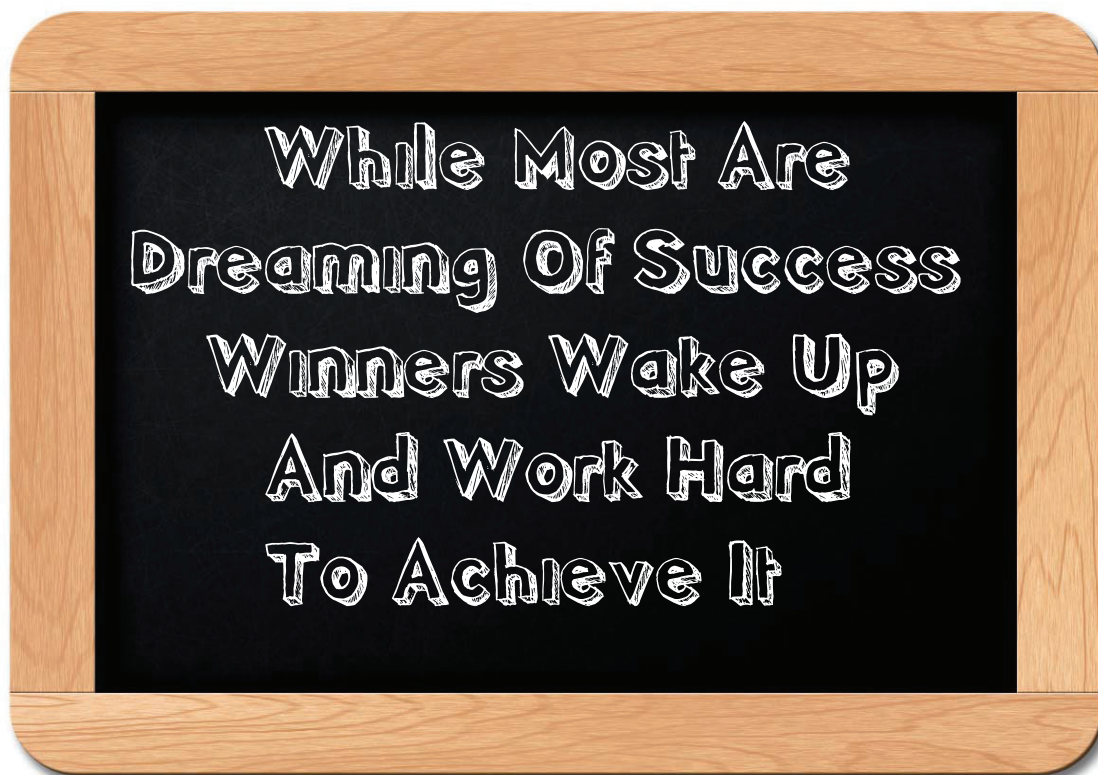


Welcome in Move with Maths! Term 1 & 2



The two biggest secrets to achieve success in Mathematics is repetition (remember: practice makes perfect) and to approach Mathematics step by step.

This book is compiled according to the CAPS (Curriculum Assessment Policy Statements), which means that some topics repeat itself throughout the year. If you as teacher prefer to complete a whole topic at once, feel free to do so.

Stay positive and enjoy it with me!

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1. Properties of real numbers

Real numbers (All numbers) \mathbb{R}

Rational numbers (Q)

Numbers that are expressed in the form $\frac{a}{b}$ where a and b are whole numbers and $b \neq 0$. Rational numbers will always end or be repetitive, e.g. $\frac{22}{7}$; 3,14; $\frac{1}{2}$; 0,3'

Irrational numbers (Q')

Numbers that can't be written in a fraction form; decimal fractions that do *not* end (or are repetitive) e.g. $\sqrt{2}$; $\sqrt{3}$; $\sqrt{7}$; π ; $\sqrt[3]{10}$; $\sqrt[3]{13}$
The answer does not end and must be rounded off.

→ **Natural numbers** \mathbb{N}
Think about the "natural way" of counting; (1,2,3,4,5...)

→ **Whole numbers** \mathbb{N}_0
(0, 1, 2, 3, 4...)

