

What is Addition?

Addition is a way of putting numbers together to find out how many you have in total. It's like when you're building something with LEGO bricks — you keep adding more blocks to make it bigger! When you count how many toys you have in one box and then add more from another box, you're using addition. You can add people in a room, jellybeans in a jar, or even minutes on a clock. It's everywhere! What makes addition fun is how it helps you think bigger. It's like building with blocks: start small and keep adding to create something awesome.

Addition in Everyday Life

We use addition all the time! Here are some real-life examples:

- **Counting toys:** "I have 3 cars and 2 trucks. How many vehicles do I have?"
- **Shopping:** "This pencil costs \$1 and the notebook costs \$2. How much do I need?"
- **Time:** "It's 3:00 now. What time will it be in 2 hours?"

Example

Emma has **2 teddy bears**. Then her grandpa gives her **3 more**.
How many does she have now?

$2 + 3 = 5$ teddy bears!

She gave them all names... even the one with only one eye!
That's addition! We **added** the numbers to find the total.

Add Like a Math Artist!

- Try adding things around you:
- How many socks are on your feet *plus* in your drawer?
- How many pets in your house + your neighbour's?
- How many LEGO bricks are **red** + **blue**?

How to Write an Addition Sentence?

An addition sentence has three main parts:

- **Addends** – the numbers being added (e.g., 2 and 5)
- **Plus sign** – the + symbol that shows addition
- **Sum** – the answer (e.g., $2 + 5 = 7$)

Vocabulary for Kids

- **Addend:** A number being added
- **Sum:** The result or answer to an addition problem

Fun Addition Facts

Zero is a hero! Adding 0 to a number doesn't change it. $5 + 0 = 5$

Numbers are friendly! You can add them in any order. That's called the commutative property.

Try This Game:

"Add & Dash"

1. Write numbers 1 to 10 on pieces of paper.
2. Pick two, add them together
3. Race to a place in your room where you say the answer out loud!

Add a time challenge to make it more fun.

Why Is Addition Important?

Addition is the building block for all other math. You'll need it to learn subtraction, multiplication, division, and even algebra!

Addition also teaches us about patterns and relationships between numbers. Once you understand addition, you're on your way to multiplication and more!

What is Subtraction?

Subtraction is what we use when we take something away or compare how much is left. It's the math behind sharing, solving puzzles, and knowing how many cookies are left in the jar!

Subtraction is the opposite of addition. If you know that $6 + 2 = 8$, then you can figure out that $8 - 2 = 6$. They work like partners in a math team.

Subtraction in Real Life

We use addition all the time! Here are some real-life examples:

Counting how many stickers you've traded

Finding out how many cookies are left (yum!)

Seeing how many pencils you lost in your desk!

Dino Example

Rex has **6 toy dinosaurs**. He gives **2** to his friend.

How many does he still have?

$6 - 2 = 4$ dinosaurs!

One of them is missing a tail... it still counts!

Subtraction Words for Kids

- Take away
- Minus
- How many are left?
- Find the difference

Quick Tips for Subtracting

Start big, count back: $9 - 3$? Count back three from 9!

Use your fingers: They're always with you

Draw it out: Cross out pictures to see what's gone!

Secret Subtraction Fact

If you know $8 + 2 = 10$, then guess what?

$10 - 2 = 8$ and $10 - 8 = 2$

Addition and subtraction are best buddies

Subtraction helps with all kinds of daily things: figuring out how many crayons you lost, how many stickers you gave away, or how many minutes are left before recess. It's a must-know math tool!

Try This Game:

"Snack Subtract"

1. Take 10 small snacks (like grapes or crackers).
2. Eat one or two or three, then say how many are left.
3. Keep going until your plate is empty, and write a subtraction sentence each time!

This helps you learn easier and not to be hungry!

Learning subtraction helps build problem-solving skills. You'll use it when telling time, making change, and estimating.

Learning subtraction helps build problem-solving skills. You'll use it when telling time, making change, and estimating.

What is Multiplication?

