The Duston School

Knowledge itself is power

Year 7 Maths

Knowledge Organiser

Term 3

Name:		Class:

Keyword	Definition
Median	The middle number in an ordered list.
Range	The difference between the smallest and largest values in a data set.
Mean	The sum of all the data divided by how many data there are.
Mode	The most common piece of data.
Average	An indication of the typical value.
Simplify	To make simpler or easier to understand by reducing the size of numbers or the number of terms.
Like terms	Terms which have the exact same letters in an expression.
Expression	One or more terms combined by addition or subtraction.
Function	A special relationship where each input has one output.
Substitute	Replace something in an expression with something else which is equal to it.

Homework 1 due:	
Homework 2 due:	
Homework 3 due:	
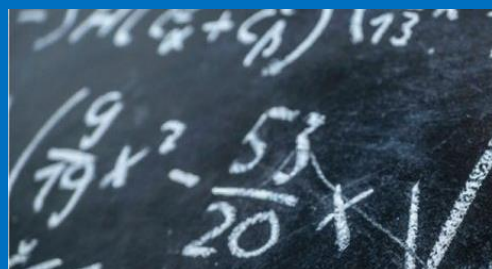
Big Questions for the term

Ratio and Proportion

- How do I write ratio?
- How is ratio linked to fractions and percentages?
- How can we model ratio questions?
- What is unitary ratio?
- Which is the best buy?
- How does proportion relate to recipes?
- How does speed relate to ratio and proportion?

Simplifying and Substitution

- Why do we use algebra?
- How do we use algebra to write expressions?
- How can we simplify an expression?

Unit 1 – Calculations and Accuracy

#	Question	Answer
1	What does the word sum mean?	The result of addition.
2	What does consecutive mean?	Following each other continuously.
3	How do you find the difference between two numbers?	Subtract the smaller number from the larger one.
4	What should your answer be if the question tells you to calculate?	A number
5	What should your answer be if the question tells you to evaluate?	A number
6	How do you divide a number by 10?	Move all the digits 1 place to the right
7	How do you multiply a number by 10?	Move all the digits 1 place to the left
8	What is subtracting a negative number equivalent to?	Adding a positive number
9	What is adding a negative number equivalent to?	Subtracting a positive number
10	What is a term-to-term rule?	A rule telling you how to get from one term to the next in a sequence
11	In a sequence, what is meant by a term?	One of the numbers in the sequence
12	What is the first step when trying to find the next term in a sequence?	Identify the pattern.
13	What is a linear sequence?	A number pattern which increases or decreases by the same amount each time.
14	How do you work out the value of a digit in a long number?	Ignore every other digit (make them zeroes)
15	How do you add decimals?	Same method as usual, lining up the decimal points
16	How do you subtract decimals?	Same method as usual, lining up the decimal points

Unit 2 – Integers, Powers and Roots

#	Question	Answer
1	What does the word product mean?	The result of a multiplication.
2	What sign would the product of 2 negative numbers have?	Positive
3	What sign would the product of a positive and a negative number have?	Negative
4	What sign would the answer to a negative number divided by a positive number have?	Negative
5	What is the definition of a square number?	The product of a number and itself
6	List the first 15 square numbers.	1,4,9,16,25,36,49,64,81,100,121,144,169,196,225
7	What is the definition of a factor?	A number which divides another number exactly.
8	What is the definition of a multiple?	A number in another number's times table.
9	What does HCF stand for?	Highest Common Factor
10	What does LCM stand for?	Lowest Common Multiple
11	What is a cube number?	The product of 3 equal numbers.
12	How do you divide by a fraction?	Multiply by its reciprocal (the fraction flipped over)

Knowledge Retrieval Questions – From Term 2

Unit 3 – Measures

#	Question	Answer
1	How do you convert millimetres to metres?	Divide by 1000
2	How do you convert metres to centimetres?	Multiply by 100
3	How do you convert metres to kilometres?	Divide by 1000
4	How do you convert hours into minutes?	Multiply by 60
5	How do you convert seconds into minutes?	Divide by 60
6	How do you convert kilograms into grams?	Multiply by 1000
7	How do you convert kilograms into tonnes?	Divide by 1000
8	How do you convert litres to millilitres?	Multiply by 1000

Unit 4 – Fractions, decimals and percentages

#	Question	Answer
1	What is a numerator?	Top number in a fraction
2	What is a denominator?	Bottom number in a fraction
3	What operation does a fraction represent?	Division
4	Which operation do we use for the word 'of'?	Multiplication
5	What's the first step when adding or subtracting fractions?	Write the fractions with a common denominator
6	How do you multiply fractions?	Multiply the numerators and multiply the denominators.
7	How do you convert a decimal to a percentage?	Multiply by 100 (%)
8	How do you simplify fractions?	Divide both the numerator and denominator by a common factor.
9	How do you find an equivalent fraction?	Multiply or divide the numerator and denominator by the same number.
10	How do you convert a mixed number to an improper fraction?	Multiply the whole number by the denominator and add it to the numerator
11	How do you find a fraction of an amount?	Divide the amount by the denominator and multiply by the numerator.
12	What does percent mean?	Out of 100
13	How do you convert a fraction to a decimal if the denominator is a factor of 100?	Write the equivalent fraction with a denominator of 100 (then divide by 100)
14	How do you convert a decimal to a fraction?	The numerator is the same digits without the decimal point, the denominator is the place value of the last digit.
15	How do you convert a percentage to a decimal?	Divide by 100 (%)

