

MATH · GRADE 2

Times Tables Practice

× 2, × 5 and × 10 — mixed

Answer in the box

$3 \times 2 =$

$7 \times 5 =$

$4 \times 10 =$

$6 \times 2 =$

$9 \times 5 =$

$8 \times 10 =$

$5 \times 2 =$

$3 \times 5 =$

$10 \times 10 =$

$9 \times 2 =$

$6 \times 5 =$

$5 \times 10 =$

$11 \times 2 =$

$11 \times 5 =$

$11 \times 10 =$

$12 \times 2 =$

$12 \times 5 =$

$12 \times 10 =$

$10 \div 2 =$

$25 \div 5 =$

$60 \div 10 =$

$16 \div 2 =$

$45 \div 5 =$

$90 \div 10 =$

$20 \div 2 =$

$50 \div 5 =$

$100 \div 10 =$

$8 \div 2 =$

$30 \div 5 =$

$40 \div 10 =$

$14 \div 2 =$

$55 \div 5 =$

$70 \div 10 =$

$24 \div 2 =$

$60 \div 5 =$

$120 \div 10 =$



MATH · KINDERGARTEN / GRADE 1

Number Bonds to 10

Find the missing number to make 10

How to use this sheet

Look at each pair. Write the missing number in the blank box so the two numbers add to 10. Use the ten-frame at the top of the sheet if you need help counting on.

Find the partner of 10

$1 + \underline{\quad} = 10$

$10 = 9 + \underline{\quad}$

$5 + \underline{\quad} = 10$

$10 = 4 + \underline{\quad}$

$2 + \underline{\quad} = 10$

$10 = 8 + \underline{\quad}$

$7 + \underline{\quad} = 10$

$10 = 3 + \underline{\quad}$

$0 + \underline{\quad} = 10$

$10 = 6 + \underline{\quad}$

$\underline{\quad} + 1 = 10$

$\underline{\quad} + 5 = 10$

$\underline{\quad} + 9 = 10$

$\underline{\quad} + 2 = 10$

$10 = \underline{\quad} + 7$

$10 = \underline{\quad} + 4$

$\underline{\quad} + 8 = 10$

$10 = \underline{\quad} + 0$

$6 + \underline{\quad} = 10$

$\underline{\quad} + 3 = 10$

Answer key (for the teacher)



9, 1, 5, 6, 8, 2, 3, 7, 10, 4, 9, 5, 1, 8, 3, 6, 2, 10, 4, 7



MATH • GRADES 2–3

Fact Families

Three numbers, four facts

How fact families work

Take any three numbers like a multiplication: 3, 4, 12. From them, you can make FOUR different facts: $3 \times 4 = 12$, $4 \times 3 = 12$, $12 \div 4 = 3$, $12 \div 3 = 4$. They're all 'related' because the same three numbers appear in each.

Write the four facts for each family

1. Numbers: 2, 5, 10. Write all four facts.
2. Numbers: 6, 4, 24. Write all four facts.
3. Numbers: 7, 3, 21.
4. Numbers: 8, 9, 72.
5. Numbers: 5, 11, 55.
6. Numbers: 6, 12, 72.
7. Numbers: 4, 25, 100.
8. Numbers: 9, 9, 81. (Tip — only TWO different facts here. Why?)



MATH • GRADES 2–5

Fractions Visual Reference

From halves to twelfths

What is a fraction?

A fraction is a way of showing a PART of a WHOLE. The bottom number (DENOMINATOR) tells you how many parts the whole is divided into. The top number (NUMERATOR) tells you how many of those parts you have. $\frac{3}{4}$ means: divide a whole into 4 equal parts. Take 3 of them.

The fraction bar — every fraction at a glance

Fraction	Reading	What it looks like
$\frac{1}{1}$	one whole	■■■■■■■■■■ (the whole bar)
$\frac{1}{2}$	one half	■■■■■ (half the bar)
$\frac{1}{3}$	one third	■■■■ (a third of the bar)
$\frac{1}{4}$	one quarter	■■■ (a quarter)
$\frac{1}{5}$	one fifth	■■ (a fifth)
$\frac{1}{6}$	one sixth	■ (a sixth)
$\frac{1}{8}$	one eighth	■ (an eighth)
$\frac{1}{10}$	one tenth	■ (a tenth)
$\frac{1}{12}$	one twelfth	■ (a twelfth — very thin)

