



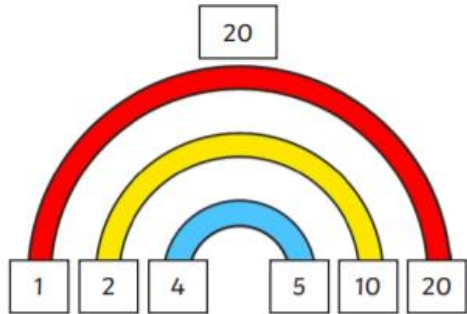
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Maths: Spring Y5

Multiplication and Division

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

Related Calculations

$$8 \times 9 = 72$$

$$80 \times 9 = 720$$

$$9 \times 8 = 72$$

$$90 \times 8 = 720$$

$$72 \div 9 = 8$$

$$720 \div 9 = 80$$

$$72 \div 8 = 9$$

$$720 \div 8 = 90$$

Squared² and Cubed³ Numbers



$$2^2 = 4$$

$$2 \times 2 = 4$$



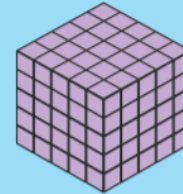
$$2^3 = 8$$

$$2 \times 2 \times 2 = 8$$



$$5^2 = 25$$

$$5 \times 5 = 25$$



$$5^3 = 125$$

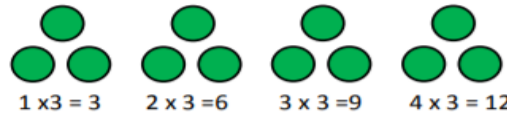
$$5 \times 5 \times 5 = 125$$

Key Vocabulary



Factor	Factors are numbers that divide exactly into another number.
Multiple	A multiple is the product result of one number multiplied by another number.
Common	A number that can be divided into two different numbers, without leaving a remainder.
Remainder	An amount left over after division.
Product	The answer when two or more values are multiplied together.

Multiples are the result of multiplying the two numbers together. They can be seen as extended times tables.



Multiples of 3 would be 3, 6, 9, 12, 15, 18...



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Multiplying and Dividing by 10, 100 and 1000

When a number is multiplied by 10, 100 or 1,000, the digits move to the left in the place value column. The digits move **1 place left** when we multiply by 10, **2 places** to multiply by 100 and **3 places** to multiply by 1,000.

The empty place value spaces are filled with a **0 as a place holder**.

TH	H	T	O	
	4	2	3	
	100 100 100 100	10 10	1 1	
100 100 100 100	10 10	1 1		0

x10

$423 \times 10 = 4,230$

When a number is divided by 10, 100 or 1,000, the digits move to the right in the place value column: **1 place** when dividing by 10, **2 places** to divide by 100 and **3 places** to divide by 1,000.

Look what happens when we divide 7,900 by 10, 100 and 1,000:

