

MENTAL MATHS KEY SKILLS

Log on to Mathletics (www.mathletics.com) AND MyMaths to practice the skills you have learnt in class and at home!
Please ask your teacher or Henry if you do not know your username or password.

MULTIPLICATION AND DIVISION

Identify and understand multiples and factors ($F \times F = M$)
FACTORS FIT! MULTIPLES ARE WHAT YOU MAKE!

Find all factor pairs of a number, for example:

$$12 = 1 \times 12, 2 \times 6, 3 \times 4, 4 \times 3, 6 \times 2, 12 \times 1$$
$$25 = 1 \times 25, 5 \times 5, 25 \times 1$$

And find common factors of two numbers

E.g. the common factors for 10 and 30 are 1, 2, 5 and 10

Find common multiples of two numbers

E.g. the common multiples for 4 and 8 are 8, 16, 24, 32, 40, 48, 56 etc.

PLACE VALUE AND COUNTING

Read, write, order and compare numbers to at least 1,000,000 and understand the value of each digit.

Count forwards and backwards in steps of powers of 10 for any number

Understand negative numbers - count forwards and backwards
Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000

Use understanding of place value to \times and \div whole numbers and decimals by 10, 100 or 1000 (e.g. $4.5 \times 10 = 45$)

ADDITION AND SUBTRACTION

Add or subtract mentally with increasingly large numbers!
Add or subtract 0.1 or 0.01 to/from any number with confidence

Use our number bonds to add or subtract:

- a 4 digit number and ones (e.g. $6124 + 7 = 6131$, $3867 - 9 = 3858$)
- a 4 digit number and tens (e.g. $7437 + 80 = 7517$, $2592 - 40 = 2552$)
- a 4 digit number and hundreds (e.g. $9674 + 300 = 9974$, $1936 - 300 = 1636$)

FRACTION ACTION!

Compare and order fractions where denominators are all multiples of the same number (e.g. $3/10$, $7/20$, $4/30$)

Read and write decimal numbers as fractions (e.g. $0.71 = 71/100$)

Read, write, order and compare numbers with 3 decimal places (e.g. 3.452) and understand thousandths

Round decimals to the nearest whole number and 1 d/p

Identify, name and write equivalent fractions of a given fraction (e.g. $2/3 = 4/6 = 10/15$ etc.)

Recognise mixed numbers and improper fractions and convert from one to the other (e.g. $6/5 = 1 \frac{1}{5}$)

Give a fraction of a number (divide by the denominator, times by the numerator) (e.g. $2/3$ of 51 = 34)

Identify these fraction, decimal and percentages equivalents..

$\frac{1}{2} = 0.5 = 50\%$	$\frac{1}{4} = 0.25 = 25\%$	$\frac{3}{4} = 0.75 = 75\%$
$1/5 = 0.2 = 20\%$	$2/5 = 0.4 = 40\%$	$4/5 = 0.8 = 80\%$
$1/10 = 0.1 = 10\%$	$1/100 = 0.01 = 1\%$	$1/3 = 0.333 = 33.3\%$

Y5

PRIME NUMBERS!

Primes have only two factors:
1 and the number itself.

Recall primes up to 19

2 (1, 2)	3 (1, 3)
5 (1, 5)	7 (1, 7)
11 (1, 11)	13 (1, 13)
17 (1, 17)	19 (1, 19)

Establish whether a number up to 100 is prime

DOUBLES & HALVES!

Doubles and halves of decimals

Doubles and halves of all numbers up to 1000

SQUARE NUMBERS!

Recognise and use square numbers and cube numbers

VOCABULARY

Common denominator: A multiple that both denominators share. Sometimes they need to be created by multiplying the bottom and top by the same number.

Denominator: The bottom number in a fraction. It shows how many equal parts that the item has been divided into.

Improper fraction : A fraction where the numerator is greater than the denominator. It has a value greater than 1 i.e. 5/4

Multiple: A number that can be divided by another number a certain number of times without a remainder.

