



Year 5 Place Value

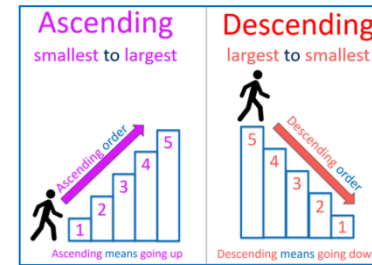
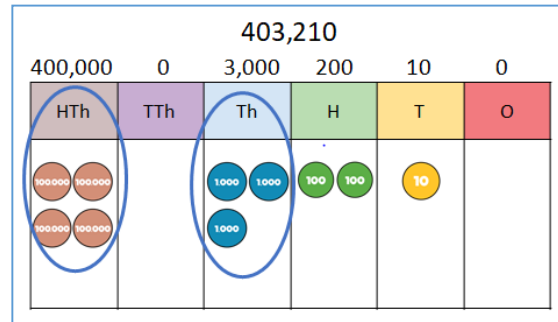
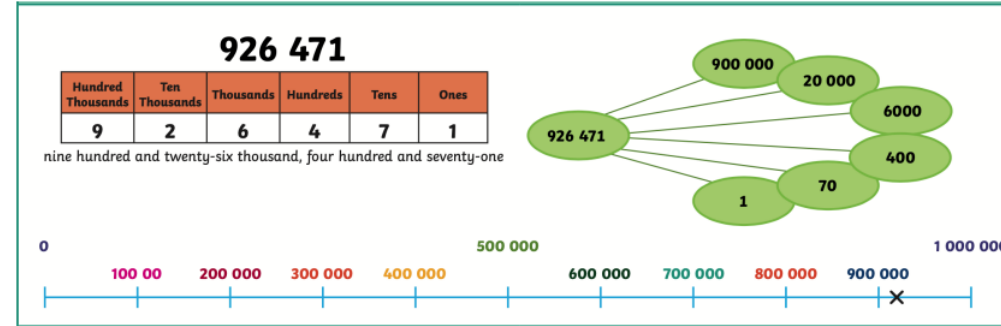
Numbers
to one
million

Gattegno Chart

100,000	200,000	300,000	400,000	500,000	600,000	700,000	800,000	900,000
10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

If the counter moves up 1 row then the number is 10 times the size.

If the counter moves up 2 rows then the number is 100 times the size.



Vocabulary
Roman numerals represent ten thousand million exchange multiple column place holder power of 10 gattegno chart left right more less partition interval ascending descending compare greater than less than rounding

The number 174,308 is shown.

100,000	200,000	300,000	400,000	500,000	600,000	700,000	800,000	900,000
10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

What is 10 more than 174,308?

10 more than 174,308 is 174,318

Roman numerals

IV = 4	I = 1	II = 2	III = 3	VIII = 8
IX = 9	V = 5	VI = 6	VII = 7	XXX = 30
XL = 40	X = 10	XI = 11	XX = 20	LXXX = 80
XC = 90	L = 50	LX = 60	LXX = 70	LXXX = 80
CD = 400	C = 100	CL = 150	CC = 200	CCC = 300
CM = 900	D = 500	DC = 600	DCC = 700	DCCC = 800
	M = 1000	MC = 1100	MD = 1500	MM = 2000

CCXLVIII = 248 DCCLXXXIV = 784 MMXIX = 2019

Rounding

Rounding to the nearest 10



Rounding to the nearest 1000



Rounding to the nearest 100 000





Multiples

● ● ● = 3 The 1st multiple of 3 is 3
 $3 \times 1 = 3$

● ● ● ● ● ● = 6 The 2nd multiple of 3 is 6
 $3 \times 2 = 6$

● ● ● ● ● ● ● ● = 9 The 3rd multiple of 3 is 9
 $3 \times 3 = 9$

3, 6 and 9 are all in the 3 times table. 3, 6 and 9 are all multiples of 3

Multiples of 2: 2, 4, 6, 8, 10, 12, 14

Multiples of 4: 4, 8, 12, 16, 20, 24, 28

Multiples of 6: 6, 12, 18, 24, 30, 36, 42

A common multiple of 2, 4 and 6 = 12

Square and cube numbers

3 rows of 3 counters is equal to 9 counters
 $3 \times 3 = 9$

The product of an integer multiplied by itself is a square number.