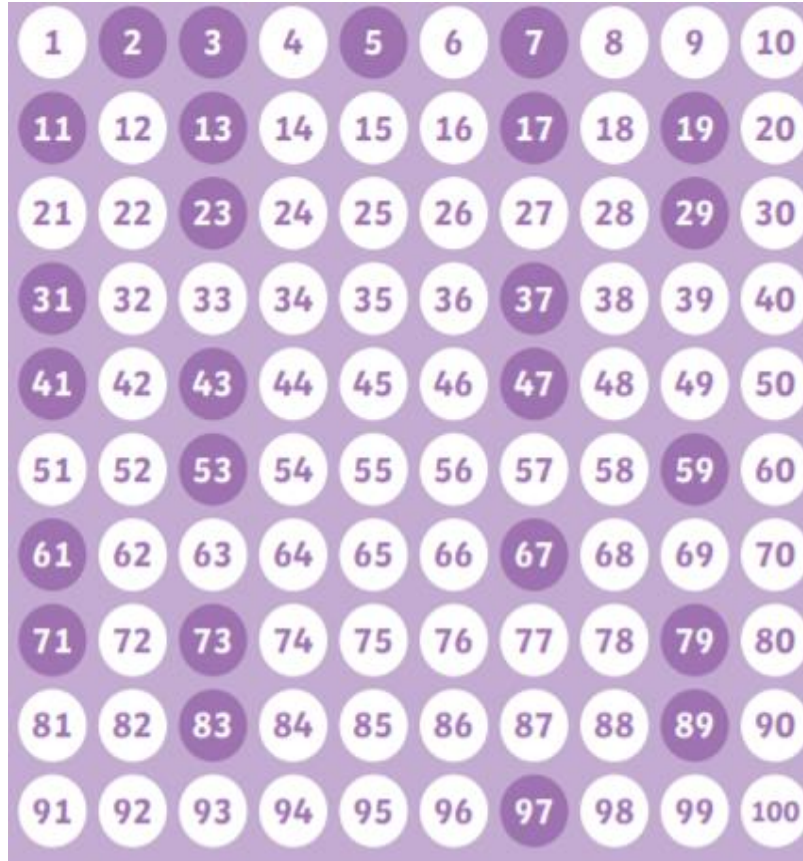
TH	H	T	O	.	t
7	9	0	0		
	7	9	0		
		7	9		
			7	.	9

÷10
÷100
÷1,000

Maths: Spring Y5

Multiplication and Division

Prime Numbers



Key Vocabulary

Square Number	A square number is the result when a number has been multiplied by itself. For example, 25 is a square number because it's 5 lots of 5, or 5 x 5.
Prime Number	A whole number above 1 that can not be made by multiplying other whole numbers. Example: 5 is a prime.
Cubed Number	A number has been multiplied by itself twice.
Product	The answer when two or more values are multiplied together.

A prime number is a number that only has 2 factors – 1 and itself. 5 is a prime number as it can only be divided by 1 and itself. 5 is not in any other times tables.

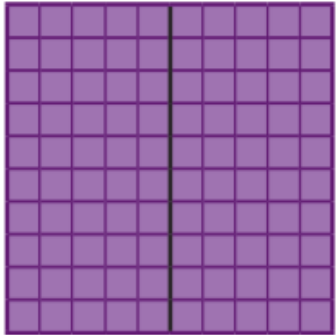




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Equivalent Fractions

To find equivalent fractions, we multiply or divide the numerator and denominator by the same number.

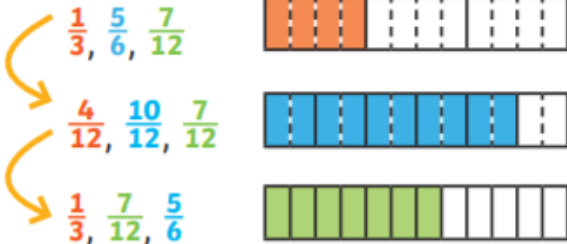


$$\frac{1}{2} \xrightarrow{\times 5} \frac{5}{10} \xrightarrow{\times 10} \frac{50}{100}$$

$$\frac{50}{100} \xrightarrow{\div 10} \frac{5}{10} \xrightarrow{\div 5} \frac{1}{2}$$

Compare and Order Fractions

We can compare and order fractions by using common denominators.



Maths: Spring Y5 Fractions

Convert an Improper Fraction to a Mixed Number

$\frac{9}{4}$

$9 \div 4 = 2r1$ $2\frac{1}{4}$

Divide the numerator by the denominator.

This shows you the whole number and the fraction.

Convert an Mixed Number to an Improper Fraction

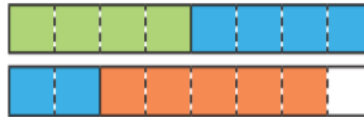
Multiply the whole by the denominator to make an improper fraction.

$2\frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$

Add the fractions together.

