

Day 2:

Topics: 1. Even, odd numbers

2. Number line basics
3. Compare numbers (< > =)

1. Even and Odd Numbers

Definition

- Even numbers are whole numbers that can be exactly divided into pairs (no leftover).
- What is “No leftover” means nothing remains, nothing is left single, everything is paired or complete.

Examples: 0, 2, 4, 6, 8, 10, 12...

What is **Whole Numbers**? Whole numbers = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 ... (go on forever)

- ✓ Whole numbers start from 0
- ✓ They do NOT include negative numbers
- ✓ They do NOT include decimals
- ✓ They do NOT include fractions

❓ Not Whole Numbers

These are *not* whole numbers:

- -3 (negative → not whole)
- 4.7 (decimal → not whole)
- $\frac{1}{2}$ (fraction → not whole)

- Odd numbers are whole numbers that leave one single item when you try to pair everything.

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

❓ Why these are NOT whole numbers?

Whole numbers follow one strict rule:

☞ Whole numbers must be complete, full numbers without pieces.

Let's look at each example.

❓ 1. Why -3 is NOT a whole number?

Whole numbers never go below 0.

Think like this:

- You can't have -3 apples
- You can't have -3 chocolates

Negative values mean *less than nothing*, which isn't a “whole” count.

✓ Whole numbers start from: 0, 1, 2, 3...

So -3 breaks the rule → not whole.

❓ 2. Why 4.7 is NOT a whole number?

Because 4.7 is not complete.

It means:

- 4 whole
- plus 0.7 part (a piece)

Whole numbers never have decimals or points.

Examples of decimals:

- 4.1
- 3.9
- 10.5

All of these have pieces → not whole.

❓ 3. Why $\frac{1}{2}$ is NOT a whole number?

$\frac{1}{2}$ means half.

Imagine:

- 1 full chocolate
- But you break it into 2 pieces
- You take 1 piece → that is $\frac{1}{2}$

Is that a full whole chocolate?

No.

Whole numbers must be complete, not broken.

In Detail : ✓ What is “leftover”?

Leftover means:

After sharing or pairing things, something is still remaining alone.

Example:

Imagine you have 5 chocolates and you try to pair them like this:



Here, one chocolate is alone → that alone chocolate is the leftover.

So 5 has a leftover → that's why 5 is an odd number.

✓ What is “no leftover”?

“No leftover” means everything makes a full pair, nothing is alone.

Example:

You have 6 chocolates:



No chocolate is alone → no leftover.

So 6 is even.

"If I will ask your mobile number is Odd or Even Number, I know as beginner you can't say, it's very harder for you? Right But, I have Quick trick (last digit rule)"

Look only at the last digit (units place):

- If the last digit is 0,2,4,6,8 → even.
- If the last digit is 1,3,5,7,9 → odd.

Why the last digit decides even/odd. ?

Every number is made of tens and ones.

Back to Day1 Class ✓ What are ONES?

Ones = single items.

It tells how many single objects you have.

- If a number ends with 3 → it has 3 ones
- If a number ends with 7 → it has 7 ones
- If a number ends with 0 → it has 0 ones

Ones = last digit of a number.

Example:

- In 45, the last digit is 5 → 5 ones
- In 129, the last digit is 9 → 9 ones

Back to Day1 ✓ what are TENS?

Tens = groups of 10 ones.

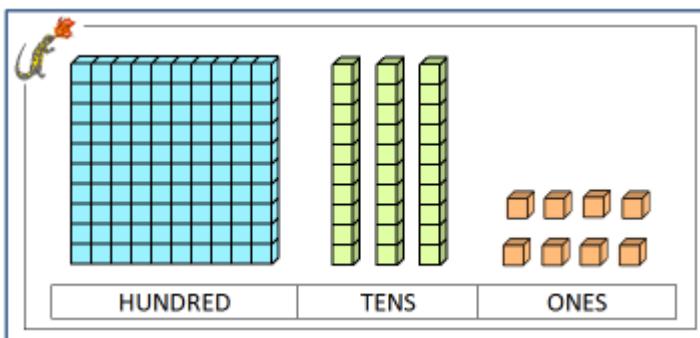
- 1 ten = 10
- 2 tens = 20
- 3 tens = 30
- 7 tens = 70
- 10 tens = 100

Tens tell how many groups of 10 are in the number.

Tens = second digit from the right.