Knowledge Retrieval Questions – From Term 3

Unit 5 – Ratio and Proportion

#	Question	Answer
1	How do you simplify a ratio?	Divide both numbers by a common factor.
2	How do you write a ratio into the form 1:n?	Divide both numbers in the ratio by the first number in the ratio.
3	What is the unitary method?	A method where the first step is making the ratio 1:n or n:1
4	How do you calculate best value?	Work out the cost of the same amount for each option and compare those.
5	How do you share an amount in a ratio?	Add the ratio numbers and divide by that to get the value of each part.

Unit 6 – Simplifying and substitution

#	Question	Answer
1	In algebra, what does "collecting like terms" mean?	Adding or subtracting terms with the exact same letters
2	In algebra, what is substitution?	Replacing something in an expression with something else which is equal to it
3	The symbol for which operation is not written in algebra?	Multiplication
4	How is division represented algebraically?	As a fraction
5	How do you write expressions from sentences?	Replace unknown numbers with letters, everything else should be a number or an operation.

Term 3 - Homework 1

#	Type	Question	Answer
1	Knowledge	How do you find an equivalent fraction?	
	Application 1	State a fraction which is equivalent to 9/72	
	Application 2	State a fraction which is equivalent to 15/180	

#	Type	Question	Answer
2	Knowledge	How do you find a fraction of an amount?	
	Application 1	Find 9/11 of 66	
	Application 2	Find 20/31 of 403	

#	Type	Question	Answer
3	Knowledge	How do you convert a decimal to a percentage?	
	Application 1	Convert 0.67 into a percentage.	
	Application 2	Convert 0.173 into a percentage.	

#	Type	Question	Answer
4	Knowledge	How do you convert metres to centimetres?	
	Application 1	Convert 8m into centimetres	
	Application 2	Convert 17m into centimetres	

#	Type	Question	Answer
5	Knowledge	What is a denominator?	
	Application 1	What is the denominator in the fraction 4 tenths?	
	Application 2	What is the denominator in the fraction 19 sevenths?	

#	Type	Question	Answer
6	Knowledge	How do you convert a decimal to a fraction?	
	Application 1	Write 0.98 as a fraction.	
	Application 2	Write 0.110 as a fraction.	

#	Type	Question	Answer
7	Knowledge	How do you convert a fraction to a decimal if the denominator is a factor of 100?	
	Application 1	What is 2/20 as a decimal?	
	Application 2	What is 5/500 as a decimal?	

#	Type	Question	Answer
8	Knowledge	How do you simplify fractions?	
	Application 1	Fully simplify 14/48	
	Application 2	Fully simplify 60/120	

#	Type	Question	Answer
9	Knowledge	What operation does a fraction represent?	
	Application 1	What calculation would you do to write 8 tenths as a decimal?	
	Application 2	What calculation would you do to write 11 ninths as a decimal?	

#	Type	Question	Answer
10	Knowledge	What's the first step when adding or subtracting fractions?	
	Application 1	Complete the first step of the calculation 5/16 + 9/8	
	Application 2	Complete the first step of the calculation 20/27 + 12/18	

#	Type	Question	Answer
11	Knowledge	What does percent mean?	
	Application 1	Write 98% as a fraction.	
	Application 2	Write 110% as a fraction.	

#	Type	Question	Answer
12	Knowledge	How do you convert millimetres to metres?	
	Application 1	Convert 9700mm into metres	
	Application 2	Convert 12400mm into metres	

#	Type	Question	Answer
13	Knowledge	How do you convert metres to kilometres?	
	Application 1	Convert 9800m into km	
	Application 2	Convert 11000m into km	

#	Type	Question	Answer
14	Knowledge	How do you convert hours into minutes?	
	Application 1	Convert 9 hours into minutes	
	Application 2	Convert 12 hours into minutes	

#	Type	Question	Answer
15	Knowledge	How do you convert a mixed number to an improper fraction?	
	Application 1	Convert 6 and 9/10 into an improper fraction.	
	Application 2	Convert 13 and 15/16 into an improper fraction.	

<u>Workings Space</u>

Term 3 - Homework 2

#	Type	Question	Answer
1	Knowledge	How do you multiply fractions?	
	Application 1	Calculate 2/20 x 1/10	
	Application 2	Calculate 18/190 x 13/90	

#	Type	Question	Answer
2	Knowledge	How do you convert a mixed number to an improper fraction?	
	Application 1	Convert 9 and 9/10 into an improper fraction.	
	Application 2	Convert 13 and 15/16 into an improper fraction.	

#	Type	Question	Answer
3	Knowledge	What is a denominator?	
	Application 1	What is the denominator in the fraction 7 tenths?	
	Application 2	What is the denominator in the fraction 11 sevenths?	