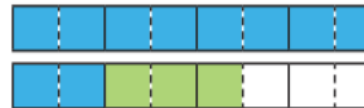
Add Fractions Where the Total is Greater Than 1

$$\frac{1}{2} + \frac{3}{4} + \frac{5}{8} = \frac{4}{8} + \frac{6}{8} + \frac{5}{8} = \frac{15}{8} = 1\frac{7}{8}$$



Adding Mixed Numbers

$$1\frac{1}{4} + \frac{3}{8} = 1\frac{2}{8} + \frac{3}{8} = 1 + \frac{5}{8} = 1\frac{5}{8}$$



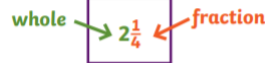
$$1\frac{1}{4} + \frac{3}{8} = \frac{5}{4} + \frac{3}{8} = \frac{10}{8} + \frac{3}{8} = \frac{13}{8} = 1\frac{5}{8}$$

Key Vocabulary

Numerator	The number above the line in a fraction.	✓
Denominator	The number below the line in a fraction.	
Unit fraction	Any fraction with 1 as the numerator.	
Non-unit fraction	A fraction where the numerator is greater than 1.	
Mixed Number	A number with three parts: a whole number, a numerator, and a denominator. E.g $1\frac{3}{4}$	
Improper Fraction	When the numerator is greater than the denominator, such as $\frac{5}{4}$.	
Simplest Form	When the numerator and the denominator have no common factors besides one.	
Common Denominator	A common multiple of the denominators of a number of fractions.	

Mixed Numbers.

Mixed numbers contain a whole number and a fraction.



Improper Fractions.

An improper fraction has a numerator which is greater than or equal to the denominator.

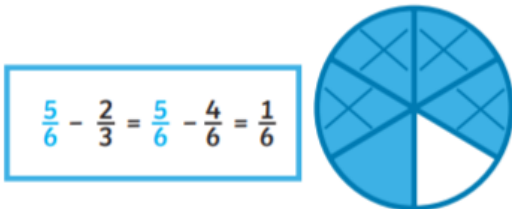
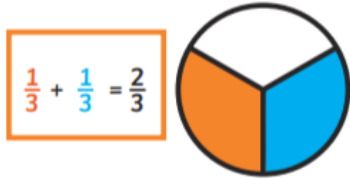
$\frac{5}{3}$



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Adding and Subtracting Fractions

To add or subtract fractions with denominators that are multiples of the same number, we must change one fraction to have the same denominator.



Maths: Spring Y5 Fractions

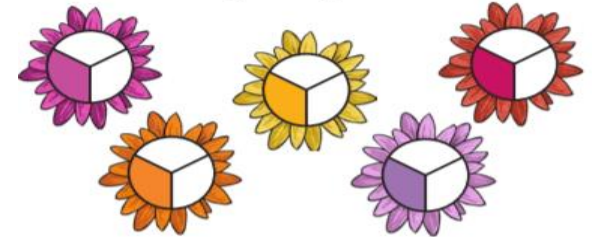
Subtract From a Mixed Number

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

starting number	find the equivalent fraction	subtract

Multiplying Unit Fractions by an Integer

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



Subtracting Two Mixed Numbers

$$2\frac{3}{4} - 1\frac{5}{8} = 1\frac{1}{8}$$



$$2 - 1 = 1$$

$$\frac{3}{4} - \frac{5}{8} = \frac{1}{8}$$

Multiply Mixed Numbers by Integers

Convert to an improper fraction and multiply the numerator by the integer.

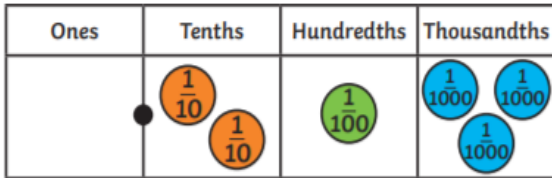
$$2\frac{1}{4} \times 2 = \frac{9}{4} \times 2 = \frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$$

Integer = A number which is not a fraction, a whole number.