Multiplication is one of the most important math operations you'll learn — and it's actually just a quicker way to add the same number over and over!

Let's imagine this: You're building a castle out of blocks. Each row has 5 blocks, and you build 4 rows. Instead of adding $5 + 5 + 5 + 5$, you can **multiply**:

$4 \times 5 = \mathbf{20}$ blocks. That's so much faster!

Multiplication is used all the time in real life

When you're:

- Counting how many legs are on 5 spiders (**$8 \text{ legs} \times 5 \text{ spiders} = 40 \text{ legs!}$**)
- Buying packs of pencils (**each pack has 6, and you buy 3**)
- Figuring out how many days are in 4 weeks (**$7 \text{ days} \times 4 \text{ weeks} = 28$**)

Fun Fact

Multiplication is **repeated addition**. That means:

3×2 is the same as $2 + 2 + 2$

5×4 is the same as $4 + 4 + 4 + 4 + 4$

You can also switch the numbers around and get the same answer! This is called the commutative property.

So:

$3 \times 4 = 4 \times 3 = 12$

Try This Game with a Teacher:

"Array Hunt" Game

1. Grab some small objects (buttons, coins, cereal pieces).
2. Teacher calls out a number, like " 3×4 !"
3. You must build 3 rows of 4 pieces. Then count them together!
4. Switch roles and let them build one for you to solve.

This teaches you how multiplication looks — in rows and columns — just like in real math problems.

Multiplication might seem big at first, but it's just adding in a smarter way. Once you master your multiplication facts, math becomes easier, quicker, and a lot more fun! Keep practicing, and you'll be multiplying like a math magician in no time.

What is Division?

Division is like the opposite of multiplication. Instead of putting things together, you're breaking them into equal groups or sharing them fairly.

Let's say you have **12 cookies** and **3 friends**. You want everyone to get the same amount. So you divide the cookies equally:

$$12 \div 3 = 4 \text{ cookies each!}$$

Division helps you figure out:

How many you can give to each person

How many groups you can make

What's left when something can't be shared evenly

It's like solving little puzzles!

Real-Life Examples:

Sharing 24 marbles between 6 kids:

$$24 \div 6 = 4 \text{ marbles each}$$

Putting 15 chairs into rows of 5:

$$15 \div 5 = 3 \text{ rows}$$

Cutting a pizza into 8 slices and giving 2 to each friend:

$$\text{How many friends can eat? } 8 \div 2 = 4 \text{ friends}$$

Here's a Trick:

If you know multiplication, you already know division!

Think:

$$3 \times 4 = 12$$

So...

$$12 \div 3 = 4 \text{ and } 12 \div 4 = 3 \text{ — they go hand in hand like best friends}$$

We use division every day without realizing it — when slicing a pizza, handing out party favors, or splitting chores. It also helps with understanding fractions and measuring things.

Try This Game with a Teacher:

"Snack Split" Game

1. Grab some small snacks (like grapes or crackers).
2. Put them in a bowl — let's say 20 pieces.
3. Take turns dividing them between different numbers of people (2, 4, 5...).
4. Talk about how many each person gets, and what happens if there's a remainder.

This game teaches fair sharing and helps you see division in action.

Division might feel tricky at first, but it's really just smart sharing. Once you get the hang of it, you'll start seeing division all around you — in games, in snacks, even in chores! Keep practicing, and you'll be dividing like a champion.

What is an Arithmetic Sequence?

An **Arithmetic Sequence** is a special kind of number pattern where the same number is added again and again to get the next number. It's like climbing stairs — each step is the same distance from the one before it.

Let's look at this number line:

2, 4, 6, 8, 10...

We're adding **2** each time. That's the rule! The number we keep adding is called the **common difference**.

Here's another:

100, 90, 80, 70...

This is still an arithmetic sequence, but this time we're subtracting **10** each time. So the common difference is **-10**.

Example:

If you plant flowers in rows of 5:

5 in the first row

10 in the second

15 in the third — you're making an arithmetic sequence!

Arithmetic sequences help us understand patterns and how numbers change over time. You'll find these patterns in music beats, calendar dates, and even rows of chairs in a theater.

