Year 7 Maths Topics 6,7 & 8
Addition, Subtraction, Multiplication, division, fractions and percentages

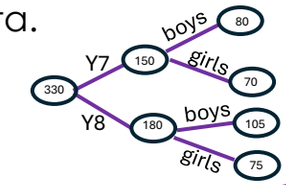
Week 1

This topic we are going to practice answering many different types of questions using addition and subtraction.
First, we will look at the properties of addition and subtraction. Addition is **commutative** which means it doesn't matter which way around we do the calculation, we will get the same answer. We will look at mental strategies such as partitioning the number into its place value parts e.g. 24 + 53 we could do 20+50 first then 4+3 and add them together to get 77.
We will also look at the formal written method called the **column method**. We line the numbers up on top of each other in their place value columns and add them up starting with the smallest place value column first. We will practice this with integers and decimals.

2345
762 +

Week 2

This week we are going to work out the **perimeter** of a shape. The perimeter is the measurement around the outside of a shape. We do this by adding all the lengths of the sides of a shape.
We are going to work with **money** by adding up shopping items and calculating the change given as well as looking at bank statements. We are going to look at calendars and timetables to work out the time in between days and stops.
We will also look at **frequency trees** as a way of representing data.



Higher learners will also look at numbers in standard form

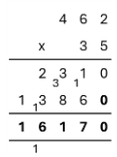
Week 3

In this topic we are going to look at multiplication and division.
We will start by looking at factors and multiples. **Factors** are numbers that go into another number without any leftovers.
eg,. The factors of 12 are 1,2,3,4,6 and 12.
The **Highest Common Factor (HCF)** is the biggest number that will go into 2 or more different numbers.
Multiples are numbers that are in the timestable of the starting number.
E.g. The multiples of 12 are 12, 24, 36, 48 etc.
We will then practice multiplying and dividing integers and decimals by 10 or 100. and apply this to converting between metric units. To do this we need to know that 10mm = 1cm 1000g = 1kg
100cm = 1m $1000\text{m}l = 1l$
1000m = 1 km

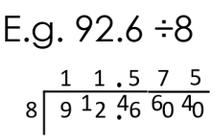
Week 4

This week we will look at formal written methods of multiplication and division.
We will use the **column method** for multiplication and the **bus stop** method for division.

E.g. 462 x 35



E.g. 92.6 ÷8



We will also look at the order of operations to ensure we get the correct answer every time. We remember the order using

B brackets
I indices
D division
M multiplication
A addition
S subtraction

Example:

$80 - 2 \times (2^2) = 80 - 2 \times 4$
$= 80 - 8$
$= 72$

Week 5

This week we will look at finding the area of various shapes and working backwards to find missing lengths. The area is the amount of space inside a shape. We can find the area of shapes by using a formula.
Rectangle: $A = length \times width$
Parallelogram: $A = base \times height$
Triangle: $A = \frac{1}{2} \times base \times height$
Trapezium: $A = \frac{1}{2} \times (a + b) \times h$ where a and b are the parallel sides.
We also will find the **mean** of a list of numbers. The mean is a type of average that tells how many they would have if they were all equal. To find the mean you add the numbers together and divide by how many there are. E.g. 1, 5, 9, 3, 7
Mean = 1+5+9+3+7 = 25 ÷ 5 = **5**

Week 6

This week we will look at finding a fraction or percentage of an amount.
To find a **fraction of an amount**, you divide the amount by the denominator (bottom number)and multiply your answer by the numerator (top number).
E.g. Find $\frac{3}{4}$ of 280 280÷4 = 70 x 3 = **210**
To find **percentages of an amount** we need to divide it by a different amount according to the percentage.
To find 50% divide the amount by 2
To find 25% divide the amount by 5
To find 10% divide the amount by 10
To find 1% divide the amount by 100
To find 5% divide the amount by 10 then 2
We can add some of these chunks together to get other percentages eg 10% +5% = 15%

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Week 1

Questions	Answers
What is it called when it doesn't matter which order you do the calculations in?	Commutative
Name a mental strategy for adding and subtracting.	Partitioning
What is partitioning?	When you split a number up into its place value parts e.g. 20 and 5 for 25
How do you set out the numbers when using the column method?	One above the other with each number in the correct place value column
Which column do you start the addition or subtraction from?	The smallest place value column (on the right hand side)

Week 2

Questions	Answers
What is perimeter?	The measurement around the outside of a shape
How do you work out the perimeter of a shape?	By adding the length of all the sides together.
Name a reason why you need to add or subtract when using a bus timetable	To work out how long the journey will take.
Name a reason why you need to add or subtract when using money	To work out how much a list of items will cost and to calculate how much change is needed.
What can frequency trees be used for?	Representing data.

Week 3

Questions	Answers
What is a factor?	A number that goes into another number exactly.
What is the Highest Common Factor?	The biggest number that will go into 2 or more different numbers.
What is a multiple?	A number that is in the starting numbers times table.
How many cm are in a meter?	100cm
One kg is how many grams?	1000g

Week 4

Questions	Answers
What formal written method would you use for multiplication?	Column method
What do you use the bus stop method to work out?	Division questions
What does B.I.D.M.A.S help us to remember?	The order in which to do the operations
In a calculation which would I do first, division or addition?	Division
What does the I stand for in BIDMAS?	Indices - powers

Week 5

Questions	Answers
What does the area of a shape tell you?	The amount of space inside the shape.
How do you work out the area of a triangle?	$\frac{1}{2} \times base \times height$
If I multiply the length by the width, what shape am I finding the area of?	Rectangle
In the formula for finding the area of a trapezium, what do the a and b represent?	The lengths of the parallel sides
How do you work out the Mean of a set of numbers?	Add them altogether and divide by how many there are.

Week 6

Questions	Answers
What is the denominator of a fraction?	The bottom number
How do you find a fraction of an amount?	Divide the amount by the denominator and multiply the answer by the numerator.
How do you find 25% of an amount?	Divide it by 4
If I divide an amount by 10, what percentage of it have I found?	10%
How could you work out 35% of an amount?	Work out 10% and multiply it by 3 and work out 5% and add it on