The bigger the bottom number, the smaller the slice

This catches children out. They see that 12 is bigger than 4, so they think $\frac{1}{12}$ is bigger than $\frac{1}{4}$. But it's the OPPOSITE. Think of a pizza: cut it into 4 slices and each slice is BIG. Cut it into 12 slices and each slice is SMALL. The bigger the bottom number, the more cuts, the smaller each



piece. $1/2 > 1/3 > 1/4 > 1/5 > 1/8 > 1/12$

Equivalent fractions — different names, same value

Fraction	= Fraction	= Fraction	Why
$1/2$	$2/4$	$5/10$	Half of anything is the same
$1/3$	$2/6$	$4/12$	A third of anything is the same
$1/4$	$2/8$	$3/12$	A quarter of anything is the same
$3/4$	$6/8$	$9/12$	Three-quarters in three forms
$2/3$	$4/6$	$8/12$	Two-thirds in three forms
$1/5$	$2/10$	$20/100$	A fifth — also called 0.2 or 20%

How to find equivalent fractions

RULE: Multiply (or divide) the top and bottom by the same number. Starting with $1/2$: • Multiply both by 2 → $2/4$ (same value as $1/2$) • Multiply both by 5 → $5/10$ (same value) • Multiply both by 50 → $50/100$ (same value!) This works because you're multiplying by 1 in disguise ($2/2=1$, $5/5=1$, $50/50=1$). Multiplying by 1 doesn't change a number.

Quick fraction facts to memorise

<p>$1/2 = 0.5 = 50%$</p> <p>The most useful fraction. Half of anything is 0.5 (decimal) or 50% (percentage).</p>	<p>$1/4 = 0.25 = 25%$</p> <p>A quarter. $1/4$ of 100 is 25. $1/4$ of 1 metre is 25cm.</p>
<p>$3/4 = 0.75 = 75%$</p> <p>Three-quarters. $3/4$ of an hour is 45 minutes.</p>	<p>$1/10 = 0.1 = 10%$</p> <p>One-tenth. 10% of any number is found by moving the decimal one place left.</p>



$\frac{1}{3} \approx 0.333... = 33.3\%$

One-third. The decimal goes on forever — that's why fractions are sometimes more useful than decimals.

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

One-fifth. 1/5 of 100 is 20. 1/5 of any number is the number divided by 5.



MATH · GRADE 2

Fractions of Shapes

Shade the fraction shown

Instructions

Each shape is divided into equal parts. Shade the fraction shown next to each shape. Then, in Section B, write down the fraction that is already shaded.

Section A — Shade the fraction

1. Shade $\frac{1}{2}$ of a rectangle split into 2 parts.
2. Shade $\frac{1}{4}$ of a square split into 4 parts.
3. Shade $\frac{3}{4}$ of a circle split into 4 parts.
4. Shade $\frac{1}{3}$ of a rectangle split into 3 parts.
5. Shade $\frac{2}{3}$ of a hexagon split into 3 parts.
6. Shade $\frac{2}{4}$ of a square split into 4 parts. What other fraction does this equal?

Section B — Name the shaded fraction

1. A pizza split into 4 slices, 1 slice eaten. What fraction is left?
2. A bar of chocolate split into 6 pieces, 3 eaten. What fraction is eaten?
3. A rectangle split into 8 equal parts, 2 shaded. Write as a simplified fraction.



MATH · GRADE 5

Mixed Numbers & Improper Fractions

Convert in both directions

How to convert

IMPROPER → MIXED: divide top by bottom. The whole-number quotient is the whole part; the remainder over the original denominator is the fraction part. e.g. $11/4 = 2 \text{ r } 3 = 2 \frac{3}{4}$. MIXED → IMPROPER: multiply the whole by the denominator, add the numerator. e.g. $3 \frac{1}{5} = (3 \times 5 + 1)/5 = 16/5$.

Improper → Mixed

$7/3 =$

$11/4 =$

$9/2 =$

$17/5 =$

$23/6 =$

$31/8 =$

$29/4 =$

$47/10 =$

Mixed → Improper

$2 \frac{1}{2} =$

$3 \frac{2}{3} =$

$4 \frac{1}{5} =$

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

$1 \frac{7}{8} =$

$6 \frac{2}{5} =$

$7 \frac{3}{10} =$

$9 \frac{1}{6} =$



MATH • GRADES 4–5

Long Multiplication

3-digit × 2-digit using the column method

Steps

1) Multiply by the ones digit. 2) Add a placeholder zero on the next line. 3) Multiply by the tens digit. 4) Add the two rows together. Show every carry digit clearly.

Calculate using long multiplication

1. 234×12

2. 157×23

3. 408×16

4. 562×24

5. 319×35

6. 703×18

7. 846×27

8. 915×32



MATH • GRADES 3–4

Multiplication Grid

Fill in the 12 × 12 grid as fast as you can

Times-tables fluency

Time yourself. Aim for under 6 minutes. Practice this grid weekly until you can complete it in under 4 minutes with all answers correct. Rapid recall of times-tables makes every other math topic — fractions, division, area, ratio — much easier.