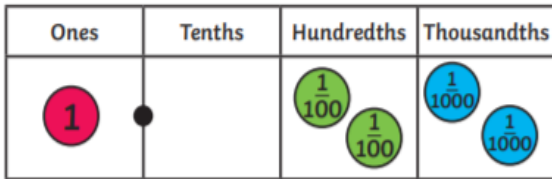


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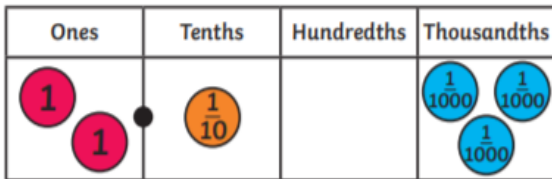
Order and Compare Numbers with Three Decimal Places



0 . 2 1 3



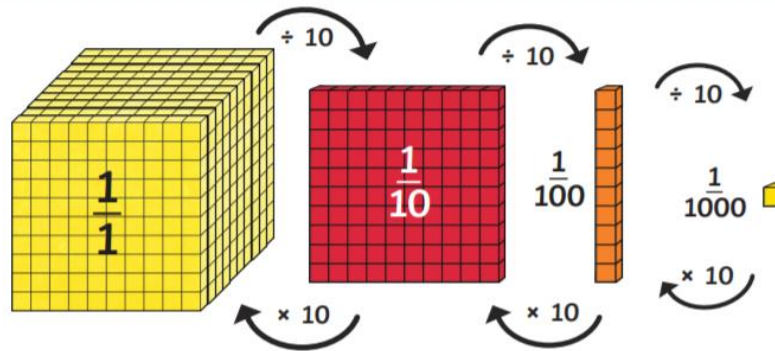
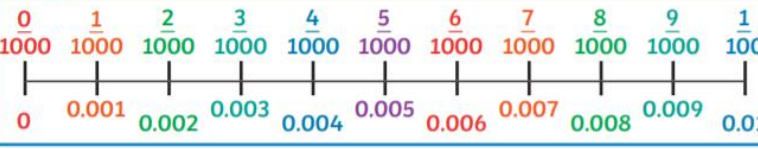
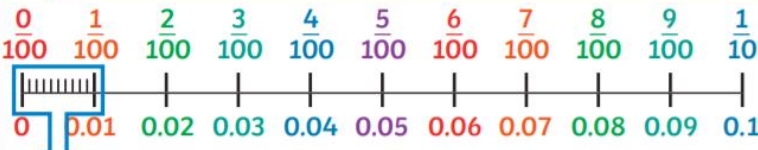
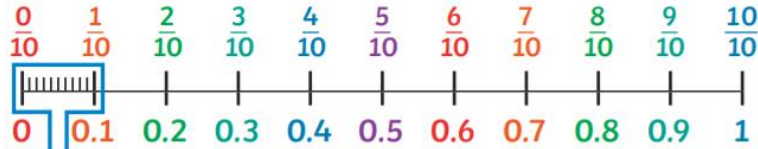
1 . 0 2 2



2 . 1 0 3

Maths: Spring Y5 Number Decimals and percentages

Tenths, Hundredths and Thousandths



Key Vocabulary

Tenths	First digit to the right of the decimal point.
Hundredths	A single part of something that has been divided into a hundred parts.
Decimal Tenths	0.1
Decimal Hundredths	The number that is 2 places to the right of the decimal point.
Decimal point	A point or dot used to separate the whole part of a number from the fractional part.
Tenths	First digit to the right of the decimal point.
Decimal Equivalents	decimal numbers that have the same value. For example, 0.5 and 0.50 are equivalent decimals.