Try This Game:

"Finish My Pattern" Challenge

1. One person writes 3 numbers of a pattern (e.g., 7, 14, 21...).
2. The other has to figure out the rule and continue the sequence!
3. Switch roles and see who creates the trickiest pattern.

You'll be amazed at how many ways you can use math rules to build cool number chains.

Once you spot the pattern, arithmetic sequences are like puzzles that keep going forever. Try creating your own — start with any number and keep adding the same one. You're doing algebra without even knowing it!

What is a Composite Number?

A **Composite Number** is a number that has more than two factors. That means it can be divided evenly by 1, itself, and at least one other number. For example, 6 is a composite number because you can divide it by 1, 2, 3, and 6.

So, while 7 is only divisible by 1 and 7 (making it a prime number), 6 is divisible by more than just 1 and itself — that's what makes it composite.

Let's take **12** for example:

You can do **3×4**

Or **2×6**

Or **1×12**

Because 12 has more than just two ways to multiply, it's a **composite number**.

Easy Trick:

If a number can be divided evenly by numbers other than 1 and itself, it's composite.

Let's test:

7 → only 1 and 7 → **✗** Not composite (that's prime!)

9 → 1, 3, 9 → **✓** Composite!

Try This Game:

"Prime or Composite?" Race

1. Make number cards from 1 to 50.
2. One player pulls a card and has 10 seconds to say "prime" or "composite."
3. Discuss why — and write down the factor pairs if it's composite!

This helps build strong number sense and gets you thinking fast!

Learning composite numbers helps you understand multiplication, division, and factoring. It's like cracking the code of how numbers are built!

What is an Even Number?

An **Even Number** is any whole number that can be divided by 2 with nothing left over. These are numbers like:

0, 2, 4, 6, 8, 10...

The last digit is always 0, 2, 4, 6, or 8.

Even numbers are great for sharing things equally between two people. If you have **10** cookies, you can give **5** to one friend and **5** to another — no crumbs left behind!

Real-Life Examples:

Splitting teams evenly in PE

Cutting pizza slices into pairs

Lining up in pairs at school

Even numbers always work for fair sharing in twos.

Knowing your even numbers makes math smoother — especially when you move on to division and factors. Start looking for even numbers around you. They're everywhere — from street signs to shoe sizes!

Try This Game:

"Even or Odd?" Toss

1. Toss a coin and roll a die.
2. If the number is even, clap your hands. If it's odd, stomp your feet!
3. Add a timer for extra excitement.

This helps build number recognition and quick thinking!

Even numbers always end in **0, 2, 4, 6, or 8**. Once you spot the pattern, you'll see them everywhere!

What is a Factor?

A **Factor** is a number that fits exactly into another number — no leftovers, no decimals. It's like a perfect puzzle piece.

For Example:

Factors of 12 are:

1, 2, 3, 4, 6, 12

Because all of those numbers can be multiplied in pairs to make 12:

$$2 \times 6 = 12$$

$$3 \times 4 = 12$$

If a number has many factors, it's easier to work with in multiplication and division.

Fast Fact:

Every number has **1** and **itself** as a factor. But some have more!

Factors of 10: 1, 2, 5, 10

Factors of 7: 1, 7 (only two → it's prime!)

Try This Game:

"Factor Find" Scavenger Hunt

1. Pick a number like 24.
2. Search your room or kitchen for objects in groups of numbers that divide into 24.
 - 6 cupcakes? ✓
 - 8 books? ✓
3. Write down all the factors you can show with real things!

It's a great way to turn math into a hands-on adventure!

Understanding factors helps with multiplication, division, and especially fractions. Once you know a number's factors, you can solve math problems faster — like a number detective!

What is the Fibonacci Sequence?

The **Fibonacci Sequence** is one of the most famous number patterns in the world. It is a special number pattern where each number is the sum of the two before it, and it goes like this:

0, 1, 1, 2, 3, 5, 8, 13, 21...

Can you see the pattern? Each number is made by adding the two numbers before it!