$5^2 = 25$
 $5 \times 5 = 25$

$4 \times 4 \times 4 = 64$
 16

64 is a cube number.

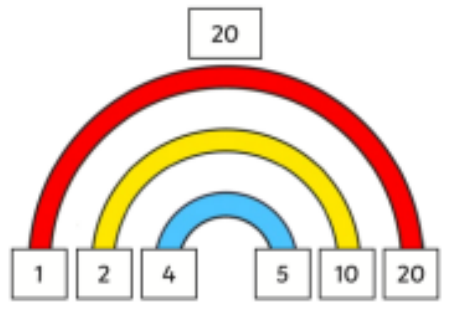
$2^3 = 8$
 $2 \times 2 \times 2 = 8$

$5^3 = 125$
 $5 \times 5 \times 5 = 125$

Year 5 Multiplication and Division A (part 1)

Factors

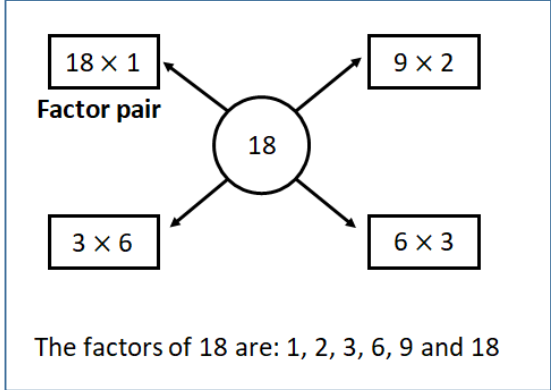
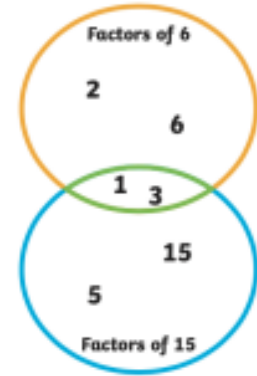
A factor is a number that divides into another number exactly, without leaving a remainder.



The factors of 20 are 1, 2, 4, 5, 10 and 20.

The factor pairs are:
 1 and 20
 2 and 10
 4 and 5

A common factor is a factor of 2 or more numbers.



Prime numbers

Integers that have exactly two factors are called **Prime Numbers**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Is 1 a prime number?

Prime number: a number with exactly two factors

What are the factors of 1? 1

$1 \times 1 = 1$

How many factors does 1 have? 1

1 has one factor.
 Prime numbers have exactly two factors.
 1 is not a prime number.

Vocabulary

Multiply
 product
 divide
 divisible
 multiples
 common multiples
 systematically
 factor
 prime number
 square number
 cube number
 place value
 column
 x times the size of
 gattegno chart
 inverse



Year 5

Multiplication and Division A (part 2)

Multiplying by 10, 100 and 1000

Th	H	T	O
		7	8

Th	H	T	O
	7	8	0

Th	H	T	O
7	8	0	0

TTh	Th	H	T	O
7	8	0	0	0

$78 \times 10 = 780$

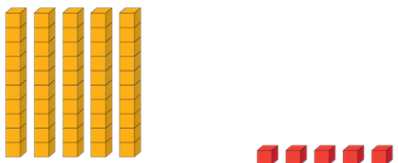
$78 \times 100 = 7,800$

$78 \times 1,000 = 78,000$

1) To multiply a number by 10 each digit moves 1 to the left on a place value grid.

2) To multiply a number by 100 each digit moves 2 to the left on a place value grid.

3) To multiply a number by 1,000 each digit moves 3 to the left on a place value grid.



50 is ten times the size of 5

50 is ten times greater than 5

Dividing by 10, 100 and 1000

TTh	Th	H	T	O
4	7	0	0	0

TTh	Th	H	T	O
	4	7	0	0

TTh	Th	H	T	O
		4	7	0

TTh	Th	H	T	O
			4	7

$47,000 \div 10 = 4,700$

$47,000 \div 100 = 470$

$47,000 \div 1,000 = 47$

1) To divide a number by 10 each digit moves 1 to the right on a place value grid.

