



Year 6 Mathematics

Key Instant Recall Facts

KIRFs

To develop your child's fluency and mental maths skills, we have introduced KIRFs (Key Instant Recall Facts) throughout school. KIRFs are a way of helping your child to learn by heart, key facts and information which they need to have instant recall of.

KIRFs are designed to support the development of mental maths skills that underpin much of the maths work in our school. They are particularly useful when calculating, adding, subtracting, multiplying or dividing. They contain number facts such as number bonds and times tables and measures that need constant practise and rehearsal, so children can recall them quickly and accurately.

Instant recall of facts helps enormously with mental agility in maths lessons. When children move onto written calculations, knowing these key facts is very beneficial.

For your child to become more efficient in recalling them easily, they need to be practised frequently and for short periods of time. Each half term, children will focus on a Key Instant Recall Fact (KIRF) to practise and learn at school and at home for the half term. They are available on our school website under the maths section and each child will receive a copy to keep at home.

The KIRFs include practical ideas to assist your child in grasping the key facts and contain helpful suggestions of ways in which you could make this learning interesting and relevant. They are not designed to be a time-consuming task and can be practised anywhere – in the car, walking to school, etc.

Regular practice - little and often – helps children to retain these facts and keep their skills sharp.

Throughout the half term, the KIRFs will also be practised in school and your child's teacher will assess whether they have been retained.

Over their time at primary school, we believe that - if the KIRFs are developed fully - children will be more confident with number work, understand its relevance, and be able to access the curriculum much more easily. They will be able to apply what they have learnt to a wide range of problems that confront us regularly.



Key Instant Recall Facts

Year 6 – Autumn 1

I can derive multiplication and division facts using decimal numbers

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

Some examples:

$$9 \times 0.6 = 5.4$$

$$0.6 \times 9 = 5.4$$

$$9 \div 0.6 = 5.4$$

$$9 \div 5.4 = 0.6$$

$$3 \times 0.4 = 1.2$$

$$0.4 \times 3 = 1.2$$

$$1.2 \div 3 = 0.4$$

$$1.2 \div 0.4 = 3$$

$$4 \times 1.1 = 4.4$$

$$1.1 \times 4 = 4.4$$

$$4.4 \div 1.1 = 4$$

$$4.4 \div 4 = 1.1$$

$$6 \times 0.3 = 1.8$$

$$0.3 \times 6 = 1.8$$

$$1.8 \div 6 = 0.3$$

$$1.8 \div 0.3 = 6$$

Key Vocabulary

What is 9 **multiplied by** 0.6?

What is 6 **times** 0.8?

What is 2.4 **divided by** 6?

This list includes some examples of facts that children should know. They should be able to answer questions including missing number questions e.g. $0.6 \times \bigcirc = 5.4$ or $4.4 \times \bigcirc = 4$.

Top Tips

These number facts can be learned by making links to known multiplication facts. 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 do not need to practise them all at once; perhaps you could have a fact of the day.

Use what you already know - Make links to the root multiplication fact. (e.g. $3 \times 4 = 12$, so $3 \times 0.4 = 1.2$) If your child knows one fact (e.g. $3 \times 0.4 = 1.2$), can they tell you the other three facts in the same fact family?

WARNING! - When creating fact families, children sometimes get confused by the order of the numbers in the division number sentence. It is tempting to say that the biggest number goes first, but it is more helpful to say that the answer to the multiplication goes first, as this will help your child more in later years when they study fractions, decimals and algebra. E.g. $6 \times 1.2 = 7.2$. The answer to the multiplication is 7.2, so $7.2 \div 6 = 1.2$ and $7.2 \div 1.2 = 6$



Key Instant Recall Facts

Year 6 – Autumn 2

I can identify common factors of a pair of numbers.

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

The factors of a number are all the numbers which divide into it without a 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.

Key Vocabulary

Factor

Common factor

Multiple

Highest common factor

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 $56 = 8 \times 7$

Top Tips

The secret to success is practising **little** and **often**. The best way to learn multiplication facts is by looking at the answers on a multiplication square while you chant the questions and answers in full. i.e. one 8 is 8, two 8's are 16 etc... Once the facts have been memorised try chanting without the multiplication square in front of you and ask someone to listen and check you got all the answers right.

NOTE: We do not expect children to know all the factors of a number instantly, but we do expect them to be able to work them out within a minute or so for the numbers under 100 using fluent recall of the multiplication and corresponding division facts for all tables up to 12×12 .



