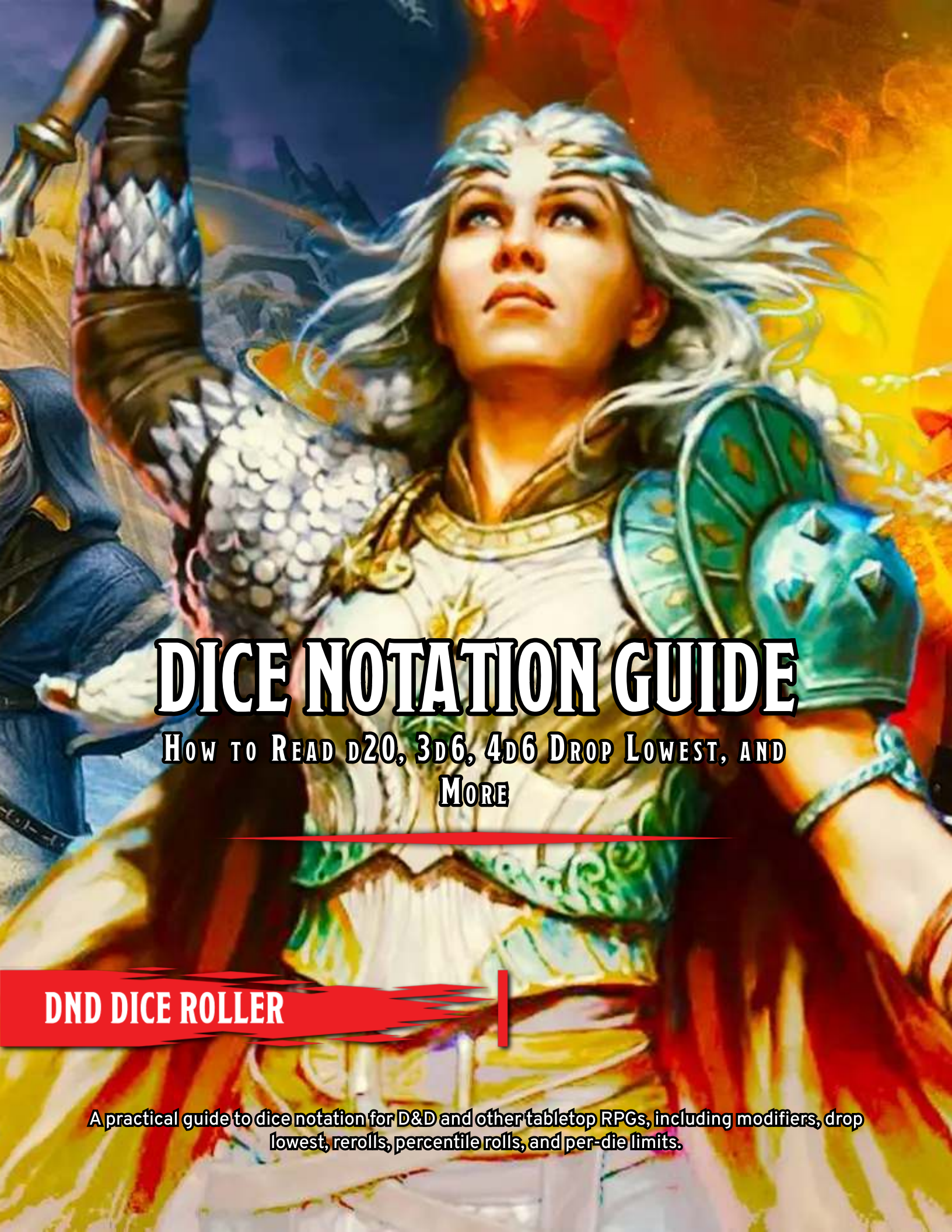




DICE NOTATION GUIDE

HOW TO READ D20, 3D6, 4D6 DROP LOWEST, AND
MORE

DND DICE ROLLER

A practical guide to dice notation for D&D and other tabletop RPGs, including modifiers, drop lowest, rerolls, percentile rolls, and per-die limits.

DICE NOTATION GUIDE

IF YOU HAVE EVER LOOKED AT A CHARACTER SHEET, SPELL description, monster stat block, or house rule and seen something like **1d20 + 5**, **2d6**, or **4d6 drop the lowest**, you were looking at **dice notation**.

Dice notation is just a compact way to describe how many dice to roll, what type of dice to use, and what extra rules apply to the result. Once you understand the pattern, you can read most tabletop rolls at a glance.

This guide covers the basics first, then moves into the more advanced formats that show up in D&D, AD&D, and custom tabletop systems.

THE CORE FORMULA

The most common pattern looks like this:

x dy

That means:

- **x** = the number of dice to roll
- **d** = “die” or “dice”
- **y** = the number of sides on each die

So:

- **1d6** means roll one six-sided die
- **1d20** means roll one twenty-sided die
- **2d8** means roll two eight-sided dice
- **3d4** means roll three four-sided dice

If there is no number before the **d**, it usually means **1**.