2) To divide a number by 100 each digit moves 2 to the right on a place value grid.

3) To divide a number by 1,000 each digit moves 3 to the right on a place value grid.

Number	Divided by 10	Divided by 100	Divided by 1,000
35,000	3,500	350	35
27,000	2,700	270	27

$723 \div 100 = ?$

H	T	O	th	hth
7	2	3		
		7	2	3

See how each digit has moved two place values to the right?

$723 \div 100 = 7.23$

Look at the place value chart to see how the digits move one place to the right.

H	T	O	th	hth
	2	4		
		2	4	

You now need to include a decimal point in the answer to show that the 4 is now worth 4 tenths.

$24 \div 10 = 2.4$



Year 5 Fractions A (Part 1)

Equivalent fractions

Equivalent fractions

$\frac{1}{3} = \frac{2}{6}$

$\frac{1}{4} = \frac{2}{8}$

$\frac{1}{5} = \frac{3}{15}$

$\times 5 \left(\frac{1}{5} = \frac{5}{25} \right) \times 5$

The denominator is 5 times the numerator in both fractions, so the fractions are equivalent.

Mixed numbers and improper fractions

An improper fraction has a numerator which is greater than or equal to the denominator. $\frac{5}{3}$

Mixed numbers contain a whole number and a fraction.

whole $\rightarrow 2\frac{1}{4}$ \leftarrow fraction

Converting a mixed number to an improper fraction.

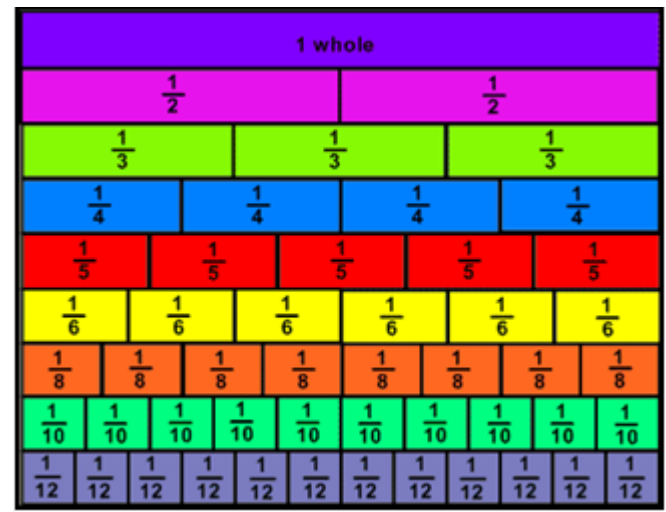
$3\frac{5}{8} = \frac{8}{8} + \frac{8}{8} + \frac{8}{8} + \frac{5}{8} = \frac{29}{8}$

- ### Vocabulary
- Equivalent
 - unit fraction
 - non-unit fraction
 - multiplied
 - divided
 - common factors
 - improper fraction
 - mixed number
 - whole part
 - denominator
 - numerator
 - greater than
 - partition

$\frac{1}{4} = \frac{3}{12}$

$\times 3$

I notice that with equivalent fractions, you multiply the numerator and the denominator by the same amount.



$5\frac{1}{6} = \frac{31}{6}$

$5 \times \frac{6}{6} = \frac{30}{6}$

$= \frac{1}{6}$

Ordering fractions

Write the fractions in ascending order.

$\frac{5}{9}, \frac{1}{9}, \frac{8}{9}, \frac{3}{9}$

When fractions have the same denominator, the smaller the numerator, the smaller fraction.

$\frac{1}{9}, \frac{3}{9}, \frac{5}{9}, \frac{8}{9}$

Write the fractions in descending order.

$\frac{3}{10}, \frac{3}{5}, \frac{3}{8}, \frac{3}{9}$

When fractions have the same numerator, the smaller the denominator, the greater fraction.

