Key Instant Recall Facts

Year 5 - Autumn 1

I know decimal addition and subtraction facts for 1 and 10.

The list below gives some examples, but they should know all the decimal number bonds (tenths and hundredths) for 1 and decimal number bonds (tenths) for 10. The aim is for instant recall for each fact in the fact family.

0.6 + 0.4 = 1	**0.06 + 0.94 = 1**	**4.8 + 5.2 = 10**
0.4 + 0.6 = 1	**0.94 + 0.06 = 1**	**5.2 + 4.8 = 10**
1 – 0.4 = 0.6	**1 – 0.06 = 0.94**	**10 – 5.2 = 4.8**
1– 0.6 = 0.4	**1 – 0.94 = 0.06**	**10 – 4.8 = 5.2**
0.75 + 0.25 = 1	**3.7 + 6.3 = 10**	**0.3 + 9.7 = 10**
0.25 + 0.75 = 1	**6.3 + 3.7 = 10**	**9.7 + 0.3 = 10**
1 – 0.25 = 0.75	**10 – 6.3 = 3.7**	**10 – 0.3 = 9.7**
1 – 0.75 = 0.25	**10 – 3.7 = 6.3**	**10 – 9.7 = 0.3**

They should be able to answer questions in any order, including missing number questions,

e.g. 0.49 + ☐ = 1 7.2 + ☐ = 10. 1 - ☐ = 0.37 10 = ☐ + 8.4

Useful Questions

What do I **add to** 0.8 to make 1?

What is 1 **take away** 0.06?

What is 1.3 **less than** 10?

How many more than 9.8 is 10?

What is the **difference between** 0.92 and 10?

Top Tips:

The secret to success is to practise little and often -could you practise on the way to school or during a car journey?

You don't need to practise them all at once – perhaps have a fact family of the day. If they can tell you one fact, can they say all the other facts in the family?

Use number bonds to 10 and number bonds to 100 to help (7 + 3 = 10 so 0.7 + 0.3 = 1 and 37 + 63 = 100 so 3.7 + 6.3 = 10 and 0.37 + 0.63 = 1)

Make it fun!

- Timed Games: How well are you doing? How many questions can you answer in 2 minutes? Can you beat your own record?
- http://www.conkermaths.org/cmweb.nsf/products/numberbondpairs.html Game 9 (Decimals that total 1) and Game 10 (decimals that total 10).
- https://www.topmarks.co.uk/maths-games/hit-the-button Choose Number bonds – Decimals make 1 or Decimals make 10
- http://www.snappymaths.com/addsub/make1/resources/make1tenthsmmmab.pdf Worksheet for bonds to make 1
- http://www.wldps.com/gordons/Bingo_-_make_amounts.swf Choose make
- 1 (1d.p) or make 10 (1 d.p)
- Play dominoes. Pick a domino. Choose one side to be the whole number and the other side to be the tenth. Ask how many more to make 10.
- http://www.learn-with-math-games.com/learning-decimals.html Pairing decimals game to print

Deepen and apply

- 0.☐☐ + 0.☐☐ + 0.☐☐ = 1 How many ways can you find?
- ☐.☐ + ☐.☐ + ☐.☐ = 10 How many ways can you find?
- Write four number facts represented by this bar model.

3.7	5.8
9.5	

- Can you make up any of your own bar models and write the fact families they represent?
- How many different worded problems can you write and solve that would be represented by the bar model (e.g. *There was a ribbon 9.5m long and I cut off 3.7m; how much was left? I had 5.8kg of rice and went to buy 3.7kg more; how much did I have altogether? Mr Green walked 9.5 km and Mr Brown walked 5.8 miles; how much further did Mr Green walk?*)
- Use this number sentence to write down three more pairs of decimal numbers that total 3: 1·6 + 1·4 = 3. Which other whole numbers can you write decimal number pairs for?

Key Instant Recall Facts
Year 5 - Autumn 2

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

Children should know all of these facts: the aim is for instant recall.

0	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	23	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

This is a chance for Year 5 children to consolidate their knowledge of multiplication and division facts and to increase their speed of recall.