#	Type	Question	Answer
4	Knowledge	What's the first step when adding or subtracting fractions?	
	Application 1	Complete the first step of the calculation 8/16 + 5/8	
	Application 2	Complete the first step of the calculation 12/27 + 15/18	

#	Type	Question	Answer
5	Knowledge	What is a numerator?	
	Application 1	What is the numerator in the fraction 8 tenths?	
	Application 2	What is the numerator in the fraction 14 sixths?	

#	Type	Question	Answer
6	Knowledge	Which operation do we use for the word 'of'?	
	Application 1	Write the calculation for 'Two thirds of 54'	
	Application 2	Write the calculation for 'Seven twelfths of 180'	

#	Type	Question	Answer
7	Knowledge	How do you calculate best value?	
	Application 1	SHOW which is better value, Shop A: 8 pens for 40p, or Shop B: 10 pens for 40p	
	Application 2	SHOW which is better value, Shop A: 16 pens for 240p, or Shop B: 18 pens for 288p?	

#	Type	Question	Answer
8	Knowledge	How do you convert a fraction to a decimal if the denominator is a factor of 100?	
	Application 1	What is 2/20 as a decimal?	
	Application 2	What is 8/500 as a decimal?	

#	Type	Question	Answer
9	Knowledge	How do you convert a decimal to a percentage?	
	Application 1	Convert 0.42 into a percentage.	
	Application 2	Convert 0.154 into a percentage.	

#	Type	Question	Answer
10	Knowledge	What is the unitary method?	
	Application 1	9 pens cost 135p. Work out the cost of 10 pens.	
	Application 2	15 pens cost 180p. Work out the cost of 16 pens.	

#	Type	Question	Answer
11	Knowledge	How do you convert a percentage to a decimal?	
	Application 1	Write 42% as a decimal.	
	Application 2	Write 154% as a decimal.	

#	Type	Question	Answer
12	Knowledge	What does percent mean?	
	Application 1	Write 34% as a fraction.	
	Application 2	Write 127% as a fraction.	

#	Type	Question	Answer
13	Knowledge	How do you find an equivalent fraction?	
	Application 1	State a fraction which is equivalent to 9/83	
	Application 2	State a fraction which is equivalent to 15/124	

#	Type	Question	Answer
14	Knowledge	How do you find a fraction of an amount?	
	Application 1	Find 9/11 of 99	
	Application 2	Find 20/38 of 494	

#	Type	Question	Answer
15	Knowledge	How do you write a ratio into the form 1:n?	
	Application 1	Write the ratio 9:2 into the form 1:n	
	Application 2	Write the ratio 15:10 into the form 1:n	

<u>Workings Space</u>

Term 3 - Homework 3

#	Type	Question	Answer
1	Knowledge	How do you calculate best value?	
	Application 1	SHOW which is better value, Shop A: 7 pens for 56p, or Shop B: 9 pens for 63p	
	Application 2	SHOW which is better value, Shop A: 16 pens for 192p, or Shop B: 18 pens for 234p?	

#	Type	Question	Answer
2	Knowledge	In algebra, what is substitution?	
	Application 1	Evaluate 8x + 2y, if x = 8 and y = 7	
	Application 2	Evaluate 12x + 13y, if x = 12 and y = 16	

#	Type	Question	Answer
3	Knowledge	How do you simplify a ratio?	
	Application 1	Fully simplify 20:42	
	Application 2	Fully simplify 30:96	

#	Type	Question	Answer
4	Knowledge	How do you write expressions from sentences?	
	Application 1	Write '10 lots of a number add 7' as an expression.	
	Application 2	Write '15 more than k' as an expression.	

#	Type	Question	Answer
5	Knowledge	In algebra, what does "collecting like terms" mean?	
	Application 1	Simplify the following expression: 10p + 8q - 2p + 8q	
	Application 2	Simplify the following expression: 20p + 12q - 13p + 12q	

#	Type	Question	Answer
6	Knowledge	How is division represented algebraically?	
	Application 1	How do you write b divided by 7 algebraically?	
	Application 2	How do you write 16 divided by c algebraically?	

#	Type	Question	Answer
7	Knowledge	The symbol for which operation is not written in algebra?	
	Application 1	How do you write 8 multiplied by k algebraically?	
	Application 2	How do you write f multiplied by 12 algebraically?	

#	Type	Question	Answer
8	Knowledge	How do you share an amount in a ratio?	
	Application 1	Share 72 into the ratio 2:7	
	Application 2	Share 192 into the ratio 8:8	

#	Type	Question	Answer
9	Knowledge	What is the unitary method?	
	Application 1	8 pens cost 96p. Work out the cost of 9 pens.	
	Application 2	12 pens cost 156p. Work out the cost of 13 pens.	

#	Type	Question	Answer
10	Knowledge	How do you write a ratio into the form 1:n?	
	Application 1	Write the ratio 8:2 into the form 1:n	
	Application 2	Write the ratio 12:10 into the form 1:n	

<u>Workings Space</u>