Year 7 Maths Knowledge Map – Autumn Term

Key Word	Definition	Example
Multiply	The basic idea of multiplying is repeated addition. But as well as multiplying by whole numbers, we can also multiply by fractions, decimals and more.	$5 × 3 = 5 + 5 + 5 = 15$ $5 × 3½ = 5 + 5 + 5 + (half of 5) = 17.5$
Divide	To divide is to split into equal parts or groups. It is "fair sharing". We use the ÷ symbol, or sometimes the / symbol to mean divide: $12 ÷ 3 = 4$ $12 / 3 = 4$	There are 12 chocolates, and 3 friends want to share them, how do they divide the chocolates? Answer: They should get 4 each.
Rounding	Rounding means making a number simpler but keeping its value close to what it was. The result is less accurate, but easier to use. This is the common method: • Decide which is the last digit to keep • Increase it by 1 if the next digit is 5 or more (this is called rounding up) • Leave it the same if the next digit is less than 5 (this is called rounding down)	73 rounded to the nearest ten is 70, because 73 is closer to 70 than to 80. But 76 goes up to 80.
Algorithm	An Algorithm is a step-by-step solution. It is like a cooking recipe for mathematics. Long Division is another example of an algorithm: when you follow the steps you get the answer. "Algorithm" is named after the 9th century Persian mathematician Al-Khwarizmi.	One algorithm for adding two digit numbers is "add the units, add the tens and combine the answers".
Perimeter	The distance around a two-dimensional shape. The perimeter of a circle is called the circumference.	The perimeter of this rectangle is 3+7+3+7 = 20.
Decimal notation	Here is the number "forty-five and six-tenths" written as a decimal number: 45.6	45.6 has 4 Tens, 5 Ones and 6 Tenths, like this: 45.6
Denominator	The bottom number in a fraction. Shows how many equal parts the item is divided into.	In the fraction 3/8, the denominator is '8'
Numerator	The top number in a fraction. Shows how many parts we have.	In the fraction 3/8, the numerator is '3'
Product	The answer when two or more numbers are multiplied together.	The product of 6 and 3 is 18, because 6x3=18.
Multiple	The result of multiplying a number by an integer (not by a fraction).	12 is a multiple of 3, as $3 × 4 = 12$.

		−6 is a multiple of 3, as 3 × −2 = −6. But 7 is NOT a multiple of 3
Integer	A number with no fractional part. Includes: • the counting numbers {1, 2, 3, ...}, • zero {0}, • and the negative of the counting numbers {-1, -2, -3, ...} We can write them all down like this: {..., -3, -2, -1, 0, 1, 2, 3, ...}	-16, -3, 0, 1, 198
LCM (Lowest Common Multiple)	The smallest positive number that is a multiple of two or more numbers.	*The Lowest Common Multiple of 3 and 5 is 15, because 15 is a multiple of 3 and also a multiple of 5. Other common multiples include 30 and 45, etc, but they are not the smallest (lowest).*
Factor	Factors are numbers we can multiply together to get another number. A number can have MANY factors!	*2 and 3 are factors of 6, because 2 × 3 = 6.* *What are the factors of 12? 3 and 4 are factors of 12, because 3 × 4 = 12.* *Also 2 × 6 = 12 so 2 and 6 are also factors of 12.* *And 1 × 12 = 12 so 1 and 12 are factors of 12 as well.* *So 1, 2, 3, 4, 6 and 12 are all factors of 12* *And -1, -2, -3, -4, -6 and -12 also, because multiplying negatives makes a positive.*
HCF (Highest Common Factor)	The highest number that divides exactly into two or more numbers. When we find all the factors of two or more numbers, and some factors are the same ("common"), then the largest of those common factors is the Highest Common Factor. Abbreviated "HCF".	
Area of a shape	The size of a surface. The amount of space inside the boundary of a flat (2-dimensional) object such as a triangle or circle.	
Estimate	To find a value that is close enough to the right answer, usually with some thought or calculation involved.	*Alex estimated there were 10,000 sunflowers in the field by counting one row then multiplying by the number of rows.*
Mean average	The mean is the average of the numbers: a calculated "central" value of a set of numbers. To calculate: Just add up all the numbers, then divide by how many numbers there are.	*What is the mean of 2, 7 and 9? Add the numbers: 2 + 7 + 9 = 18 Divide by how many numbers (i.e. we added 3 numbers): 18 ÷ 3 = 6 So the Mean is 6*