Children who have already mastered their times tables should apply this knowledge to answer questions including decimals,

e.g. 0.7 × 6 = 4.2 or 42 ÷ 60 = 0.7

Children should be able to answer the questions in any order, including with the calculations written either side of the equals sign and missing number questions,

e.g. 11 × ☐ = 99 6 = ☐ ÷ 8 9 = ☐ ÷ 12 32 = ☐ x 4

Useful Questions

What is 12 **multiplied by** 9?

What are 8 **lots of** 9? What is 4 **times** 7?

What is 108 **divided by** 12?

What do you get if you have 6, **eight times**?

What is **the product of** 8 and 9?

Top Tips:

The secret to success is to practise little and often - could you practise on the way to school or during a car journey? You don't need to practise them all at once – perhaps have a fact of the day, or a fact family of the day.

Use what you already know: Which facts do you already know that could help you work it out? (Avoid counting up – this is not an efficient strategy)

Use fact families: If I know that 3 x 7 = 21, then 7 x 3 = 21, 21 ÷ 3 = 7 and 21 ÷ 7 = 3.

Focus on the facts you find more difficult to remember and keep repeating them.

Make it fun!

- Use practical resources – lay out pebbles, buttons or other objects in arrays (rows and columns) to represent the facts (e.g. 3 x 12 = 36 can be represented by 12 rows of 3).
- Songs and Chants – You can buy Times Tables CDs or find multiplication songs and chants online. If your child creates their own song, this can make the times tables even more memorable.
- http://www.conkermaths.org/cmweb.nsf/products/conkerkirfs.html
- http://www.topmarks.co.uk/maths-games/hit-the-button
- Play number ping pong! Start by saying 'ping', child replies with 'pong'. Repeat with times tables facts i.e. say '6' and they reply '72'
- Test the Parent – Your child can make up their own tricky division questions for you, e.g. What is 132 divided by 12? They need to be able to multiply to create these questions.
- Timed Games: How well are you doing? How many questions can you answer in 2 minutes? Can you beat your own record?
- Use memory tricks – For those hard-to-remember facts, www.multiplication.com has some strange picture stories to help children remember.
- https://www.bbc.co.uk/teach/skillswise/times-tables/z4gs7nb
- http://www.snappymaths.com/multiplication/1to12xtab/interactive/1to12ximm/1to12ximm.htm
- https://www.timestables.co.uk/

Deepen and apply

- Choose a fact family from the times tables. How many different number stories can you write to fit your equation?
- Write out the products of the 3, 6, 9 and 12 times tables – which facts do they have in common? Can you explain why? Can you find any other times tables that have facts in common?
- Choose a times table and write it out. Is there a pattern in the ones digits? Is there a pattern in the tens digits? Does the pattern go on forever? How could you convince me?
- Choose target number. How many different ways can you make that number using multiplication or division (e.g. 12 = 2 x 6, 12 = 3 x 4 12 = 1 x 12, 12 = 24 ÷ 2, 12 = 48 ÷ 4, 12 = 2 x 3 x 2, 12 = 96 ÷ 2 ÷ 2 ÷ 2).
- https://nrich.maths.org/4905
- https://nrich.maths.org/6924

Key Instant Recall Facts

Year 5 – Spring 1

I can multiply and divide whole numbers and those involving decimals by 10,100 and 1000.

By the end of this term, children should be able to **quickly** work out facts like the ones below.

5 × 10 = 50	7 × 100 = 700	4 x 1000 = 4000
80 ÷ 10 = 8	900 ÷ 100 = 9	2000 ÷ 1000 = 2
23 × 10 = 230	84 × 100 = 8400	72 x 1000 = 72,000
97 ÷ 10 = 9.7	72 ÷ 100 = 0.72	8540 ÷ 1000 = 8.54
217 × 10 = 2170	589 × 100 = 58,900	423 x 1000 = 423,000
456 ÷ 10 = 45.6	312 ÷ 100 = 3.12	601 ÷ 1000 = 0.601
6.4 × 10 = 64	2.8 × 100 = 280	8.7 x 1000 = 8700
7.8 ÷ 10 = 0.78	697 ÷ 100 = 6.97	5328 ÷ 1000 = 5.238
2.85 × 10 = 28.5	4.76 × 100 = 476	6.75 x 1000 = 6750
67.1 ÷ 10 = 6.71	189 ÷ 100 = 1.89	1924 ÷ 1000 = 1.924