Example:

- In 45, the tens digit is 4 → 4 tens (40)
- In 129, the tens digit is 2 → 2 tens (20)



Place - Value Mat with Two Ten-Frames		
Hundreds	Tens	Ones

Image modeled after Van De Walle, Karp, & Bay-Williams, 2010, Figure 11.1

Think of place values like building blocks:

Ones → small cubes

Tens → a stick of 10 cubes

Hundreds → a big square of 100 cubes

So:

- 10 ones → becomes 1 ten
- 10 tens → becomes 1 hundred

This is how numbers grow. (this is what we already know in our previous class)

Back to the point: - Every number is made of **tens** and **ones**.

Example:

$$246 = 200 + 40 + 6$$

$$1379 = 1000 + 300 + 70 + 9$$

Now see this magical rule:

☞ **Every “10” is even**

Because:

$$10 = 5 \text{ pairs} \rightarrow \checkmark \text{ even}$$

$$20 = 10 \text{ pairs} \rightarrow \checkmark \text{ even}$$

$$30 = 15 \text{ pairs} \rightarrow \checkmark \text{ even}$$

No matter how many tens you have, tens never create leftover.

So leftover can only come from the ones place (last digit).

That's why:

Even or odd depends ONLY on the last digit . Because Every “10” is even ✓

Still Not Getting? (Most important understanding)

☞ If the last digit is odd → the whole number is odd.

☞ If the last digit is even → the whole number is even.

Because the last digit (ones place) decides everything.

✓ Examples

Last digit = odd → full number = odd

- 13 → last digit 3 → odd
- 47 → last digit 7 → odd
- 129 → last digit 9 → odd
- 6751 → last digit 1 → odd

Last digit = even → full number = even

- 24 → last digit 4 → even
- 80 → last digit 0 → even
- 302 → last digit 2 → even
- 4976 → last digit 6 → even

✓ Why only the last digit matters?

Because:

- Tens, hundreds, thousands → always even
- Only ones place can create leftover

So the last digit decides the final result.

⊕ Let's check **6752** using the last-digit rule.

⌚ Last digit = 2

2 is an **even** number.

☒ Therefore:

6752 is EVEN.

Because the last digit is even, the whole number becomes even.

✓ Let's break 6752 into place values

$$6752 = 6000 + 700 + 50 + 2$$

Now check each part:

◆ **6000 (thousands)**

$$6000 = 600 \text{ tens}$$

$$\rightarrow 10 \times 600$$

→ Always even ✓

◆ **700 (hundreds)**

$$700 = 70 \text{ tens}$$

$$\rightarrow 10 \times 70$$

→ Even ✓

◆ **50 (tens)**

$$50 = 5 \text{ tens}$$

$$\rightarrow 10 \times 5$$

→ Even ✓

◆ **2 (ones)**

2 is **even**

❓ Now add all these:

6000 (even)

- 700 (even)

- 50 (even)

- 2 (even)

= Even number

So the full number 6752 is even.

✓ Why the “7” does NOT matter

Because the digit 7 in 6**7**52 is not in ones place.

It is in **hundreds place**, meaning:

- It represents **700**, not 7
- And 700 is even because it's **70 tens**

$700 = 10 \times 70 \rightarrow$ even.

So the “7” does NOT decide anything.

❓ Even or odd does NOT depend on all digits.

It depends **ONLY** on the last digit (ones place).

Why?

Because **ONLY** the ones place can create leftover.

Tens, hundreds, thousands \rightarrow ALWAYS even, no leftover.

✓ SUPER-SIMPLE STORY (very easy understanding)

Think of a number as a **bag** with:

- bundles of **10 items**
- and some **loose items**

Example:

$246 = 24$ bundles of 10 + 6 loose items

Now check:

Bundles of 10 \rightarrow ALWAYS even

Because each bundle of 10 can be perfectly paired.

So ignore them.

Loose items decide even/odd

- Loose items 0 \rightarrow even
- 1 \rightarrow odd
- 2 \rightarrow even
- 3 \rightarrow odd
- 4 \rightarrow even
- 5 \rightarrow odd
- 6 \rightarrow even

- 7 → odd
- 8 → even
- 9 → odd

These loose items are the **last digit**.

✓ NOW CHECK YOUR EXAMPLES AGAIN

1) 246

= (24 bundles of 10) + 6 loose

Bundles → even

Loose → 6 (even)

So **246 is even**.

2) 1379

= (137 bundles of 10) + 9 loose

Bundles → always even

Loose → 9 (odd)

So **1379 is odd**.

