**📌 What is Reference in Excel?**

In Excel, **Reference** means the **address of a cell or range**, used inside formulas to calculate values.

**📂 There are 3 main types of references:**

| **Type** | **Name** | **Example** | **Behavior** |
| --- | --- | --- | --- |
| 1️⃣ | **Relative Reference** | =A1 + B1 | Changes when formula is copied to other cells |
| 2️⃣ | **Absolute Reference** | =$A$1 + $B$1 | Doesn’t change when copied |
| 3️⃣ | **Mixed Reference** | =$A1 or A$1 | Either column or row is fixed |

**🧠 Real Examples:**

**✅ 1. Relative Reference**

* In cell C1, if you write: =A1 + B1
* Copy to C2 ➤ It becomes =A2 + B2
* Because relative references adjust with the position

**✅ 2. Absolute Reference**

* Formula in C1: =$A$1 + $B$1
* Copy anywhere ➤ It stays the same: =$A$1 + $B$1

**✅ 3. Mixed Reference**

* =$A1 ➤ Column A is fixed, row changes when copied
* =A$1 ➤ Row 1 is fixed, column changes when copied

**🎯 Use Case Example:**

**Discount Calculation Using Absolute Reference**

| **Product** | **Price** | **Discount** | **Final Price** |
| --- | --- | --- | --- |
| A | 100 | 10% | =B2\*(1-$C$1) |

Here, $C$1 stores the discount rate. When you copy the formula down, $C$1 doesn’t change — this is the benefit of absolute reference.

**🔐 How to Add Dollar Sign in Excel References (All Versions)**

**✅ What does the $ sign do?**

* $ before **column letter** = Locks the **column**
* $ before **row number** = Locks the **row**

**⚙️ Shortcut to Add $ Sign in Excel (All Versions)**

You use the F4 key **inside a formula** to toggle between different types of references.

🧠 **Note:** This only works when you're editing a formula and have selected the cell reference (like A1) — not with plain numbers.

**🎯 Pressing F4 (Inside Formula Editor):**

| **Press** | **Reference Changes To** | **Meaning** |
| --- | --- | --- |
| 1st | =$A$1 | Locks **column and row** (Absolute) |
| 2nd | =A$1 | Locks **row only** |
| 3rd | =$A1 | Locks **column only** |
| 4th | =A1 | No lock (Relative) |

**🔄 How to Lock Only Column or Row**

**👉 To lock only the column:**

* Type a formula like =A1
* Select the A1 part
* Press F4 **three times**
* ✅ It becomes =$A1

**👉 To lock both column and row:**

* Type the formula
* Select the reference (like A1)
* Press F4 **once**
* ✅ It becomes =$A$1

**🖥️ Excel Versions Support:**

| **Version** | **Works With F4?** |
| --- | --- |
| Excel 2010 | ✅ Yes |
| Excel 2013 | ✅ Yes |
| Excel 2016 | ✅ Yes |
| Excel 2019 | ✅ Yes |
| Excel 2021 / 365 | ✅ Yes |

⚠️ On some **laptops**, you might need to press Fn + F4 if function keys are locked.

**🎓 Example:**

If you have a formula in cell C2:

= A2 \* B2

You want to keep column A fixed (but not the row):

* Change A2 ➝ =$A2 → **Press F4 three times after selecting A2**

You want to keep both fixed:

* A2 ➝ =$A$2 → **Press F4 once**

| * **Copy Direction** | **Fix What?** | **Reference Type** | **Example** |
| --- | --- | --- | --- |

|  |  |  |  |
| --- | --- | --- | --- |
| Horizontal ➡️ | Column | Mixed | =$A1 |

|  |  |  |  |
| --- | --- | --- | --- |
| Vertical ⬇️ | Row | Mixed | =A$1 |

|  |  |  |  |
| --- | --- | --- | --- |
| Anywhere | Both | Absolute | =$A$1 |

|  |  |  |  |
| --- | --- | --- | --- |
| Flexible Move | None | Relative | =A1 |