Children should be able to answer the questions in any order, including with the calculations written either side of the equals sign and missing number questions,

e.g. 100 × ☐ = 5 or ☐ ÷ 1000 = 0.645 43,200 = ☐ x 43.2

Useful Questions

What is 5 **multiplied by** 10?

What is 723 **divided by** 1000? **times**?

What is 10 **times bigger** than 1.19?

What is 100 **times** 0.9?

What is **the product of** 100 and 92?

What is 100 **times smaller** than 43?

Top Tips:

The secret to success is to practise little and often - could you practise on the way to school or during a car journey? You don't need to practise them all at once – perhaps have a fact of the day, or a fact family of the day.

Keep referring to the key language of tenths, hundredths and thousandths.

It is important to talk about the how the value of the digits changes according to its place, so in 0.24, the four is worth 4 hundredths but if we make it ten times bigger, we get 2.4 and the 4 is now worth 4 tenths. Tenths are ten times bigger than hundredths.

Make it fun!

- http://www.snappymaths.com/counting/decimals/interactive/div1dby10100/div1dby101000.htm
- http://www.snappymaths.com/counting/decimals/interactive/div2dby100/div2dby100.htm
- Play number ping pong! Start by saying 'ping', child replies with 'pong'. Repeat with times tables facts i.e. say '9' and they reply '0.009' (for dividing by 1000)
- Test the Parent – Your child can make up their own tricky division questions for you, e.g. What is 42 divided by 100? See if you can both solve it.
- Timed Games: How well are you doing? How many questions can you answer in 2 minutes? Can you beat your own record?

Deepen and apply

- I divide a number by 1000 and the answer is 0.3. What number did I start with? Write down a number with one decimal place which when divided by 100 gives an answer between 12.5 and 13 ... and another, … and another, …
- Is it always, sometimes or never true that multiplying a number by 10 and then multiplying the answer by 100 is the same as multiplying the original number by 1000? Explain your answer.
- http://www.topmarks.co.uk/Flash.aspx?f=BingoMultiplicationv9 Try applying it to tables questions
- ☐ x 10 = ☐ ÷ 10 How many ways can you make this true? Can you try with different combinations of 10, 100 and 1000?

Key Instant Recall Facts
Year 5 – Spring 2

I know how to find square and cube numbers

Children should know how to find square numbers and be able to recall all the squares up to 144.

1 = 1^2 = 1 x 1
4 = 2^2 = 2 x 2
9 = 3^2 = 3 x 3
16 = 4^2 = 4 x 4
25 = 5^2 = 5 x 5
36 = 6^2 = 6 x 6
49 = 7^2 = 7 x 7
64 = 8^2 = 8 x 8
81 = 9^2 = 9 x 9
100 = 10^2 = 10 x 10
121 = 11^2 = 11 x 11
144 = 12^2 = 12 x 12

Children know how to find cube numbers and be able to recall cubes up to 125

1 = 1^3 = 1 x 1 x 1
8 = 2^3 = 2 x 2 x 2
27 = 3^3 = 3 x 3 x 3
64 = 4^3 = 4 x 4 x 4
125 = 5^3 = 5 x 5 x 5

Useful Questions

What is 8 **squared**? What is 7 multiplied by itself? Is 81 a **square number**?
What is the **product of** 7 and 7? What is he square root of 144??
How can you tell if a number is **square**? What is 3 **cubed**?

Top Tips:

The secret to success is to practise little and often - could you practise on the way to school or during a car journey? You don't need to practise them all at once – perhaps have a fact of the day, or a fact family of the day.

Use what you already know: Children should already know all of their times tables so the square numbers should have already been learned, just not named.

