THE DUSTON SCHOOL
Knowledge itself is power
TDS 4-19

Year 7 Maths
Knowledge Organiser
Term 1

Name:	Class:

Keyword	Definition
Integer	A whole number
Ascending	Increasing in size, going up
Descending	Decreasing in size, going down
Decimal	A way of writing numbers which aren't whole. The whole number and the decimal fraction are separated by a decimal point.
Decimal Places	The numbers that come after a decimal point.
Factor	A number which the amount can be divided by without leaving a remainder.
Multiple	A number which is the result of multiplying an amount by an integer.
Prime	A number with only 2 factors.
Square (n)	A number formed by multiplying an amount by itself.
Cube (n)	A number formed by raising an amount to the power of 3.

Homework 1 due:	
Homework 2 due:	
Homework 3 due:	

RESPECT

In Mathematics, a classroom environment should always be respectful. Students can show respect through:

- **Supporting each other with their learning.** Pupils should recognise that every individual has their own strengths and weaknesses and, as a class, we should 'up-lift' students.
- **Students should not be felt to be rushed by others in the classroom**. Respect that all students have different experiences and therefore will access the knowledge at different rates.
- **Being Polite.** As no different to the rest of school. Students should embrace diversity and treat all others with tolerance and decency.

ASPIRATION

- **Building logical processes.** Understanding that learning mathematical concepts improves our logical reasoning which improves other aspects of our lives: language, culture, games etc. the essence of mathematics is in respect of ideas, structures and relationships by logical reasoning.
- **Every day needs.** Understanding that being numerate, along with literate, is a strong indicator of long-term success and students' ability to climb the tree of knowledge.

RESILIENCE

- **I don't know it… yet.** Understanding that maths can be abstract and that, as with anything new, it will take time to learn. With time, you will succeed.
- **Mathematical concept won't always come easily.** Understanding that getting things wrong is a frustrating and not pleasant feeling but, to succeed, it is a passage we need to go through.
- **Practice makes permanent.** Mathematics is a logical subject such that, rehearsal and repetition of method is the key to being successful and committing the knowledge to long-term memory. This process takes time and will come with failures along the way which we must persevere through.

Term 1 Overview

Big Questions for the term

Calculations and Accuracy

- What is place value, and what do we mean by 'base 10'?
- What if we worked in a different base?
- How can we put numbers in order?
- What is rounding?
- What is the quickest way to add/subtract numbers?
- How can we add/subtract with decimals?
- What is perimeter?
- When do we use negative numbers?
- How can we add/subtract with negatives?
- What is a linear sequence?

Integers, Powers and Roots

- What is multiplication, and how does it relate to division?
- How do we show our working out when multiplying larger numbers?
- How do we multiply decimals?
- When is a question asking us to multiply?
- What is a lowest common multiple?
- How do we show our working out when dividing numbers?
- When dividing, how do we know when to round up or round down?
- What is a factor? What is a highest common factor?
- What is a prime number?
- Can every number be written as a product of its prime factors?
- Can we use LCM/HCF to solve worded problems?
- How do we divide and multiply with negative numbers?
- How do we use the four operations with negative numbers?
- What does it mean to square or cube a number?
- What is the order of operations? How is it useful?

Knowledge Retrieval Questions

Unit 1 – Calculations and Accuracy

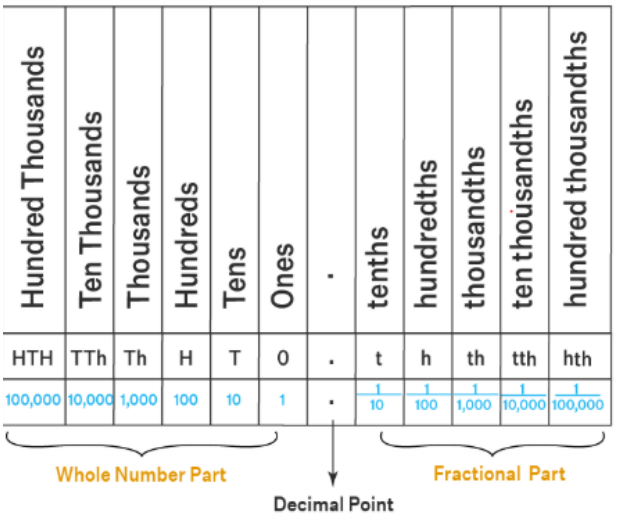
#	Question	Answer
1	What does the word sum mean?	The result of addition.
2	What does consecutive mean?	Following each other continuously.
3	How do you find the difference between two numbers?	Subtract the smaller number from the larger one.
4	What should your answer be if the question tells you to calculate?	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

