lowest Common Multiple	7	6,873	76.5%	**94.9%**
Magic Mental Addition	3	12,087	83.4%	**97.7%**
Magic Mental Subtraction	3	8,458	75.7%	**95.8%**
Making Big Numbers Count	2	5,243	86.9%	**99.1%**
Making Graphs	1	8,276	85.6%	**98.3%**
Making Numbers Count	1	8,022	88.6%	**98.9%**
Map Coordinates	5	8,690	91.9%	**99.2%**
Mass Addition	6	4,838	82.0%	**96.1%**
Match the Object	K	7,797	90.2%	**99.2%**
Mean	8	4,583	83.4%	**97.2%**
Mean from Frequency Table	8	4,167	84.8%	**97.6%**
Measuring Angles	5	9,703	79.4%	**96.1%**
Measuring Length	3	8,653	85.1%	**97.9%**
Median	8	4,293	83.0%	**96.5%**
Median and Cumulative Frequency	9	4,465	83.0%	**97.3%**
Median from Frequency	10	4,269	84.2%	**97.2%**
Median from Stem and Leaf Plot	8	4,234	84.2%	**97.2%**
Metres and Kilometres	6	7,105	82.5%	**97.0%**
Midpoint by Formula	10	4,519	83.4%	**96.4%**
Missing it!	1	8,302	89.8%	**99.1%**
Missing Values: Decimals	6	4,568	83.7%	**97.1%**
Mixed Numerals	7	4,659	82.6%	**95.6%**
Mixed to Improper	6	6,691	80.4%	**97.0%**
Mode	8	5,183	86.3%	**98.5%**
Mode from Frequency Table	8	4,456	85.7%	**98.4%**
Mode from Stem and Leaf Plot	8	4,279	85.6%	**98.3%**
Modelling Linear Relationships	11	4,093	85.7%	**98.1%**
Money	3	10,893	88.0%	**98.5%**
Months of the Year	1	7,163	83.6%	**98.1%**
More Directions!	5	7,574	78.3%	**94.8%**
More Fraction Problems	7	4,467	82.7%	**96.4%**
More Substitution in Formulae	11	4,086	85.9%	**98.2%**
More with Integers	7	4,954	82.5%	**96.9%**
Multiples	3	7,543	84.0%	**97.0%**
Multiplication Facts	4	13,976	87.9%	**98.7%**
Multiplication with Indices	7	5,639	80.9%	**96.8%**
Multiply Decimals: 10, 100, 1000	6	8,255	79.4%	**96.1%**
Multiplying by 10, 100, 1000	4	5,166	79.8%	**98.6%**
Multiplying Fractions	7	5,161	81.7%	**95.3%**
Multiplying Surds	10	4,528	83.9%	**96.9%**
Nearest 10?	2	7,846	86.1%	**98.9%**
Nearest 100?	3	13,545	88.2%	**98.9%**
Nearest 1000?	5	10,136	88.4%	**98.8%**
Nearest Whole Number	4	12,924	85.1%	**98.7%**
Negative Indices	9	4,967	84.7%	**98.2%**
Negative or Positive?	6	8,946	80.8%	**98.1%**
Nets	11	4,249	84.6%	**97.9%**
No Common Denominator	7	4,980	79.0%	**94.6%**
Non Linear Graphs	12	4,087	85.9%	**98.2%**
Non Linear Regions	10	4,103	85.8%	**98.1%**
Number Line Order	2	7,733	88.6%	**98.8%**
Number Lines	3	9,817	90.5%	**99.3%**
Numbers in Words	3	8,828	88.7%	**98.8%**
Offset Diagrams	11	4,060	86.1%	**98.3%**
One take Fraction	6	5,454	80.5%	**97.3%**
Operations with Length	7	6,233	72.4%	**90.4%**
Order of Operations 1	6	11,068	77.6%	**95.2%**
Ordered Pairs	7	5,696	84.0%	**97.9%**
Ordering Fractions	7	6,850	73.0%	**91.7%**
Ordering Integers	7	7,184	81.7%	**97.8%**
Parallel Lines	8	6,650	75.8%	**96.2%**
Pattern Error	K	7,157	82.8%	**97.1%**
Pattern Rules and Tables	7	4,740	85.3%	**97.8%**
Percentage Composition	7	4,584	81.4%	**96.4%**
Percentage Error	11	4,070	86.0%	**98.3%**
Percentage Increase and Decrease	6	5,052	79.5%	**95.7%**
Percentage of a Quantity	7	5,232	82.1%	**97.5%**
Percentage to Fraction	7	7,102	72.6%	**91.2%**
Percentage Word Problems	8	4,666	82.8%	**96.7%**
Perimeter and Circles	8	4,654	80.6%	**96.1%**
Perimeter of Shapes	3	7,557	79.8%	**97.2%**
Perimeter: Composite Shapes	7	5,587	78.1%	**91.7%**
Perimeter: Squares and Rectangles	4	7,335	81.9%	**97.1%**