Make it fun!

- Use practical resources – lay out pebbles, buttons or other objects in arrays (rows and columns) to represent the facts. The arrays for square numbers are square – they have the same number of rows and columns so 25 is represented by 5 rows of 5.
- Play number ping pong! Start by saying 'ping', child replies with 'pong'. Repeat with square number or cube number facts i.e. say '9' and they reply '81'.
- Test the Parent – Your child can make up square root questions for you e.g. What is the square root of 64? They need to know the squares to create these questions.
- Timed Games: How well are you doing? How many questions can you answer in 2 minutes? Can you beat your own record?
- http://www.topmarks.co.uk/maths-games/hit-the-button Choose square numbers
- http://www.math-play.com/square-root-game.html

Deepen and apply

- http://nrich.maths.org/1151 Cycling Squares – a challenge involving square numbers. Can you complete the challenge and then create your own examples?
- For each of the following, try a few examples and see what you notice:
  - Add two consecutive square numbers and then subtract 1
  - Square any odd number, then subtract 1
  - Multiply two consecutive odd numbers and then add 1
  - Multiply two consecutive even numbers and then add 1

Can you explain what you've noticed? Can you prove that it will always happen?

- http://nrich.maths.org/2275 How do you find the sum of consecutive odd numbers quickly?
- Can you make square numbers by adding two prime numbers together?
- Is it always, sometimes or never true that when you square an even number, the result is divisible by 4? Explain your answer.

Key Instant Recall Facts

Year 5 – Summer 1

I know fraction, decimal and percentage equivalents.

$\frac{1}{2}$ 0.5 = 50%	$\frac{5}{5}$ = 1 = 100%	$\frac{7}{10}$ = 0.7 = 70%	$\frac{10}{100}$ = 0.1 = 10%
$\frac{1}{4}$ = 0.25 = 25%	$\frac{1}{10}$ = 0.1 = 10%	$\frac{8}{10}$ = 0.8 = 80%	$\frac{50}{100}$ = 0.5 = 50%
$\frac{3}{4}$ = 0.75 = 75%	$\frac{2}{10}$ = 0.2 = 20%	$\frac{9}{10}$ = 0.9 = 90%	$\frac{99}{100}$ = 0.99 = 99%
$\frac{1}{5}$ 0.2 = 20%	$\frac{3}{10}$ = 0.3 = 30%	$\frac{10}{10}$ = 1 = 100%	$\frac{100}{100}$ = 1 = 100%
$\frac{2}{5}$ 0.4 = 40%	$\frac{4}{10}$ = 0.4 = 40%	$\frac{1}{100}$ = 0.01 = 1%	
$\frac{3}{5}$ 0.6 = 60%	$\frac{5}{10}$ = 0.5 = 50%	$\frac{5}{100}$ = 0.05 = 5%	
$\frac{4}{5}$ 0.8 = 80%	$\frac{6}{10}$ = 0.6 = 60%	$\frac{45}{100}$ = 0.45 = 45%	

Children should be able to convert between fractions, decimals and percentages for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, and any number of fifths, tenths or hundredths.

Useful Questions

How many **tenths** is 0.8?

How many **hundredths** is 0.8?

How many **fifths** is 0.8?

What **percentage** is four fifths?

How many **hundredths** is 0.12?

Write $\frac{3}{4}$ as a **percentage** and a **decimal**.

Top Tips:

The secret to success is to practise little and often - could you practise on the way to school or during a car journey? You don't need to practise them all at once – perhaps have a fact of the day, or a fact of the day.

Percentages are just another way of expressing hundredths so 15 hundredths is the same as 15%.

A common mistake is to confuse 0.1 as 1% (or 0.2 as 2% etc.). This is incorrect: 0.1 is 1 tenth, or 10 hundredths so it is equivalent to 10%. The correct decimal for 1% is 0.01.

Make it fun!