3) 0

= 0 bundles + 0 loose

Loose → 0 (even)

So **0 is even**.

✓ ONE-LINE MAGIC RULE

Only the loose items (last digit) can create leftover.

Everything else (tens, hundreds, thousands) already forms perfect pairs.

246 → |10|10|10| ... (24 times) ... |10| + 6
1379 → |10|10|10| ... (137 times) ... |10| + 9

All |10| blocks are even → ignore them

Only the last number matters.

✓ The confusion:

You said:

"23 is called tens but it creates leftover."

Correct — **23 DOES create leftover**, because of the **3**, not because of the tens.

The key idea is this:

☒ Tens NEVER create leftover.

☒ BUT the ones can create leftover.

Let's break **23** correctly:

✓ 23 is NOT “tens”

$23 = 2 \text{ tens} + 3 \text{ ones}$

☒ 2 tens = 20

$20 = 10 + 10 \rightarrow$ these are **even**, no leftover.

☒ 3 ones = 3

3 leaves **one leftover** → makes the number **odd**.

So **23** has leftover because of the **ONES (3)**, not because of the tens.

✓ Why tens never create leftover?

Every 10 can always make pairs perfectly:

10 = even

20 = even

30 = even

40 = even

90 = even

100 = 10 tens (even)

1000 = 100 tens (even)

No 10, 20, 30, 40, 50... EVER leaves a single leftover item.

You asked:

“Which even numbers can create odd?”

Answer: **No even number becomes odd by adding extra digits in front.**

✓ Example Table

Number	Tens part	Ones part	Tens leftover?	Ones leftover?	Final result
23	20	3	☒ no leftover	✓ leftover	Odd
46	40	6	☒ no leftover	☒ no leftover	Even
91	90	1	☒ no leftover	✓ leftover	Odd
120	120 (12 tens)	0	☒ no leftover	☒ no leftover	Even

◆ LEVEL 1 — Easy

Tell if these numbers are Even or Odd:

1. **42**
 2. **97**
 3. **130**
 4. **555**
 5. **808**
-

◆ LEVEL 2 — Medium

Tell Even or Odd:

6. **6013**
 7. **9990**
 8. **2741**
 9. **48002**
 10. **77778**
-

◆ LEVEL 3 — Trick Level

Tell Even or Odd:

11. **0**
12. **1000001**
13. **242424243**
14. **56000000**
15. **1357913579**

2. NUMBER LINE — SUPER EASY EXPLANATION

A **number line** is simply:

- □ A straight line
- □ With numbers placed in order
- □ We read it from left → right

Think of it as a **road of numbers**. (Wow)

0 1 2 3 4 5

A number line goes like this:

☞ The number on the right is always bigger.

☞ The number on the left is always smaller.

Look at this line:

2 3 4 5 6 7

- 3 is on the **right side**

- 2 is on the **left side**

So:

- ✓ 3 is bigger
- ✓ 2 is smaller

Simple!

- 5 is on the right → **5 is bigger**
- 4 is on the left → **4 is smaller**

Tell me:

1. Which number is on the right?
2. Which number is on the left?
3. Which number is bigger?
4. Which number is smaller?

Reply like:

