Mathematical Super Powers

Year 6 - Autumn 1

I know the multiplication and division facts for all times tables up to 12 × 12.

The Year 5 children should already know **ALL** the times tables up to 12x12. The aim is for them to recall these facts **instantly**. This half term is a chance for Year 5 children to consolidate their knowledge of multiplication and division facts and to increase their speed of recall.

1	2	3	4	5	6
1 x 1 = 1	2 x 2 = 4	3 x 3 = 9	4 x 4 = 16	5 x 5 = 25	6 x 6 = 36
1 x 2 = 2	2 x 3 = 6	3 x 4 = 12	4 x 5 = 20	5 x 6 = 30	6 x 7 = 42
1 x 3 = 3	2 x 4 = 8	3 x 5 = 15	4 x 6 = 24	5 x 7 = 35	6 x 8 = 48
1 x 4 = 4	2 x 5 = 10	3 x 6 = 18	4 x 7 = 28	5 x 8 = 40	6 x 9 = 54
1 x 5 = 5	2 x 6 = 12	3 x 7 = 21	4 x 8 = 32	5 x 9 = 45	6 x 10 = 60
1 x 6 = 6	2 x 7 = 14	3 x 8 = 24	4 x 9 = 36	5 x 10 = 50	6 x 11 = 66
1 x 7 = 7	2 x 8 = 16	3 x 9 = 27	4 x 10 = 40	5 x 11 = 55	6 x 12 = 72
1 x 8 = 8	2 x 9 = 18	3 x 10 = 30	4 x 11 = 44	5 x 12 = 60	
1 x 9 = 9	2 x 10 = 20	3 x 11 = 33	4 x 12 = 48		
1 x 10 = 10	2 x 11 = 22	3 x 12 = 36			
1 x 11 = 11	2 x 12 = 24				
1 x 12 = 12					

7	8	9	10	11	12
7 x 7 = 49	8 x 8 = 64	9 x 9 = 81	10 x 10 = 100	11 x 11 = 121	12 x 12 = 144
7 x 8 = 56	8 x 9 = 72	9 x 10 = 90	10 x 11 = 110	11 x 12 = 132	
7 x 9 = 63	8 x 10 = 80	9 x 11 = 99	10 x 12 = 120		
7 x 10 = 70	8 x 11 = 88	9 x 12 = 108			
7 x 11 = 77	8 x 12 = 96				
7 x 12 = 84					

Key Vocabulary

What is 12 **multiplied by** 6?

What is 7 **times** 8?

What is 84 **divided by** 7?

What is the **product** of 3 and 4?

9 **lots of** 6 is …?

They should be able to answer these questions in any order, including missing number questions e.g. 7 × ◯ = 28 or ◯ ÷ 6 = 7. Children who have already mastered their times tables should apply this knowledge to answer questions including decimals e.g. 0.7 × ◯ = 4.2 or ◯ ÷ 60 = 0.7

Advice

The secret to success is practising little and often. Can you practise these Super Powers while walking to school or during a car journey? You don't need to practise them all at once. You don't need to practise them all at once: perhaps you could start with one particular times tables and ensure they know all of them before moving onto another times table.

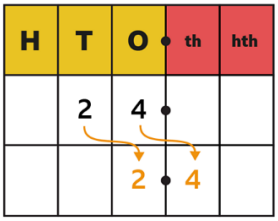
Speed Challenge – Take two packs of playing cards and remove the kings. Turn over two cards and ask your child to multiply the numbers together (Ace = 1, Jack = 11, Queen = 12). How many questions can they answer correctly in 2 minutes? Practise regularly and see if they can beat their high score.

Mathematical Super Powers

Year 6 – Autumn 2

I can multiply and divide numbers by 10, 100 and 1000.

By the end of this half term, children should know the following facts. The aim is for them to recall these **facts instantly.**

When you multiply by 10, the number gets 10 times bigger. Each digit moves one place to the left. If needed, the space is filled with a 0, which is called a place holder. **4 x 10 = 40** **7 x 10 = 70** **0.5 x 10 = 5** **0.72 x 10 = 7.2**	When you multiply by 100, the number gets 100 times bigger. The digits move two places to the left. If needed, the spaces are filled with 0's, which are called place holders. **3 x 100 = 300** **9 x 100 = 900** **2.5 x 100 = 250** **0.16 x 100 = 16**	When you multiply by 1000, the number gets 1000 times bigger. The digits move three places to the left. If needed, the spaces are filled with 0's, which are called place holders. **6 x 1000 = 6000** **90 x 1000 = 90,000** **6.8 x 1000 = 6,800** **0.89 x 1000 = 890**
When you divide by 10, the number gets 10 times smaller. The digits move one place to the right. **5 ÷ 10 = 0.5** **24 ÷ 10 = 2.4** **7.2 ÷ 10 = 0.72** **0.96 ÷ 10 = 0.096** 	When you divide by 100, the number gets 100 times smaller. The digits move two places to the right. **2 ÷ 100 = 0.02** **8 ÷ 100 = 0.08** **99 ÷ 100 = 0.99** **2.9 ÷ 100 = 0.029**	When you divide by 1000, the number gets 1000 times smaller. The digits move three places to the right. **9 ÷ 1000 = 0.009** **28 ÷ 1000 = 0.028** **99 ÷ 1000 = 0.099** **4.2 ÷ 1000 = 0.0042**

Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal point	tenths	hundredths	thousandths
								.			