- Count up and down in tenths and hundredths, counting out loud, then change between fractions and percentages as well.
- Play games - Make some cards with pairs of equivalent fractions, decimals and percentages. Use these to play the memory game or snap. Or make your own dominoes with fractions or decimals one side and percentages on the other.
- https://www.skillsworkshop.org/resources/world_cup_top_trumps_playing_cards
- https://mathsframe.co.uk/en/resources/resource/120/match-fractions-decimals-and-percentages
- https://www.mathplayground.com/matching_fraction_percent.html
- https://nrich.maths.org/1249
- https://www.mathplayground.com/Decention/index.html

Deepen and apply

- Put these numbers in the correct order, starting with the largest:

7/10, 0.73, 7/100, 0.073 71% Explain your thinking.

- Can you use your knowledge of fraction, decimals and percentages to solve the following?
  - What is 50% of £300?
  - Jemimah had a box of sweets and ate $\frac{1}{4}$ of them. What percentage did she have left?
  - In a class of 30 children 40% were girls. What fraction were boys? How many girls and boys were there?
- https://nrich.maths.org/1118 Would you rather...?
- Jakob says to Peter, 'Last month I saved 40% of my pocket money and this month I saved 3/5 of my pocket money, so altogether I've saved 50% of my pocket money'. Do you think Peter should agree with Jakob? Explain your decision.
- Which is longer 25% of 23km or 0.2 of 20km. Convince me.
- Put the following amounts in order, starting with the largest.

23%, 5/8, 3/5, 0.8 Explain your reasoning.

- Can you write any other problems to solve which include fractions, decimals and percentages?

Key Instant Recall Facts
Year 5 – Summer 2

I know how to convert between different units of measurement.

Children should know the following conversion facts:

1 kilogram = 1000 grams	To convert from kg to g To convert from g to kg	x 1000 ÷1000
1 kilometre = 1000 metres	To convert from km to m To convert from m to km	x 1000 ÷1000
1 metre = 100 centimetres	To convert from m to cm To convert from cm to m	x 100 ÷100
1 metre = 1000 millimetres	To convert from m to mm To convert from mm to m	x 1000 ÷1000
1 centimetre = 10 millimetres	To convert from cm to mm To convert from mm to cm	x 10 ÷10
1 litre = 1000 millilitres	To convert from l to ml To convert from ml to l	x 1000 ÷1000

Children should also be able to apply these facts to answer questions and solve problems with measures.

Useful Questions

How many **metres** in $1\frac{1}{2}$ km?

Convert 40g into kg.

Which is smaller 460ml or 0.4l?

How many mm in 24cm?

If I have a ribbon 2m15cm long, how many cm is that altogether?

Top Tips:

The secret to success is to practise little and often - could you practise on the way to school or during a car journey? You don't need to practise them all at once – perhaps have a fact of the day, or a fact of the day.

Make it fun!

- Look at the prefixes – Can your child work out the meanings of ***kilo-***, ***centi-*** and **milli-**? What other words begin with these prefixes?
- Be practical – Do some baking and convert the measurements in the recipe.
- How far? – Calculate some distances using unusual measurements. How tall is your child in mm? How far away is London in metres?
- http://mrnussbaum.com/soup/ Use conversions when making 'horrendous' soup
- https://www.thatquiz.org/tq-n/science/metric-system/

Deepen and apply

- http://nrich.maths.org/5994 All in a jumble investigation
- http://nrich.maths.org/8318 Investigate Olympic Measures
- Which has the greater mass? 1/5 kg or 1/10 kg Explain why.
- True or false for each of these?
- 1·5 kg + 600 g = 2·1 kg + 300 g
- 32 cm + 1·05 m = 150 cm – 0·13 m
- $\frac{3}{4}$ ℓ + 0.05 ℓ = half of 1·6 ℓ
- Explain your reasoning.
- A 1·2 m ribbon and a 90 cm ribbon are joined by overlapping the ends and gluing them together. The total length of ribbon needs to be 195 cm long. How much should the two pieces overlap?
- A football weighs 0·4 kg. Three footballs weigh the same as eight cricket balls. How many grams does a cricket ball weigh?
- Can you make up some of your own measures problems to solve where you need to convert from one measure to another?