- **0 + 1 = 1**
- **1 + 1 = 2**
- **1 + 2 = 3**
- **2 + 3 = 5**
- **3 + 5 = 8**
- **... and so on!**

This sequence is found in nature too — in pinecones, sunflower seeds, and even the spiral of snail shells!

Cool Math Fact:

The Fibonacci Sequence **never ends** and keeps growing bigger and bigger. It's a mix of addition and patterns working together.

Try This Game:

"Fibonacci Flower" Drawing

4. Start with a dot.
5. Draw a small spiral where each loop is longer using Fibonacci numbers (1 space, 1 space, 2, 3, 5...).
6. Use colors for each number step!

This visual game teaches how patterns can turn into beautiful designs — just like in real plants!

Learning Fibonacci is like discovering a secret code hidden in nature. It shows that math isn't just about numbers — it's part of the world around you.

What is an Irrational Number?

An **Irrational Number** is a number that **goes on forever** and **never repeats**. You can't write it as a simple fraction like $1/2$ or $3/4$. It's wild, endless, and full of mystery!

The most famous irrational number is **π (pi)**. You've probably heard of it in circles:

$12 \div 3 = 4$ cookies each!

$\pi \approx 3.14159265...$ and it keeps going!

No pattern, no repeat — just digits forever.

Another example is the **square root of 2 ($\sqrt{2}$)**. Try putting that into a fraction — you can't! Its decimal also goes on and on with no repeating pattern.

How Do You Know It's Irrational?

If a number can't be written as a simple fraction, it's irrational.

If the decimal **never ends and never repeats**, it's irrational.

Try This Game with a Teacher:

"Rational or Irrational?" Detective

1. Your teacher writes a number on a card: 1.5 , $\sqrt{2}$, π , $5/8$, $0.333...$
2. You guess: rational (can be written as a fraction) or irrational.
3. Talk through the answer together. Why is it one or the other?

Even though irrational numbers can't be written neatly, they're super important in math and science. They help us measure curves, design circles, and even build buildings! They're like math's endless explorers.

What is a Mixed Number?

A **Mixed Number** is a number made up of a whole number and a fraction. It's used when you have more than one, but not quite two of something.

For example:

2 ½ means 2 whole pizzas and half of another.

7 ¾ means 7 whole apples and three-quarters of an apple more!

You'll see mixed numbers in cooking, shopping, and measuring — almost anywhere in everyday life.

Why Use Mixed Numbers?

They're easier to picture than big fractions

They show both how many wholes and how many parts

You can convert between fractions and mixed numbers

Example:

$$11/4 = 2 \frac{3}{4}$$

(That's 2 wholes, with 3 parts out of 4 left over)

Try This Game:

"Recipe Remix"

1. Pretend you're baking cookies with your Mom.
2. Use a pretend recipe with mixed numbers (like 1 ½ cups flour, 2 ¾ cups sugar).
3. Practice saying and measuring them out with water, rice, or beans!

This helps you use mixed numbers in real-world fun ways.

Mixed numbers help turn fractions into something easier to understand. They're perfect for showing real amounts — not too little, not too much, just right!

What is a Multiple?

A **Multiple** is what you get when you **multiply a number by any whole number**. It's like skip-counting — 2, 4, 6, 8... those are all multiples of 2!

Let's try:

Multiples of 3: **3, 6, 9, 12, 15...**

Multiples of 5: **5, 10, 15, 20...**

You can keep going forever! Multiples help with times tables, patterns, and solving word problems.

Real-Life Uses

- Counting by 10s to track minutes
- Finding which days repeat (like every 7 days = weekly)
- Figuring out when two events will happen on the same day using common multiples

Try This Game:

"Multiple March!"

1. Choose a number, like 4.
2. March in place while skip-counting: 4, 8, 12, 16...
3. Every time you say a multiple, clap!

Or play as a challenge with a friend: "Say the next multiple — don't get stuck!"

Multiples are like math's way of jumping ahead. You'll use them in multiplication, division, and finding common denominators in fractions. They make math faster — and more fun!