Children should be able to work these out in their heads.

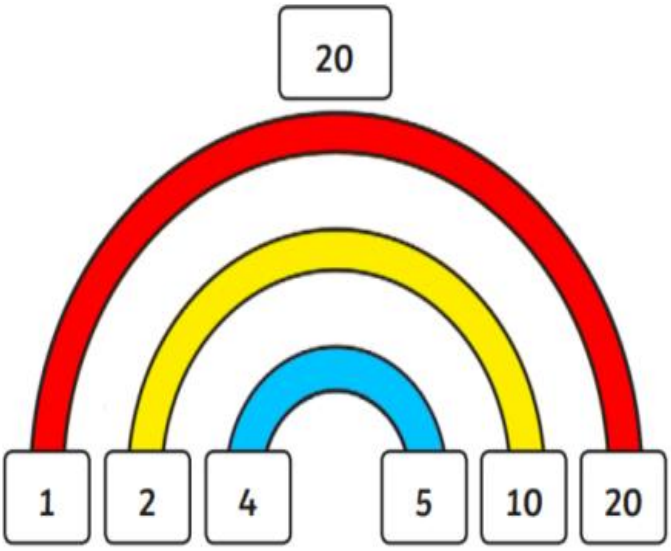
They should also be able to say answers such as 5 ÷ 10 = 0.5 as 5 tenths, 29 ÷ 100 = 0.29 as 29 hundredths or 2 tenths and 9 hundredths and 9 ÷ 1000 = 0.009 as 9 thousandths.

Mathematical Super Powers

Year 6 – Spring 1

I can identify common factors of a pair of numbers.

By the end of this half term, children should know the factors of numbers. The aim is for them to recall these facts fairly **instantly**.



The **factors** of a number are all numbers which divide it with no remainder.

E.g. the factors of 24 are 1, 2, 3, 4, 6, 8, 12, and 24.

The factors of 56 are 1, 2, 4, 7, 8, 14, 28 and 56.

The **common factors** of two numbers are the factors they share.

E.g. the common factors of 24 and 56 are 1, 2, 4 and 8.

The **highest common factor** of 24 and 56 is 8.

Children should be able to explain how they know that a number is a common factor.

E.g. 8 is a common factor of 24 and 56 because $24 = 8 \times 3$ and $56 = 8 \times 7$.

Advice

The secret to success is practising little and often. Can you practise these Super Powers while walking to school or during a car journey? You don't need to practise them all at once: perhaps you could have a fact of the day.

Vary the way you practice through the use of key vocabulary and language as well as known facts.

The secret to success is practising little and often. Use time wisely. Can you practise these Super Powers while walking to school or during a car journey?

Play games - There are many online games to practise finding the greatest common factor, for example: www.fun4thebrain.com/beyondfacts/gcfsketch.html

Mathematical Super Powers

Year 6 – Spring 1

I can recall square numbers and cube numbers.
I can identify prime numbers up to 50.

By the end of this half term, children should know the following facts. The aim is for them to recall these **facts instantly.**

A square number is a number multiplied by itself:	A cube number is a number multiplied by itself and then itself again.	A prime number is a number with no factors other than itself and one.
1 x 1 = 1 This is also written as 1^2 (one squared). 4 = 2 x 2 or 2^2 9 = 3 x 3 or 3^2 16 = 4 x 4 or 4^2 25 = 5 x 5 or 5^2 36 = 6 x 6 or 6^2 49 = 7 x 7 or 7^2 64 = 8 x 8 or 8^2 81 = 9 x 9 or 9^2 100 = 10 x 10 or 10^2 121 = 11 x 11 or 11^2 144 = 12 x 12 or 12^2	1 x 1 x 1 = 1 This is also written as 1^3 (one cubed). The first 10 cube numbers are: 1 = 1 x 1 x 1 or 1^3 8 = 2 x 2 x 2 or 2^3 27 = 3 x 3 x 3 or 3^3 64 = 4 x 4 x 4 or 4^3 125 = 5 x 5 x 5 or 5^3 216 = 6 x 6 x 6 or 6^3 343 = 7 x 7 x 7 or 7^3 512 = 8 x 8 x 8 or 8^3 729 = 9 x 9 x 9 or 9^3 1,000 = 10 x 10 x 10 or 10^3 The cube numbers from 1 to 100 are: 1, 8, 27, 64 As you can see when you cube a whole number, you'll find the numbers get very big very quickly!	**The following numbers are prime numbers:** **2, 3, 5, 7, 11, 13, 17, 19 , 23, 29, 31, 37, 41, 43, 47** A composite number is divisible by a number other than 1 or itself. **The following numbers are composite numbers:** **4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 22, 24, 25, 26, 27, 28, 30, 32, 34, 35, 36, 38, 39, 40, 42, 44, 45, 46, 48, 49, 50** **<u>Key vocabulary</u>** Prime number Composite number Factor Multiple