Mixed fraction - A number that is made up of a whole number plus a fraction.

Numerator: The top number in a fraction. It shows how many of the equal part someone has.

Vinculum: The horizontal line drawn between the numerator and denominator.

Whole number: A counting number which is complete and not including any fractions of amount i.e. 2 is a whole number, 2.3 is not.



ADDING FRACTIONS METHOD MAT YEAR 5

MAIN IDEA

When adding fractions, we only ever add the **numerators** together and never the **denominators**. This is because the denominator tells us how many times an object or amount has been divided equally. So a denominator of 4, means something has been divided 4 equal times. The numerator tells us how many of those equally divided pieces we have so you can find out how many of those slices of 4 you have.



Here, we have 2/4 and 1/4, so together we have a total of 3/4. The denominator stay the same because we haven't changed the size of the divided pieces.

We always need to make sure the denominators are the same so that we can easily combine the different amounts. Sometimes, the denominators are different, in which case we find a common **multiple** that they both fit into. **NOTE:** It is almost always easier to find a larger common multiple by using multiplication, rather than dividing to a smaller denominator.

Adding fractions with the same denominator

$$\begin{array}{r} 1 \ 2 \\ \times \frac{2}{5} + \frac{1}{5} \\ \hline \end{array}$$

improper fraction

$$\frac{7}{5} + \frac{1}{5} = \frac{8}{5} = 1 \frac{3}{5}$$

Remember:

$$\begin{array}{r} 2 \ 2 \\ \times \frac{2}{5} + \\ \hline \end{array}$$

(2 x 5 + 2)

$$\div \frac{12}{5} = 2 \frac{2}{5}$$

two whole fives fit in 12, with a remainder of 2

Adding fractions with different denominators

$$\begin{array}{r} 1 \ 2 \\ \frac{2}{5} + \frac{7}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{7}{5} + \frac{7}{10} \\ \times 2 \quad \times 2 \\ \hline \frac{14}{10} + \frac{7}{10} \\ \hline \end{array}$$

improper fraction

$$\frac{14}{10} + \frac{7}{10} = \frac{28}{10} = 2 \frac{8}{10}$$

Steps to Success

Adding fractions with the same denominator

- 1) Write the calculation.
- 2) Convert any mixed fractions into improper ones.
- 3) Check the denominators are the same.
- 4) If so, add the numerators together for the new total.
- 5) Keep the denominator the same—do not add them together!
- 6) If the answer is an improper fraction, turn it back into a mixed.

Adding fractions with different denominators

- 1) Write the calculation.
- 2) Convert any mixed fractions into improper ones.
- 3) If the denominators are not the same, can one denominator fit into the other? Do they share a common multiple?
- 4) Put them into the same denominator by multiplying the top and bottom by the same number.

VOCABULARY

Common denominator: a multiple that both denominators share. Sometimes they need to be created by multiplying the bottom and top by the same number.

Denominator: The bottom number in a fraction. It shows how many equal parts that the item has been divided into.

Improper fraction : A fraction where the numerator is greater than the denominator. It has a value greater than 1 i.e. $\frac{5}{4}$

Multiple: a number that can be divided by another number a certain number of times without a remainder.

Mixed fraction - A number that is made up of a whole number plus a fraction.

Numerator: The top number in a fraction. It shows how many of the equal part someone has.

Vinculum: the horizontal line drawn between the numerator and denominator.

Whole number: A counting number which is complete and not including any fractions of amount i.e. 2 is a whole number, 2.3 is not.



SUBTRACTING FRACTIONS METHOD MAT YEAR 5

MAIN IDEA

Remember, when subtracting fractions, we only ever subtract the **numerators** and never the **denominators**. We always need to make sure the denominators are the same so that we can easily take one amount away from the other. If the denominators are different, we have to find a denominator that they both fit into. Sometimes one of the denominators fits into but other times you have to find a **multiple** they both fit into. Knowing your times tables is key! It is almost always easier to find a larger common multiple by using multiplication, rather than dividing into a smaller denominator. Don't forget, whatever you multiply the denominator by, you must also multiply the numerator by the same amount to keep the **ratio** the same.