What is a Natural Number?

Natural Numbers are the counting numbers we all start with:

1, 2, 3, 4, 5...

These are the first numbers we learn when we start to count things — like fingers, toys, or jellybeans. Some people include 0 as a natural number, but in most math, it starts with 1.

Where Do We Use Natural Numbers?

Counting how many books you read

Keeping score in a game

Lining up your stuffed animals from 1 to 10

Natural numbers don't include decimals, fractions, or negatives — just full, whole numbers that you use to count.

Try This Game:

"Natural Number Hunt"

1. Set a timer for 5 minutes.
2. Walk around the house and find real things that match numbers:
 - 3 spoons
 - 7 books
 - 10 crayons
3. Write them down and count how many things you found!

This helps connect math to the world around you.

Natural numbers are the starting point of all math. Without them, we couldn't count or measure anything. They're simple — and super powerful!

What is an Odd Number?

An **Odd Number** is a number that can't be split evenly into two equal parts. When you try to divide it by 2, there's always one left over.

Examples of odd numbers:

1, 3, 5, 7, 9, 11, 13...

You can spot an odd number by looking at the last digit. If it ends in **1, 3, 5, 7, or 9**, it's odd!

Real-Life Examples:

- If you have **5 cookies** and want to share them with a friend, each of you gets 2 — but 1 cookie is left!
- If **7 students** want to pair up, one person won't have a partner.
- Many locker numbers, house addresses, and jerseys use odd numbers.

Odd numbers are just like their even number buddies, but they don't like to share evenly!

Cool Math Fact:

If you add two odd numbers, the answer is always even!

Example: $3 + 5 = 8$ ✓

But if you add an odd and even number, you always get **odd** again!

Example: $4 + 7 = 11$ ✓

Odd numbers are just like their even number buddies, but they don't like to share evenly!

Try This Game:

"Even or Odd? Shoe Toss!"

1. Write numbers 1–20 on small papers and toss them into a basket.
2. Pick a number, say it out loud, and decide: Even or Odd?
3. If it's even, clap your hands. If it's odd, jump in place!

You can make it silly and active — a great way to remember which is which!

Odd numbers are everywhere. They make counting fun, help with patterns, and even show up in nature — like how some petals or legs on insects come in odd numbers. Once you learn to spot them, you'll see they're just as awesome as even numbers!

What is a Perfect Number?

A **Perfect Number** is a very special number. It's a number where all its factors (except itself) add up exactly to the number!

For Examples:

6 is a perfect number because:

$$1 + 2 + 3 = 6$$

Another perfect number is **28**:

$$1 + 2 + 4 + 7 + 14 = 28$$

These numbers are rare and mysterious — and they've been studied for thousands of years!

What Makes a Number “Perfect”?

- It must be positive
- All its proper factors (except itself) must add up to it
- It must have **at least three** factors (so it can't be a prime)

Try This Game:

“Factor Finder”

1. Pick a number (like 10, 12, 20...)
2. Find all the factors (numbers that divide into it evenly)
3. Add them up — is the number perfect?

Try it with 6 and 28 first — they're the easiest to find!

Perfect numbers show how numbers can be balanced and beautiful. Even though they're rare, they're a cool part of number science and history!

What is a Prime Number?

A **Prime Number** is a special number that has only two factors: **1** and **itself**. That means it can only be divided evenly by 1 and the number itself — no other number works!

Here are some examples of prime numbers:

2 ✓

3 ✓

5 ✓

7 ✓

11 ✓

All of these have exactly two factors.

Important Tip:

2 is the only even prime number! All other even numbers can be divided by 2, so they're not prime.

Real-Life Examples:

Prime numbers are used in secret codes and computer security (cool, right?)
You use primes when finding the smallest pieces, a number can be broken into

Try This Game:

"Prime or Not?" Shout Game

1. One person calls out a number under 50.
2. Everyone else shouts "prime!" or "not prime!"
3. If it's prime, say its only two factors. If not, name at least one more factor.

This game builds number sense and helps kids spot prime numbers fast!