Children should d be able to explain how they know that a number is composite. E.g. 39 is composite because it is a multiple of 3 and 13.

<u>Advice</u>

The secret to success is practising little and often. Use time wisely. Can you practise these KIRFs while walking to school or during a car journey? You don't need to practise them all at once: perhaps you could have a fact of the day.

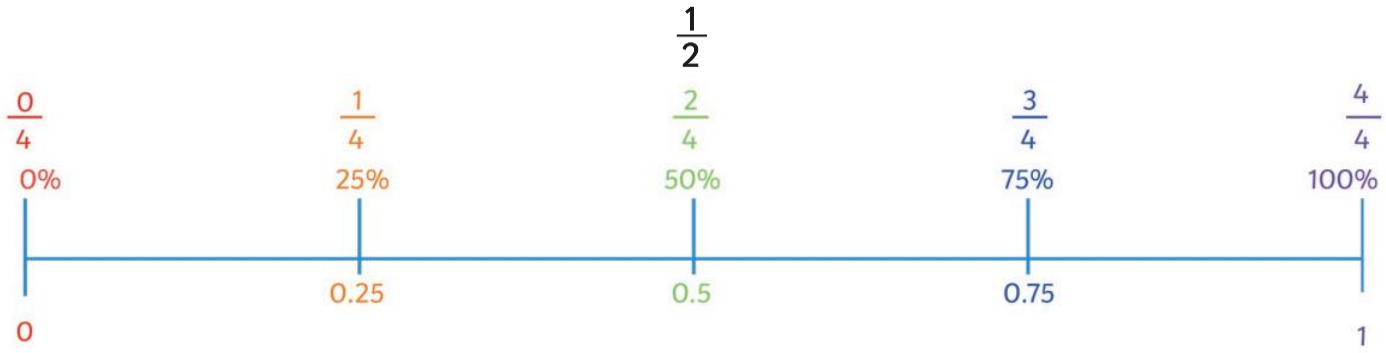
It's really important that your child uses mathematical vocabulary accurately. Choose a number between 2 and 50. How many correct statements can your child make about this number using the vocabulary above? Make a set of cards for the numbers from 2 to 50. How quickly can your child sort these into prime and composite numbers? How many even prime numbers can they find? How many odd composite numbers?

Mathematical Super Powers

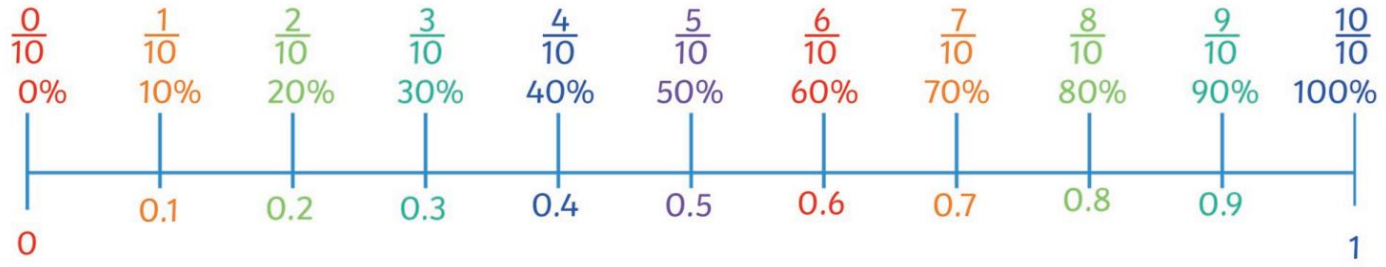
Year 6 – Spring 2

I can convert between decimals, fractions and percentages.

By the end of this half term, children should know the following facts. The aim is for them to recall these **facts instantly.**



fraction	decimal	percentage %	**Key Vocabulary**
1/3	0.33	33%	How many **tenths** is 0.8?
2/3	0.66	66%	Write 0.75 as a **fraction**.
			Write ¼ as a **decimal**.



Advice

Play games - Make some cards with pairs of equivalent fractions and decimals. Use these to play the memory game or snap. Or make your own dominoes with fractions on one side and decimals on the other.

https://www.topmarks.co.uk/maths-games/daily10 - Level 6 Fractions – decimal equivalents