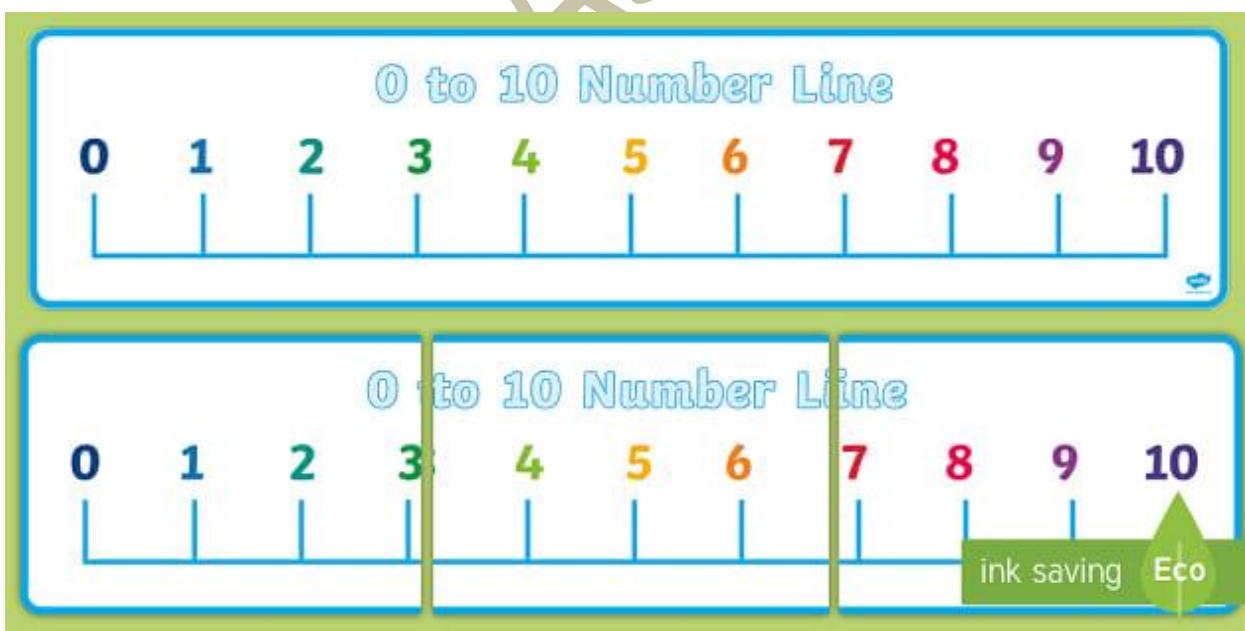
1._ , 2._ , 3._ , 4._

Follow the below Diagram and Tell Me:

1. Which is bigger: 12 or 10?
2. Which is smaller: 11 or 13?
3. Which side makes numbers bigger: Left or Right?

Reply like:

1._ , 2._ , 3._



❓ Why do we use a number line? (Very easy explanation)

✓ 1. To see numbers in order

It shows numbers from small to big.

Example:

0, 1, 2, 3, 4, 5...

✓ 2. To know which number is bigger or smaller

Just look:

- The number on the **right** is bigger
- The number on the **left** is smaller

Example:

On the line **6 is bigger than 4**.

✓ 3. To help in addition

When you add, you **move right**.

Example:

$2 + 3 \rightarrow$ start at 2, move 3 steps right \rightarrow you reach 5.

✓ 4. To help in subtraction

When you subtract, you **move left**.

Example:

$7 - 2 \rightarrow$ start at 7, move 2 steps left \rightarrow you reach 5.

✓ 5. To learn negative numbers

Negative numbers come on the **left side of 0**.

Example:

... -3, -2, -1, 0, 1, 2, 3 ...

This helps you understand cold temperature, bank balance, loss, etc.

❓ Very Important Idea

Number line makes math visual.

Instead of guessing if a number is big/small \rightarrow you look at its **position**.

3. Compare numbers (< > =)

❓ 1. What does each symbol mean?

✓ > means **GREATER** than

Example:

$5 > 3 \rightarrow 5$ is bigger

✓ < means LESS than

Example:

$2 < 9 \rightarrow 2$ is smaller

✓ = means EQUAL to

Example:

$7 = 7 \rightarrow$ both are same

?] 2. VERY SIMPLE WAY TO REMEMBER

Think of the symbols as a **crocodile mouth** 

 **The crocodile ALWAYS eats the bigger number.**

Example:

$5 > 3$

 eats 5 because 5 is bigger

Example:

$2 < 8$

 eats 8 because 8 is bigger

Example:

$6 = 6$

Both same \rightarrow crocodile doesn't open mouth

?] 3. Number Line Trick (Very Easy)

Numbers on the **right** are bigger.

Numbers on the **left** are smaller.

Example number line:

3 4 5 6

- 6 is right \rightarrow bigger
- 3 is left \rightarrow smaller

So:

$3 < 6$

$6 > 3$

?] 4. Examples (Very Simple)

1. $9 > 4$ (9 is bigger)
2. $3 < 7$ (3 is smaller)
3. $10 = 10$ (same number)
4. $12 > 5$ (12 is bigger)

5. $1 < 9$ (1 is smaller)

?] 5. SUPER SHORT SUMMARY

- $>$ = left number is bigger
 - $<$ = right number is bigger
 - $=$ = both same
 - Crocodile mouth always opens towards the **bigger number**
-

?] Now your turn (Very Easy Test)

Compare these numbers and give answers:

1. $8 \underline{\quad} 3$
2. $2 \underline{\quad} 9$
3. $6 \underline{=} 6$
4. $15 \underline{<} 12$
5. $4 \underline{>} 10$

Reply like:

1. $>$, 2. $<$, 3. $=$, ...