Blank grid

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												



9												
10												
11												
12												

Second attempt — try to beat your time

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												



MATHEMATICS · WHOLE SCHOOL

Calculation Policy: Addition & Subtraction

Y1-Y6 written methods progression

Why this matters

A coherent calculation policy is the difference between children who can compute reliably by Y6 and children who reach Y6 with a confused mix of half-remembered methods. The progression below is aligned to the UK National Curriculum 2014 and to the most-widely used mastery approaches. USE THIS DOCUMENT to: • Audit your current calculation policy. Are there gaps? Repetition? • Brief new staff joining your school. • Compare across year groups in staff meetings. • Send a simplified version home to parents so they understand the methods. WHAT'S NOT IN THIS DOCUMENT: detailed progression for fluency facts (number bonds, times tables) — those need their own policy. This focuses purely on WRITTEN METHODS for addition and subtraction.

Y1 — Foundations

Concept	Methods used
Add and subtract within 20	Counters, ten-frames, fingers, Numicon. Children physically move objects.
Number bonds to 10 and 20	Visual: ten-frame; abstract: $5+5=10$, $6+4=10$...
Counting on / back	On a number line, fingers, beadstring.
Recording	Pictures, tally marks, then the formal abstract: $7+5=12$, $12-5=7$.



Y1 — Worked example

Y2 — Building number sense

Concept	Methods used
Add and subtract within 100	Partitioning into tens and ones. Empty number line. Base-10 blocks.
2-digit + 1-digit	Partition: $34 + 7 = 30 + 4 + 7 = 30 + 11 = 41$
2-digit + 2-digit	Partition both: $23 + 14 = (20+10) + (3+4) = 30 + 7 = 37$
Subtraction	Counting back; finding the difference; partitioning.
Recording	Empty number line for jumping. Partitioned written form.

Y2 — Worked example

Y3 — Introducing column methods

Concept	Methods used
Add and subtract within 1,000	Column addition (no regrouping → with regrouping).
3-digit numbers	Column method introduced. Partitioning still encouraged for mental approach.
Subtraction with regrouping	Column subtraction with 'borrowing' / 'exchanging'.
Estimation	Round and check: is my answer reasonable?
Recording	Vertical column method becomes standard. Place value clearly aligned.

Y3 — Worked example

Y4 — Securing the column method

Concept	Methods used
Add and subtract numbers up to 4 digits	Column method, fluent.
Multi-step word problems	Identify the calculations needed; calculate in steps; check.
Inverse operations	Use addition to check subtraction and vice versa.
Mental strategies alongside written	Round-and-adjust; partitioning; near doubles.



Y4 — Worked example

Y5 — Extending to larger and decimal numbers

Concept	Methods used
Add/subtract whole numbers >4 digits	Column method extended.
Add/subtract decimals	Same column method. Critical: align the decimal points.
Mixed amounts of decimal places	Pad with zeros: $3.7 + 2.45 \rightarrow 3.70 + 2.45$
Multi-step problems including money and measure	Solve with decimal place value.

Y5 — Worked example

Y6 — Mastery and application

Concept	Methods used
Solve multi-step problems with all four operations	Choose appropriate methods; estimate; check.
Negative numbers	Add and subtract through zero (e.g. $5 - 8 = -3$).



Concept	Methods used
Mental and written methods choice	Pupil decides: when does mental work? when do I need to write it down?
Algebraic thinking	Find missing values: $35 + \blacksquare = 100$
Convert between units	Add/subtract amounts in different units (e.g. 1.4 km + 600 m).

Y6 — Worked example

Vocabulary by year group

Year	Vocabulary expected
Y1	add, plus, more, total, take away, less, minus, equal, sum
Y2	tens, ones, partition, calculate, difference, inverse, exchange
Y3	regroup, carry, exchange, column method, estimate, round
Y4	round to nearest 10/100/1000, inverse operation, multi-step
Y5	decimal point, tenths, hundredths, place value, padding
Y6	negative number, integer, BIDMAS/order of operations



Common misconceptions and how to address them

Implementation checklist



MATH • GRADES 3–4

Fraction Strips

Cut, compare, and combine

How to use

Print and cut along the lines. Each row is a different fraction. Stack them to compare — for example, place $1/2$ next to $3/6$ and you'll see they're the same length. Use them to add: $1/4 + 2/4$ stacked is the same length as $3/4$.

Strips to cut out

Fraction	Equal pieces
1 whole	1 piece
$1/2$	2 pieces of $1/2$ each
$1/3$	3 pieces of $1/3$ each
$1/4$	4 pieces
$1/5$	5 pieces
$1/6$	6 pieces
$1/8$	8 pieces
$1/10$	10 pieces
$1/12$	12 pieces

Investigations

1. Use the strips to find: which is bigger, $1/3$ or $2/5$?
2. Use the strips to add: $1/4 + 1/2 = \underline{\quad}$



3. Find three different fractions that all equal $\frac{1}{2}$.
4. What's the smallest fraction on your strips? The biggest?