→ **Integers** \mathbb{Z}
(All numbers without commas or fractions e.g. -3, 0, 4)
• Calculations with integers:
 $2 - 7 = -5$



→ **Fractions**

- Normal fractions
 - Positive fractions (e.g. $\frac{1}{2}$; $\frac{4}{5}$)
 - Negative fractions (e.g. $-\frac{2}{3}$; $-\frac{3}{4}$)
- Decimal fractions
 - Ending decimal fractions (e.g. 0,45 or 2,68 or -3,4)
 - Repetitive decimal fractions (e.g. 0,3' or 0,006')

Non real numbers: Numbers that cannot be shown on a number line. It is numbers that, when squared (multiplied with itself), has a negative answer, e.g. $\sqrt{-4}$; $\sqrt{-1}$

Exercise 1: Complete the table

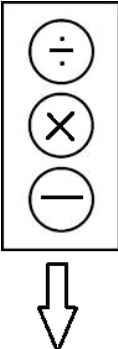
Number	\mathbb{R}	Non-real	Q	Q'	\mathbb{Z}	\mathbb{N}_0	\mathbb{N}
Ex. 0,4	✓		✓				
A. $\sqrt{49}$							
B. 1,07							
C. $\sqrt{-2}$							
D. 4,778...							
E. 15							

Number	\mathbb{R}	Non-real	\mathbb{Q}	\mathbb{Q}'	\mathbb{Z}	\mathbb{N}_0	\mathbb{N}
F. $\sqrt[3]{12}$							
G. -5							
H. $0,3\cdot$							
I. $-\sqrt{1}$							
J. $\sqrt[3]{64}$							
K. $-2\frac{4}{5}$							
L. $\sqrt{-9}$							
M. $\sqrt{2}$							

2. Basic calculations with real numbers (So simple – let's review Gr.8)

<p>Estimation and rounding $5\,097 + 682$</p> <p>Estimate by first making use of rounding:</p> $5\,100 + 700$ $\approx 5\,800$	<p>Compensation $787 + 77$ and $271 - 89$</p> $787 + 77$ $= 787 + 80 - 3$ $= 864$ $271 - 89$ $= 270 + 1 - (90 - 1)$ $= 270 - 90 + 1 + 1$ $= 182$ <p>Use <i>compensation</i> to make the calculation easier for yourself.</p>
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Let's review the basic calculations of $+$, $-$, \times and \div

<p>Addition $77\,256 + 1\,567 + 81\,156$</p> $\begin{array}{r} 1\ 1 \\ 77\,256 \\ 1\,567 \\ +81\,156 \\ \hline 159\,969 \end{array}$ <p>Look at the last line and remember: $6 + 7 + 6 = 19$, the 9 is written and the 1 (tens) is carried to the next line.</p>	<p>Subtraction $789\,671 - 92\,288$</p> $\begin{array}{r} 6\ 1\ 5\ 16\ 1 \\ 789\,671 \\ -92\,288 \\ \hline 697\,383 \end{array}$ <p>Look at the last line and remember: $(1 - 8)$ can't happen, so we borrow one from the 7 next to it. The 7 becomes a 6 and the 1 is next to the other 1 to make 11. Now we can say that $11 - 8 = 3$.</p>
<p>Multiplication $8\,712 \times 123$</p> $\begin{array}{r} 1 \\ 2 \\ \times 8\,712 \\ \times 123 \\ \hline 26\,136 \\ 174\,240 \\ +871\,200 \\ \hline 1\,071\,576 \end{array}$ <p>Remember to always add an extra 0!</p>	<p>Division $584\,304 \div 74$</p> <p>Imagine a traffic light...</p> $\begin{array}{r} \bullet\bullet 7\,896 \\ 74 \overline{) 584\,304} \\ -518 \\ \hline 663 \\ -592 \\ \hline 710 \\ -666 \\ \hline 444 \\ -444 \\ \hline 0 \end{array}$ <p>For the first part of the sum: 74 could not be divided by 5 or 58, but 584 could be divided by 7. $7 \times 74 = 518$ $584 - 518 = 66$ Bring the 3 down. Start again. Start by asking yourself: How many times can 663 be divided by 74?... </p>