$\frac{3}{5}, \frac{3}{8}, \frac{3}{9}, \frac{3}{10}$

We can compare and order fractions by using common denominators.

$\frac{11}{8} > \frac{5}{4} = \frac{10}{8}$

Converting an improper fraction to a mixed number

$\frac{7}{3} = 2\frac{1}{3}$

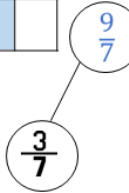
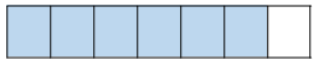
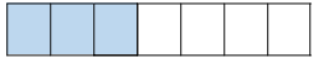


Adding fractions

Year 5 Fractions A (Part 2)

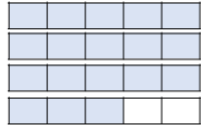
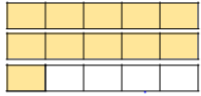
Different methods to add mixed numbers

$$\frac{3}{7} + \frac{6}{7} = \frac{9}{7} = 1\frac{2}{7}$$



When adding fractions with the same denominators, I just add the numerators.

$$2\frac{1}{5} + 3\frac{3}{5} = \frac{29}{5} = 5\frac{4}{5}$$



$$2\frac{1}{5} = \frac{11}{5}$$

$$3\frac{3}{5} = \frac{18}{5}$$

$$\frac{11}{5} + \frac{18}{5} = \frac{29}{5}$$

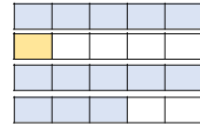
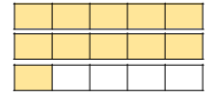


I'm going to convert both mixed numbers to improper fractions first

$$2\frac{1}{5} + 3\frac{3}{5} = 5\frac{4}{5}$$



I'm going to add my whole numbers and fractions separately.



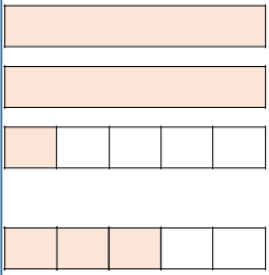
$$2 + 3 = 5$$

$$\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$$

The mixed numbers can be partitioned into a whole part and a fractional part.

- ### Vocabulary
- Equivalent
 - unit fraction
 - non-unit fraction
 - multiplied
 - divided
 - common factors
 - improper fraction
 - mixed number
 - whole part
 - denominator
 - numerator
 - greater than partition

$$2\frac{1}{5} + \frac{3}{5} = 2\frac{4}{5}$$



$$2\frac{1}{3} + \frac{5}{9} = 2\frac{8}{9}$$

$$2 + \frac{1}{3} + \frac{5}{9}$$

$$2 + \frac{3}{9} + \frac{5}{9} = 2\frac{8}{9}$$



I am going to make all of the denominators 9

I will use equivalent fractions to help me.

Subtracting Fractions

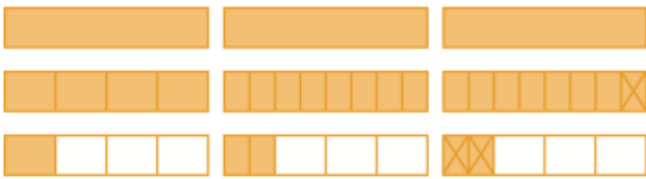
Subtract from a Mixed Number

$$1\frac{2}{3} - \frac{2}{9} = 1\frac{6}{9} - \frac{2}{9} = 1\frac{4}{9}$$

starting number	find the equivalent fraction	subtract

Subtract from a Mixed Number - Breaking the Whole

$$2\frac{1}{4} - \frac{3}{8} = 2\frac{2}{8} - \frac{3}{8} = 1\frac{10}{8} - \frac{3}{8} = 1\frac{7}{8}$$



$$\cancel{3}\frac{3}{5} - \cancel{1}\frac{8}{15} = 2\frac{1}{15}$$

$3 - 1 = 2$
 $\frac{3}{5} - \frac{8}{15} =$
 $\frac{9}{15} - \frac{8}{15} = \frac{1}{15}$

The mixed numbers can be partitioned into a whole part and a fractional part.