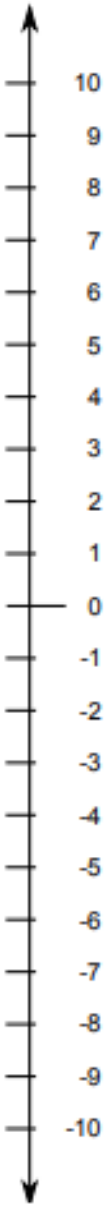
Unit 2 – Integers, Powers and Roots

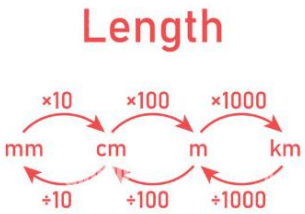
#	Question	Answer
1	What does the word product mean?	The result of a multiplication.
2	What sign would the product of 2 negative numbers have?	Positive
3	What sign would the product of a positive and a negative number have?	Negative
4	What sign would the answer to a negative number divided by a positive number have?	Negative
5	What is the definition of a square number?	The product of a number and itself
6	List the first 13 square numbers.	1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169
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)
13	What is the definition of a prime number?	A number with only 2 factors.

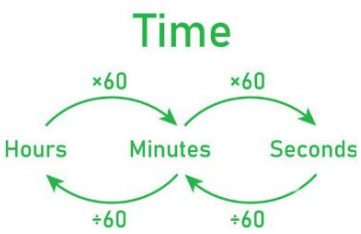
Multiplication Chart

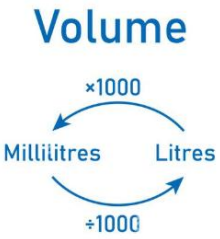
X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

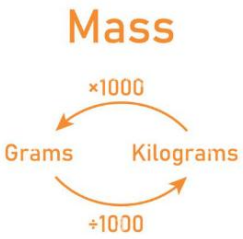












Remote-Learning

If you are absent from school, lesson work can be found on your year group Teams channel: files -> class materials -> maths

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This website is useful to students as it contains videos to support students understanding and also extra questions to extend and support students.

Please see your class teacher for any login issues

vle.mathswatch.co.uk

Username: firstnamesurname@dustonschool

Password: berrywood

Term 1 Homework 1

#	Type	Question	Answer
1	Knowledge	What is the first step when trying to find the next term in a sequence?	Identify the pattern.
	Application 1	What is the next term in the following sequence 8, 15, 22, 29, 36?	
	Application 2	What is the next term in the following sequence 16, 33, 50, 67, 84?	101
2	Knowledge	What is a term-to-term rule?	A rule telling you how to get from one term to the next in a sequence
	Application 1	What is the term-to-term rule in the following sequence 8, 15, 22, 29, 36?	
	Application 2	What is the term-to-term rule in the following sequence 16, 33, 50, 67, 84?	add 17
3	Knowledge	How do you add decimals?	Same method as usual, lining up the decimal points
	Application 1	Calculate 6.2 + 9.6	
	Application 2	Calculate 18.4 + 16.9	35.3
4	Knowledge	What is adding a negative number equivalent to?	Subtracting a positive number
	Application 1	Evaluate 6 + (-10)	
	Application 2	Evaluate 16 + (-18)	-2

#	Type	Question	Answer
5	Knowledge	What is a linear sequence?	A number pattern which increases or decreases by the same amount each time.
	Application 1	Is the following sequence linear? 4, 6, 6, 8	No
	Application 2	Is the following sequence linear? 21, 44, 70, 93	No

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6	Knowledge	What does the word sum mean?	The result of addition.
	Application 1	What is the sum of 8 and 7?	15
	Application 2	What is the sum of 16 and 17?	33

7	Knowledge	How do you divide a number by 10?	Move all the digits 1 place to the right
	Application 1	Calculate 96 divided by 10.	9.6
	Application 2	Calculate 169 divided by 10.	16.9

8	Knowledge	How do you multiply a number by 10?	Move all the digits 1 place to the left
	Application 1	Evaluate 62 multiplied by 10.	620
	Application 2	Evaluate 184 multiplied by 10.	1840