Perimeter: Triangles	5	5,641	84.1%	**97.7%**
Pick the Next Number	5	5,674	81.0%	**95.0%**
Picture Graphs	3	8,184	82.1%	**96.8%**
Piecework and Royalties	11	4,071	85.9%	**98.1%**
Place Value to Millions	6	10,098	86.7%	**98.6%**
Place Value to Thousands	4	9,891	84.3%	**98.8%**
Plane Figure Terms	9	4,795	83.1%	**96.9%**
Plane Figure Theorems	9	4,434	84.0%	**97.2%**
Present and Future Value Tables	11	4,057	86.1%	**98.3%**
Prime or Composite?	6	19,263	76.0%	**94.1%**
Prisms and Pyramids	5	7,595	83.2%	**97.6%**
Probability Scale	9	8,218	75.1%	**94.9%**
Probability Tables	10	4,267	83.6%	**96.9%**
Probability With Replacement	10	4,179	85.7%	**98.1%**
Probability Without Replacement	10	4,119	85.8%	**98.1%**
Problems: Times and Divide	5	6,759	83.9%	**97.2%**
Product of Prime Factors	7	5,006	78.5%	**94.3%**
Profit and Loss	8	4,491	82.3%	**96.5%**
Properties of Solids	7	7,494	80.5%	**96.5%**
Purchase Options	9	4,233	84.7%	**97.0%**
Pythagoras' Theorem	8	5,898	79.0%	**96.2%**
Pythagorean Triads	8	4,791	80.7%	**96.0%**
Quadratic Equations 1	10	4,304	84.6%	**97.3%**
Quadratic Formula	10	4,185	85.3%	**97.9%**

Learning Activity	Year Group	Sample Size	After 1 set of 10 Questions	After 3 sets of 10 Questions
Rates Calculations	11	4,070	85.9%	**98.2%**
Rates Word Problems	8	4,536	84.9%	**97.6%**
Ratio	8	5,791	79.0%	**94.2%**
Ratio Word Problems	8	4,820	82.7%	**96.7%**
Rationalising and Binomials	10	4,105	85.6%	**98.1%**
Rationalising the Denominator	10	4,198	85.6%	**98.2%**
Reading from a Bill	11	4,063	86.0%	**98.3%**
Reading from a Column Graph	5	9,958	84.4%	**97.5%**
Reading Numbers to 30	K	6,648	88.7%	**98.9%**
Reading Values from a Line	7	5,112	81.6%	**96.3%**
Real Formulae	11	4,071	86.0%	**98.3%**
Recognising Like Terms	7	9,592	84.2%	**98.6%**
Recurring Decimals	9	5,531	77.8%	**93.8%**
Relative Frequency	10	4,255	85.1%	**97.8%**
Remainders by Arrays	3	5,318	84.7%	**98.2%**
Rotational Symmetry	6	9,778	88.1%	**99.1%**
Rounding Decimals	7	9,349	68.9%	**91.5%**
Rounding Numbers	6	13,161	78.4%	**95.9%**
Rounding Significant Figures	9	8,526	69.4%	**92.3%**
Scale	5	5,702	84.2%	**97.8%**
Scale Factor	11	4,204	84.7%	**97.6%**
Scale Measurement	8	4,587	82.4%	**96.1%**
Scientific Notation	9	6,648	76.8%	**94.6%**
Sector Graph Angles	11	4,082	85.9%	**98.2%**
Sector Graph Calculations	8	4,655	82.9%	**96.6%**
Sector Graphs	6	6,328	79.5%	**94.2%**
Shading Equivalent Fractions	4	5,912	72.5%	**91.1%**
Shapes	5	15,377	79.5%	**97.3%**
Share the Treasure	K	7,172	91.6%	**99.4%**
Shares	11	4,056	86.1%	**98.3%**
Short Division	5	7,187	70.6%	**89.7%**
Sides, Angles and Diagonals	3	7,191	80.9%	**96.8%**
Significant Figures	9	8,347	81.8%	**98.4%**
Similar Areas and Volumes	10	4,098	85.6%	**98.1%**
Similar Figures	8	4,701	85.0%	**97.8%**
Simple Interest	9	4,735	82.6%	**96.8%**
Simple Patterns	K	5,856	88.1%	**98.8%**
Simple Probability	8	6,039	81.8%	**96.3%**
Simple Substitution	7	8,199	80.5%	**96.5%**
Simplifying Expressions	9	6,809	78.2%	**93.6%**
Simplifying Fractions	5	7,276	71.8%	**88.4%**
Simplifying Surds	10	4,696	81.8%	**96.3%**
Simplifying with Index Laws 1	9	5,543	85.0%	**98.2%**
Simultaneous Equations 1	10	4,233	85.2%	**97.9%**
Simultaneous Equations 2	10	4,098	85.7%	**98.1%**
Simultaneous Linear Equations	11	4,126	85.6%	**98.1%**