Prime numbers are like the "building blocks" of all other numbers. Once you learn them, you'll start seeing how they help make math work behind the scenes.

What is a Rational Number?

A **Rational Number** is any number that can be written as a fraction — one number over another. Even if it looks like a decimal, if it can be written as a fraction, it's rational!

Examples of rational numbers:

- **$1/2$**
- **4** (which is the same as $4/1$!)
- **0.75** (same as $3/4$)
- **$-2/3$**
- **5.0** (equal to $5/1$)

If the decimal **stops** or **repeats**, it's rational.

Helpful Rule:

If you can write it as a **ratio** (one number divided by another), it's rational!

✗ NOT rational?

Numbers like **π** or **$\sqrt{2}$** — they can't be written as a clean fraction, so they're called **irrational**.

Try This Game:

"Rational Roundup!"

1. Write a mix of numbers on flashcards: 0.5, 3, π , $1/3$, 0.333..., $\sqrt{2}$
2. Ask your partner to pick out all the rational ones
3. Turn decimals into fractions and explain why they are (or aren't) rational!

Rational numbers show up everywhere — in money, measuring, and dividing things up. Learning them helps you with fractions, decimals, and real-world math!

What is a Real Number?

All **Real Numbers** are all the numbers you know — they live on the number line and include almost everything:

Examples of rational numbers:

- **Whole numbers** (0, 1, 2, 3...)
- **Negative numbers** (-1, -10...)
- **Fractions** (like $\frac{2}{3}$)
- **Decimals** (like 0.75 or -4.6)
- **Irrational numbers** like π and $\sqrt{2}$

If you can find it on a number line, it's a real number!

Real numbers help us describe everything from length, temperature, and money, to scientific measurements and time. They are used in every math subject and every real-world situation — that's why they're called "**real**" numbers!

The only numbers not included are **imaginary numbers**, which are used in more advanced math. But for now, everything from **-1000** to π to $\frac{1}{2}$ is part of the real number family. Understanding real numbers helps you make sense of math as a big picture — how all types of numbers fit together.

Real vs. Not Real?

- **Real:** 3, -5, 1.5, π , $\sqrt{2}$
- **Not real:** Things like $\sqrt{-1}$ or dividing by **0** — those are called imaginary numbers, and they come much later in math.

Try This Game:

"Number Line Hop"

1. Draw a giant number line with sidewalk chalk or on paper.
2. Call out numbers — the player hops to where it belongs!
3. Include negatives, decimals, and fractions for extra challenge.

Real numbers are the foundation of almost all the math you'll ever do. They're everywhere — from temperatures to time to the cost of your favourite toy!

What is a Whole Number?

A **Whole Number** is a number without fractions or decimals — it's a number that's "complete." Whole numbers include:

0, 1, 2, 3, 4, 5... and they go on forever.

They are not parts of numbers (like $\frac{1}{2}$) and they are not negative. Whole numbers are the most basic numbers we use every day:

- Counting people or objects
- How many players are on a team
- Telling how many days until your birthday
- Keeping score in games

They're simple, but super useful!

Whole numbers help us build number sense from the very beginning. They are the stepping stones to bigger math ideas like place value, rounding, estimating, and later on — decimals and fractions. If you're building a strong math foundation, whole numbers are where it all starts.

When you feel confident working with whole numbers, you're ready to explore all kinds of math adventures. Whether you're counting steps or solving equations, whole numbers are always there to help you out!

Whole Numbers vs. Natural Numbers

- **Natural numbers:** Start at 1 and go up (1, 2, 3...)
- **Whole numbers:** Same, but include 0 (0, 1, 2, 3...)

Try This Game:

"Whole Number Hunt"

1. Look around the room and write down 10 things that come in whole numbers:
 - 3 chairs, 2 pillows, 7 crayons
2. Can you find a group with zero? (Like: 0 bananas left!)

This teaches kids that zero is a number too — and it is part of the whole number family.

Whole numbers are the friendly numbers we start with — no fractions, no fuss. Once you understand them, you're ready to dive into bigger number worlds!