#	Type	Question	Answer
9	Knowledge	What is subtracting a negative number equivalent to?	Adding a positive number
	Application 1	Calculate 8 - (-9)	17
	Application 2	Calculate 16 - (-17)	33
10	Knowledge	What does consecutive mean?	Following each other continuously.
	Application 1	Select 2 of these numbers which are consecutive: 8, 13, 9, 16.	8 and 9
	Application 2	Select 2 of these numbers which are consecutive: 16, 21, 18, 20.	20 and 21
11	Knowledge	How do you find the difference between two numbers?	Subtract the smaller number from the larger one.
	Application 1	What is the difference between 73 and 10?	63
	Application 2	What is the difference between 180 and 185?	5
12	Knowledge	What should your answer be if the question tells you to calculate?	A number
	Application 1	Calculate 8 multiplied by 3	24
	Application 2	Calculate 10 multiplied by 2	20

Term 1 Homework 2

#	Type	Question	Answer
1	Knowledge	What is adding a negative number equivalent to?	Subtracting a positive number
	Application 1	Evaluate 9 + (-3)	6
	Application 2	Evaluate 18 + (-16)	2
2	Knowledge	How do you find the difference between two numbers?	Subtract the smaller number from the larger one.
	Application 1	What is the difference between 63 and 13?	50
	Application 2	What is the difference between 185 and 185?	0
3	Knowledge	In a sequence, what is meant by a term?	One of the numbers in the sequence
	Application 1	What is the third term in the following sequence? 63, 76, 89, 102, 115	
	Application 2	What is the third term in the following sequence? 185, 370, 555, 740, 925	
4	Knowledge	What should your answer be if the question tells you to calculate?	A number
	Application 1	Calculate 9 multiplied by 3	
	Application 2	Calculate 18 multiplied by 2	

#	Type	Question	Answer
5	Knowledge	How do you multiply a number by 10?	Move all the digits 1 place to the left
	Application 1	Evaluate 13 multiplied by 10.	
	Application 2	Evaluate 185 multiplied by 10.	

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6	Knowledge	What does the word sum mean?	The result of addition.
	Application 1	What is the sum of 9 and 9?	
	Application 2	What is the sum of 12 and 19?	

7	Knowledge	How do you subtract decimals?	Same method as usual, lining up the decimal points
	Application 1	What is the difference between 0.2 and 1.1	
	Application 2	What is the difference between 1.39 and 11.4	

8	Knowledge	What is a term-to-term rule?	A rule telling you how to get from one term to the next in a sequence
	Application 1	What is the term-to-term rule in the following sequence 9, 18, 27, 36, 45?	
	Application 2	What is the term-to-term rule in the following sequence 12, 31, 50, 69, 88?	

#	Type	Question	Answer
9	Knowledge	How do you work out the value of a digit in a long number?	Ignore every other digit (make them zeroes)
	Application 1	What is the value of the 4 in the number 53478?	
	Application 2	What is the value of the 1 in the number 41052?	
10	Knowledge	What should your answer be if the question tells you to evaluate?	A number
	Application 1	Evaluate 63 + 31	
	Application 2	Evaluate 185 + 189	
11	Knowledge	How do you divide a number by 100?	Move all the digits 2 places to the right
	Application 1	Calculate 76 divided by 100.	
	Application 2	Calculate 136 divided by 100.	
12	Knowledge	What is a term-to-term rule?	A rule telling you how to get from one term to the next in a sequence
	Application 1	What is the next term in the following sequence -1, -2, -3, -4, -5?	
	Application 2	What is the next term in the following sequence -10, -20, -30, -40?	

Term 1 Homework 3

#	Type	Question	Answer
1	Knowledge	How do you divide a number by 10?	Move all the digits 1 place to the right
	Application 1	Calculate 76 divided by 10.	
	Application 2	Calculate 136 divided by 10.	
2	Knowledge	How do you find the difference between two numbers?	Subtract the smaller number from the larger one.
	Application 1	What is the difference between 76 and 79?	
	Application 2	What is the difference between 136 and 136?	
3	Knowledge	What is a term-to-term rule?	A rule telling you how to get from one term to the next in a sequence
	Application 1	What is the term-to-term rule in the following sequence 5, 14, 23, 32, 41?	
	Application 2	What is the term-to-term rule in the following sequence 11, 22, 33, 44, 55?	
4	Knowledge	What is a linear sequence?	A number pattern which increases or decreases by the same amount each time.
	Application 1	Is the following sequence linear? 2, 4, 9, 11	
	Application 2	Is the following sequence linear? 24, 46, 63, 85	

#	Type	Question	Answer
5	Knowledge	How do you subtract decimals?	Same method as usual, lining up the decimal points
	Application 1	What is the difference between 0.97 and 9.1	
	Application 2	What is the difference between 1.69 and 15.4	

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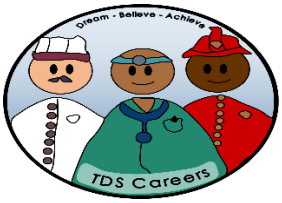
6	Knowledge	What should your answer be if the question tells you to evaluate?	A number
	Application 1	Evaluate 76 + 50	
	Application 2	Evaluate 136 + 195	

7	Knowledge	How do you multiply a number by 10?	Move all the digits 1 place to the left
	Application 1	Evaluate 79 multiplied by 10.	
	Application 2	Evaluate 136 multiplied by 10.	