Sin A	10	4,540	82.7%	**97.0%**
Sine and Cosine Curves	10	4,095	85.8%	**98.2%**
Sine Rule 1	10	4,141	85.5%	**97.8%**
Sine Rule 2	10	4,077	86.0%	**98.2%**
Solving Inequalities 1	8	4,230	85.0%	**97.8%**
Solving Inequalities 2	10	4,107	85.7%	**98.0%**
Solving More Equations	8	5,607	75.4%	**92.2%**
Solving Simple Equations	7	6,902	76.5%	**93.1%**
Sorting Data	2	9,488	85.1%	**98.5%**
Special Allowances	11	4,068	86.0%	**98.3%**
Special Binomial Products	10	4,430	84.3%	**97.5%**
Stem and Leaf Introduction	8	5,195	82.5%	**96.4%**
Step Graphs	8	4,448	83.5%	**96.7%**
Substitution in Formulae	11	4,187	85.3%	**98.1%**
Subtract: Common Denominator	6	5,362	86.8%	**98.4%**
Subtract: No Common Denominator	6	4,529	82.6%	**96.6%**
Subtracting Colossal Columns	6	6,896	76.7%	**94.9%**
Subtracting Decimals	5	5,437	80.0%	**95.3%**
Subtracting from Ten	K	6,789	87.0%	**98.7%**
Successive Discounts	10	4,322	84.7%	**97.9%**
Surd Form to Index Form	10	4,987	82.4%	**96.7%**
Surface Area: Cones	10	4,134	85.8%	**98.2%**
Surface Area: Cylinders	9	4,412	83.4%	**97.6%**
Surface Area: Rearrange Formula	10	4,134	85.7%	**98.2%**
Surface Area: Rectangular Prisms	8	4,409	83.5%	**97.4%**
Surface Area: Spheres	10	4,146	86.0%	**98.3%**
Surface Area: Square Pyramids	10	4,155	85.6%	**98.2%**
Surface Area: Triangular Prisms	8	4,216	84.3%	**97.3%**
Symmetry or Not?	3	14,923	79.6%	**96.4%**
Table of Values	6	5,389	80.8%	**95.4%**
Tallies	2	8,844	85.6%	**97.9%**
Tally Charts	11	4,291	84.6%	**97.9%**
Tan A	10	4,296	84.5%	**97.6%**
The Zero Index	9	5,540	78.6%	**95.8%**
Time Mentals	5	6,781	75.2%	**89.7%**
Time Taken	8	4,249	84.9%	**97.6%**
Time Zones	8	4,242	84.6%	**97.1%**
Travel Graphs	8	4,482	83.7%	**96.5%**
Triangle Tasters	5	12,849	84.3%	**98.6%**
Trigonometric Relationships	10	4,203	85.4%	**98.1%**
Unit Fractions	6	5,392	85.5%	**98.1%**
Unitary Method	11	4,090	85.8%	**98.2%**
Using a Calendar	1	7,893	82.9%	**98.5%**
Using Similar Triangles	8	4,481	85.0%	**97.9%**
Using Timetables	4	6,539	80.3%	**93.6%**
Venn Diagrams	10	4,331	83.5%	**96.9%**
Vertex of a Parabola	10	4,289	84.4%	**97.3%**
Volume: Composite Figures	10	4,179	85.0%	**97.7%**
Volume: Cones	10	4,194	85.8%	**98.2%**
Volume: Cylinders	8	4,315	84.9%	**98.0%**
Volume: Prisms	10	4,524	84.5%	**98.0%**
Volume: Pyramids	10	4,275	85.4%	**98.2%**
Volume: Rearrange Formula	10	4,123	85.8%	**98.2%**
Volume: Rectangular Prisms 1	6	6,057	79.8%	**95.5%**
Volume: Rectangular Prisms 2	8	4,545	83.2%	**97.0%**
Volume: Spheres	10	4,205	85.8%	**98.2%**
Volume: Triangular Prisms	8	4,252	84.8%	**97.4%**
Wages and Salaries	9	4,800	80.9%	**94.8%**
What are the Chances?	5	18,582	73.0%	**94.9%**
What Fraction is Shaded?	3	9,714	81.6%	**97.7%**
What is the Time?	3	9,805	81.5%	**96.5%**
What Line am I?	4	9,798	84.7%	**98.3%**
What Time Will it Be?	7	4,609	82.8%	**95.3%**
What Type of Angle?	4	5,986	88.1%	**99.4%**
Where is it?	K	7,591	88.1%	**98.8%**
Which is Bigger?	3	8,688	91.2%	**99.2%**
Which is Smaller?	3	8,359	90.6%	**99.2%**
Which Straight Line?	10	4,591	83.8%	**97.4%**
Who has the Goods?	K	7,571	90.5%	**99.1%**
Who has the Money?	2	12,348	86.1%	**98.0%**
Working Overtime	9	4,322	84.6%	**97.7%**
y=ax	11	4,105	86.0%	**98.3%**
Zero Index and Algebra	9	4,633	83.9%	**97.7%**