Key Instant Recall Facts

Year 6 – Spring 1

I can convert between common decimal, fraction and percentage equivalences.

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

$1/2$	=	0.5	=	50%
$1/4$	=	0.25	=	25%
$3/4$	=	0.75	=	75%
$1/10$	=	0.1	=	10%
$3/10$	=	0.3	=	30%
$1/5$	=	0.2	=	20%
$3/5$	=	0.6	=	60%
$1/100$	=	0.01	=	1%

Key Vocabulary

Write 0.75 as a **fraction**

Write $1/4$ as a **decimal**

What is $3/4$ as a **percentage**?

Children should be able to convert between decimals, fractions and percentages for $1/2$, $1/4$, $3/4$ and any number of tenths and hundredths.

Top Tips

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 do not need to practice them all at once; perhaps you could have a fact of the day. If you would like more ideas, please speak to your child's class teacher.

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



Key Instant Recall Facts

Year 6 – Spring 2

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 prime number is a number with no factors other than one and itself.

The following numbers are prime numbers:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43 and 47

A composite number is divisible by a number other than one and itself. (It is the opposite of a prime number).

The following numbers are composite numbers:

4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28, 30, 32, 34, 35, 36, 38, 40, 42, 44, 45, 46, 48, 49 and 50

Key Vocabulary

Prime number
Composite number
Factor
Multiple
Divisible by...

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

Top Tips

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 do not need to practice them all at once; perhaps you could have a fact of the day. If you would like more ideas, please speak to your child's class teacher.

Vocabulary - It is very 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 key 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 can they find?

Please note that 1 is not a prime number or a composite number.



Key Instant Recall Facts

Year 6 – Summer 1

I know the square roots of square numbers up to 15 x 15..

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

Square Roots:

$$\sqrt{1} = 1$$

$$\sqrt{4} = 2$$

$$\sqrt{9} = 3$$

$$\sqrt{16} = 4$$

$$\sqrt{25} = 5$$

$$\sqrt{36} = 6$$

$$\sqrt{49} = 7$$

$$\sqrt{64} = 8$$

$$\sqrt{81} = 9$$

$$\sqrt{100} = 10$$

$$\sqrt{121} = 11$$

$$\sqrt{144} = 12$$

$$\sqrt{169} = 13$$

$$\sqrt{196} = 14$$

$$\sqrt{225} = 15$$

Key Vocabulary

Square number

Square root

Top Tips

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 do not need to practice them all at once; perhaps you could have a fact of the day. If you would like more ideas, please speak to your child's class teacher.

Play games - Make some cards with square numbers and square roots. Use these to play a memory game or snap.



Key Instant Recall Facts

Year 6 – Summer 2

I know the first 12 cube numbers

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

A cube number is any number multiplied by itself three times.

E.g. $n \times n \times n$. It can be written as n^3

The first 12 cube numbers are:

$$1 \times 1 \times 1 = \mathbf{1} \qquad 7 \times 7 \times 7 = \mathbf{343}$$

$$2 \times 2 \times 2 = \mathbf{8} \qquad 8 \times 8 \times 8 = \mathbf{512}$$

$$3 \times 3 \times 3 = \mathbf{27} \qquad 9 \times 9 \times 9 = \mathbf{729}$$

$$4 \times 4 \times 4 = \mathbf{64} \qquad 10 \times 10 \times 10 = \mathbf{1000}$$

$$5 \times 5 \times 5 = \mathbf{125} \qquad 11 \times 11 \times 11 = \mathbf{1331}$$

$$6 \times 6 \times 6 = \mathbf{216} \qquad 12 \times 12 \times 12 = \mathbf{1728}$$

Key Vocabulary

Cube number



1 is the first cube number, because $1 \times 1 \times 1 = \mathbf{1}$



8 is the second cube number, because $2 \times 2 \times 2 = \mathbf{8}$



27 is the third cube number, because $3 \times 3 \times 3 = \mathbf{27}$



64 is the fourth cube number, because $4 \times 4 \times 4 = \mathbf{64}$

Children should be able to explain what a cube number is and recall the first twelve cube numbers quickly and accurately.

Use these visual images to help your children understand what a cube number is.

Top Tips

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 do not need to practice them all at once; perhaps you could have a fact of the day. If you would like more ideas, please speak to your child's class teacher.