8	Knowledge	What should your answer be if the question tells you to calculate?	A number
	Application 1	Calculate 5 multiplied by 8	
	Application 2	Calculate 11 multiplied by 2	

#	Type	Question	Answer
9	Knowledge	How do you work out the value of a digit in a long number?	Ignore every other digit (make them zeroes)
	Application 1	What is the value of the 2 in the number 31256?	
	Application 2	What is the value of the 5 in the number 85496?	
10	Knowledge	In a sequence, what is meant by a term?	One of the numbers in the sequence
	Application 1	What is the third term in the following sequence? 76, 155, 234, 313, 392	
	Application 2	What is the third term in the following sequence? 136, 272, 408, 544, 680	
11	Knowledge	What is a term-to-term rule?	A rule telling you how to get from one term to the next in a sequence
	Application 1	What is the next term in the following sequence 5, 14, 23, 32, 41?	
	Application 2	What is the next term in the following sequence 11, 22, 33, 44, 55?	
12	Knowledge	How do you divide a number by 100?	Move all the digits 2 places to the right
	Application 1	Calculate 796 divided by 100.	
	Application 2	Calculate 9836 divided by 100.	



Jobs that use Maths

Please go to this link for more information

https://www.bbc.co.uk/bitesize/topics/z842m39

unifrog

Best paid jobs in maths:

Quantitative Finance
IT and Computing
Data Scientist
Cryptology
Biomathematics
Aerospace Engineering
Risk Manager

Other top paying jobs include statistician, physicist and mathematician.

Quantitative Finance

This involves using maths to predict financial market movements. This helps financial organisations make more money (and avoid losing money).

IT and Computing

Numeracy and logical thinking is key to a well paid role in IT and computing. Computing is one of the fastest growing sectors in the UK.

Data Scientist

Data scientists may complete research or help create robots. They must develop ways for dealing with huge amounts of data very quickly.

Maths Teacher

A teacher is responsible for educating children to ensure they are knowledgeable, well informed and skilled in maths.

Cryptology

This deals with decoding and encrypting secure information and can deal with a range of different organisations with the aim of keeping people's information safe.

Bank Manager

The role has responsibility for the day-to-day operation of a bank. Ensuring customers are happy, and products and services are accurately sold.

Biomathematics

This field combines maths, biology and computer science. The sector aims to solve problems related to population genetics, biotechnology or medical issues.

Aerospace Engineering

There are a number of degrees that are accepted to be an aerospace engineer, maths is just one of them. This role involves designing and building aircraft.

Accountant

They work for businesses to ensure they have accurate accounts and are paying the correct taxes.

Risk Management

The role uses probability and statistics to help businesses to assess uncertainty, helping strengthen their business for the future.

Maths for Fun

S	V	D	R	A	P	O	E	L	S	E	S
S	N	D	O	T	L	D	O	H	T	S	T
C	U	V	P	V	A	H	T	L	S	T	E
U	D	B	V	C	C	D	C	U	B	I	D
E	S	H	T	N	E	T	R	D	D	M	R
I	U	M	E	R	V	T	T	I	A	A	I
S	H	T	D	N	A	S	U	O	H	T	D
D	T	N	I	I	L	C	T	S	S	E	N
S	U	I	V	M	U	L	T	I	P	L	Y
H	E	O	I	D	E	C	I	M	A	L	S
D	E	P	D	T	H	E	D	S	M	C	D
P	A	A	P	T	O	N	O	E	T	E	S

ADD
DECIMAL
DIVIDE
ESTIMATE
HUNDREDTHS
MULTIPLY
PLACE VALUE
POINT
SUBTRACT
TENTHS
THOUSANDTHS

www.subtangent.com/maths

Place the numbers 1-9 in every column, row and group of 9 squares (shown by the bold lines). You cannot have repeats in each one.

6		1					7	2
8	2	4		3			1	
		9	1					
		2		1	8		4	
			2	6				
	8		4	7	3		6	
				5				
		3		8		1	9	4
7			9	2	4	6	5	3