Subtracting fractions with the same denominator

$$\begin{array}{r} 1\frac{2}{5} - \frac{4}{5} \\ \hline \end{array}$$

$$\frac{7}{5} - \frac{4}{5} = \frac{3}{5}$$

Remember:

$$\begin{array}{r} 2\frac{2}{5} \\ \times \\ \hline \end{array} \quad \div \quad \begin{array}{r} 12 \\ \div 5 \\ \hline \end{array} = 2\frac{2}{5}$$

two whole fives fit in 12, with a remainder of 2

Subtracting fractions with different denominators

$$\begin{array}{r} 1\frac{2}{5} - \frac{3}{10} \\ \hline \end{array}$$

$$\begin{array}{r} \times 2 \\ \times 2 \\ \hline \frac{7}{5} - \frac{3}{10} \\ \hline \frac{14}{10} - \frac{3}{10} \\ \hline \end{array}$$

improper fraction

$$\frac{14}{10} - \frac{3}{10} = \frac{11}{10} = 1\frac{1}{10}$$

Steps to Success

Subtracting fractions with the same denominator

- 1) Write the calculation.
- 2) Convert any mixed fractions into improper ones.
- 3) Check the denominators are the same.
- 4) If so, subtract the numerators together for the new total.
- 5) Keep the denominator the same—do not subtract them!
- 6) If the answer is an improper fraction, turn it back into a mixed.

Subtracting fractions with different denominators

- 1) Write the calculation.
- 2) Convert any mixed fractions into improper ones.
- 3) If the denominators are not the same, can one denominator fit into the other? Do they share a common multiple?
- 4) Put them into the same denominator by multiplying the top and bottom by the same number.

VOCABULARY

Denominator: The bottom number in a fraction. It shows how many equal parts that the item has been divided into.

Fraction: A part of a whole. A common fraction is made up of a numerator and a denominator.

Improper fraction : A fraction where the numerator is greater than the denominator. It has a value greater than 1 i.e. 5/4

Mixed fraction - A number that is made up of a whole number plus a fraction.

Numerator: The top number in a fraction. It shows how many of the equal part someone has.

Of: It means multiplication in mathematics.

Vinculum: The horizontal line drawn between the numerator and denominator.

Whole number: A counting number which is complete and not including any fractions of amount i.e. 2 is a whole number, 2.3 is not.



MULTIPLYING FRACTIONS METHOD MAT YEAR 5

MAIN IDEA

Multiplying fractions is the most straightforward operation when working with fractions. Once they've been lined up, you can really simply just 'multiply across' with no conversions necessary. Remember, every whole number has a secret $\frac{1}{1}$ hiding under it. This will help you when multiplying a fraction to a whole number.

A fraction multiplied by a whole number

$$\frac{2}{5} \times 4$$

$$\frac{2}{5} \times \frac{4}{1}$$

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

improper fraction

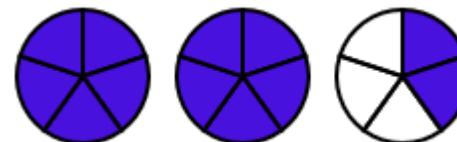
Remember:

$$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array} +$$

(2 x 5 + 2)

$$\frac{12}{5} = 2 \frac{2}{5}$$

two whole fives fit in 12, with a remainder of 2



Steps to Success

A fraction multiplied by a whole number

- 1) Write the calculation.
- 2) Make the whole number a fraction over 1.
- 3) Multiply straight across (numerator x numerator, denominator x denominator) to get your final answer.
- 4) If your answer is an improper fraction, convert it back to a mixed fraction.

Key crossover:

fraction	decimal	percent
	1.00	100%
	0.50	50%
	0.33	33%
	0.25	25%
	0.20	20%
	0.10	10%