Decimal Numbers as Fractions.

$$0.71 = \frac{71}{100} = \frac{7}{10} + \frac{1}{100}$$

$$0.37 = \frac{37}{100} = \frac{3}{10} + \frac{7}{100}$$



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Multiplying and Dividing by 10, 100 and 1000

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
	3	8		
3	8			

$\div 10$ (arrow from 8 to 3) and $\times 10$ (arrow from 3 to 8)

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
	0	3	8	
3	8			

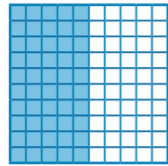
$\div 100$ (arrow from 8 to 0.38) and $\times 100$ (arrow from 0.38 to 38)

Tens	Ones	Tenths	Hundredths	Thousandths
3	8			
	0	0	3	8
3	8			

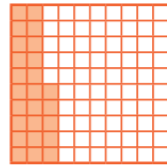
$\div 1000$ (arrow from 8 to 0.0038) and $\times 1000$ (arrow from 0.0038 to 38)

Maths: Spring Y5 Number Decimals and percentages

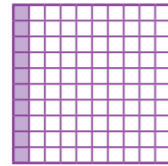
Percentage and Decimal Equivalents



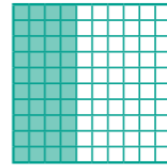
$$50\% = \frac{50}{100} = \frac{1}{2} = 0.5$$



$$25\% = \frac{25}{100} = \frac{1}{4} = 0.25$$



$$10\% = \frac{10}{100} = \frac{1}{10} = 0.1$$

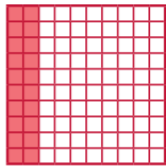


$$40\% = \frac{40}{100} = \frac{2}{5} = 0.4$$

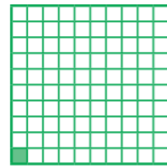
Crossing the Whole

$$0.82 + 0.63 = 1.45$$

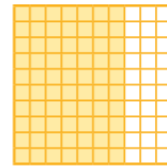
$$2.531 - 0.6 = 1.931$$



$$20\% = \frac{20}{100} = \frac{1}{5} = 0.2$$



$$1\% = \frac{1}{100} = 0.01$$



$$70\% = \frac{70}{100} = \frac{7}{10} = 0.7$$

Adding and Subtracting Decimals

$$0.8 + 0.001 = 0.801$$

$$1.031 - 0.23 = 0.801$$

$$0.4005 + 0.4005 = 0.801$$

Percentage of an Amount: Non calculator

To calculate any percentage it is useful to start with 10%.

30% of 120: 10% = $120 \div 10 = 12$
30% = $3 \times 12 = 36$

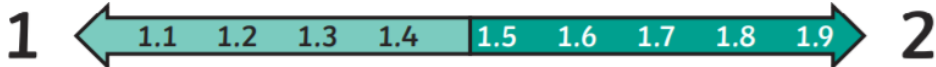
To find 10% we divide by 10. To find 30% we multiply 10% by 3.

45% of 80: 10% = $80 \div 10 = 8$
5% = $8 \div 2 = 4$
40% = $4 \times 8 = 32$
45% = $40\% + 5\% = 32 + 4 = 36$
5% is half of 10% so we divide by 2.

To find 1% we divide the starting amount by 100.

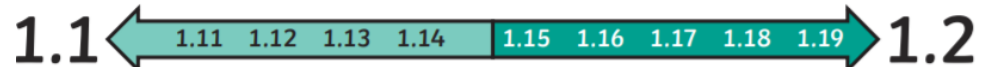
1% of 30 = $30 \div 100 = 0.3$.

Rounding Decimals



If the tenths digit is 1, 2, 3 or 4, we round down to the nearest whole number.

If the tenths digit is 5, 6, 7, 8 or 9, we round up to the nearest whole number.



If the hundredths digit is 1, 2, 3 or 4, we round down to the nearest tenth.

If the hundredths digit is 5, 6, 7, 8 or 9, we round up to the nearest tenth.