



Idsall Calculations Policy

Sponsorship & Review

1 Sponsor

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2 Written & Approved

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3 Next Review Date

January 2020

‘Great oaks from little acorns grow.’



Calculations Policy

Section 1 – Number

Reading and Writing Numbers

Students are to be encouraged to write numbers simply and clearly.

In reading large figures, students should know that the final three figures are read as they are written as **hundreds, tens** and **units**. Reading from the left, the next three figures are **thousands** and the next group of three are **millions**, e.g. 3 027 251 is ‘three million, twenty seven thousand, two hundred and fifty-one’.

Order of Operations

It is important that students follow the correct order of operations for arithmetic calculations. They should be familiar with the mnemonic: **BIDMAS**.

Brackets, Indices , Division, Multiplication, Addition, Subtraction

The important facts to remember are that: any **Brackets** are calculated first, then the **Indices**, then **Multiplication** and/or **Division**, and finally **Addition** and/or **Subtraction**:

$$\begin{aligned} \text{e.g. (i) } & (5 + 3) \times 4 \\ & = 8 \times 4 \\ & = \underline{32} \end{aligned}$$

$$\begin{aligned} \text{e.g. (ii) } & 5 + 6^2 \div 3 - 4 \\ & = 5 + 36 \div 3 - 4 \\ & = 5 + 12 - 4 \\ & = 17 - 4 \\ & = \underline{13} \end{aligned}$$

Mental Calculations

Most students should be able to carry out the following processes mentally, although the speed with which they do it will vary considerably:

- Recall of addition and subtraction facts up to 20;
- Recall of multiplication and division facts for times-tables up to 12 x 12.
- Recall Square Numbers up to 15 x 15
- Recall Cube Numbers up to 5 x 5 x 5

Addition: All pupils should be confident using Column Addition

e.g. $3\ 456 + 975$

$$\begin{array}{r} 3\ 456 \\ + \quad 975 \\ \hline 4\ 431 \\ \hline \end{array}$$

Subtraction: All pupils should be confident using Column Subtraction

e.g. $\begin{array}{r} 7\ 9\ 9\ 1 \\ \cancel{8}\cancel{0}\cancel{0}3 \\ -2\ 5\ 6\ 9 \\ \hline 5\ 4\ 3\ 4 \end{array}$

Multiplication

Conventional multiplication, using a column method, as set out below may not suit all students. Parents and Teachers should be aware that other methods may be employed by some pupils. Two further examples are given:

Column Method:

$$\begin{array}{r} 3\ 2\ 7 \\ \times \quad 5\ 3 \\ \hline 9\ 8_2\ 1 \quad \longleftarrow 327 \times 3 \\ 1\ 6_1\ 3_3\ 5\ 0 \quad \longleftarrow 327 \times 50 \\ \hline 1\ 7\ 3\ 3\ 1 \end{array}$$

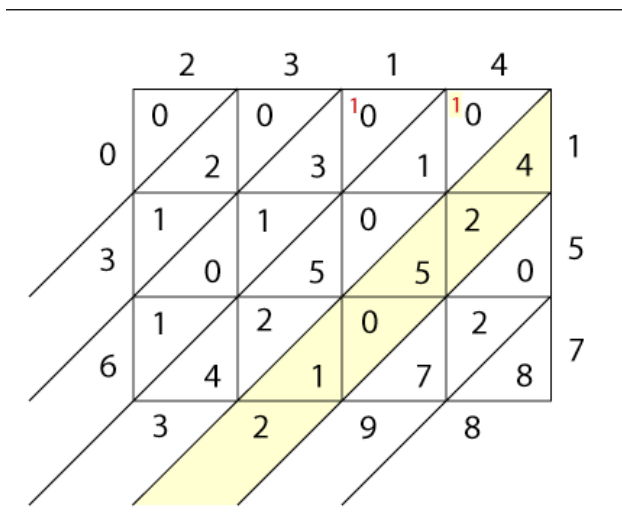
Grid Method

e.g. (i) 327×53

X	300	20	7	Total
50	15 000	1000	350	16 350
3	900	60	21	981
Total	15900	1060	371	17331

Lattice Method

e.g. 2314×157



Division

Conventional division, using a column method, is set out below. Other methods do exist.

e.g. $351 \div 13$

$$\begin{array}{r} 27 \\ 13 \overline{) 351} \end{array}$$

Multiplying Decimals

When multiplying decimals, as always, estimate the answer. Complete the calculation as if there were no decimal points. In the answer, insert a decimal point so that there are the same number of decimal places in the answer as there were in the original question. Check to see if the answer is reasonable:

e.g. (i) 1.2×0.3

Ignoring the decimal points, this is calculated as $12 \times 3 = 36$ and will now need two decimal places in the answer.

$$\therefore 1.2 \times 0.3 = 0.36$$

Section 2 – Algebra

Basic Algebra

All students should know the following facts:

$2y$ means $2 \times y$

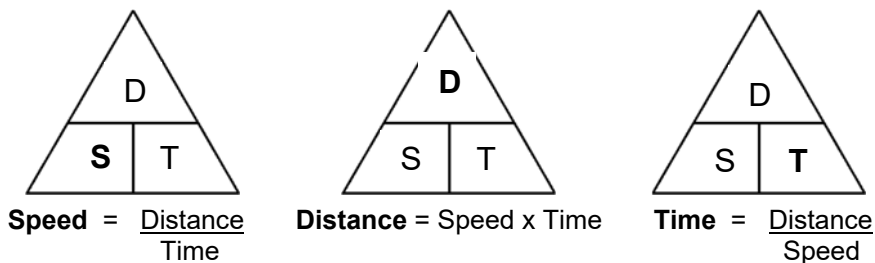
y^2 means $y \times y$

$7(y - 3) = 7y - 21$ (Each term in the bracket is multiplied by the term outside)

Formulae

A formula triangle can be useful:

Speed, Distance and Time:

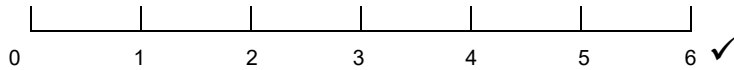


Graphs

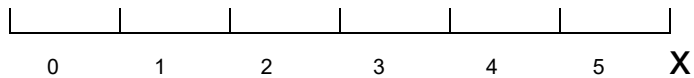
Plotting Points

When drawing graphs on which points have to be plotted, students may need to be reminded that the numbers written on the axes must be on the lines and not in the spaces:

e.g.



NOT



Helpful Websites

Here is a list of suggested websites with videos and questions to use to help when students are having difficulty with calculations and areas of numeracy:

www.hegartymaths.com

www.corbettmaths.com

www.mymaths.co.uk