So **d20** and **1d20** mean the same thing.

COMMON DICE AT A GLANCE

Here are the dice you will see most often:

- **d4** = four-sided die
- **d6** = six-sided die
- **d8** = eight-sided die
- **d10** = ten-sided die
- **d12** = twelve-sided die
- **d20** = twenty-sided die
- **d100** = percentile die or percentage roll

In D&D, the **d20** usually handles attack rolls, saving throws, and ability checks. Damage is often rolled on smaller dice such as **d4**, **d6**, **d8**, **d10**, or **d12**.

READING BASIC ROLLS

d20

Roll one twenty-sided die.

Example:

- attack roll
- saving throw
- skill check

2d6

Roll two six-sided dice and add them together.

Example:

- greatsword damage in many D&D versions

3d8

Roll three eight-sided dice and add the results.

Example:

- spell damage
- monster abilities
- healing effects

1d10

Roll one ten-sided die.

Example:

- hit points
- weapon damage
- random tables

ADDING MODIFIERS

Very often, a roll includes a modifier.

Examples:

1d20 + 5
2d6 + 3
1d8 - 1

This means you roll the dice first, then add or subtract the modifier from the total.

EXAMPLE 1: 1d20 + 5

If you roll a 14 on the d20:

$$14 + 5 = 19$$

Final result: **19**

EXAMPLE 2: 2d6 + 3

If the dice come up 4 and 2:

$$4 + 2 + 3 = 9$$

Final result: **9**

EXAMPLE 3: 1d8 - 1

If you roll a 6:

$$6 - 1 = 5$$

Final result: **5**

TOTAL MODIFIER VS PER-DIE MODIFIER

Some tools, including DnD Dice Roller, let you apply a modifier either **to the total** or **to each die**.

That distinction matters.

MODIFIER TO TOTAL

2d6 + 3 to total

If you roll 4 and 2:

$$4 + 2 = 6$$

$$6 + 3 = 9$$

MODIFIER TO EACH DIE

2d6 + 3 to each

If you roll 4 and 2:

$$(4 + 3) + (2 + 3) = 12$$

That is a very different result.

Most standard D&D rolls use modifiers **to the total**, but per-die modifiers can be useful for special rules, homebrew systems, or testing unusual mechanics.

PERCENTILE ROLLS AND D100

A **d100** usually means a percentile roll from 1 to 100.

Some players use a physical **d100**, but more often the roll is simulated using two ten-sided dice:

- one die for the tens
- one die for the ones

Example:

- 00 and 7 = 7
- 40 and 3 = 43
- 90 and 0 = 90
- 00 and 0 is often read as 100, depending on the system

Percentile rolls are common in random tables, loot tables, and some non-D&D tabletop games.

MULTIPLE DICE AND WHY THEY MATTER

One important thing about dice notation is that more dice changes the shape of the results.

1d20

Every number from 1 to 20 has the same chance.

3d6

The middle numbers are more common than the extreme numbers.

That is why **3d6** feels very different from **1d20**, even though both can produce a wide range of totals. The more dice you roll together, the more the results cluster toward the middle.

DROP LOWEST AND DROP HIGHEST

This is where notation starts becoming more interesting.

4d6 drop the lowest

Roll four six-sided dice, ignore the lowest result, and add the remaining three.

This is one of the most famous examples in D&D because it is often used for generating ability scores.

Example:

- roll 6, 5, 3, 1
- drop the 1
- total = 14

2d20 drop the lowest

Roll two d20s and ignore the lower result.

That is effectively how **advantage** works in D&D 5E.

2d20 drop the highest

Roll two d20s and ignore the higher result.

That is effectively how **disadvantage** works in D&D 5E.

In DnD Dice Roller, this kind of setup is handled with the advanced option that lets you choose:

- Drop or Reroll
- lowest or highest
- how many dice

So instead of writing a long formula, you configure the line directly.

REROLL LOWEST AND REROLL HIGHEST

Some systems or house rules do not want a die ignored. They want it rerolled.

That is different.

DROP

The original die is thrown away and not counted.

REROLL

The die is rolled again, and the new result replaces the old one.

Example:

- roll **4d6**
- results: 6, 4, 2, 1
- reroll the lowest
- the 1 is rolled again and becomes 5
- final set: 6, 4, 2, 5

That produces a different result from simply dropping the lowest die.

MINIMUM AND MAXIMUM PER DIE

This is a more advanced rule, but it is useful.

A **minimum per die** means each die cannot go below a certain value.

Example:

- roll **1d10**
- minimum of 2 per die
- if the die lands on 1, treat it as 2

A **maximum per die** means each die cannot go above a certain value.

Example:

- roll **1d8**
- maximum of 6 per die
- if the die lands on 7 or 8, treat it as 6

This is not standard for most everyday D&D rolls, but it can be useful for:

- AD&D-inspired rule handling
- custom class features
- special magical effects
- balancing experimental house rules

COMMON D&D EXAMPLES

Here are some common dice formulas and what they mean.

ATTACK ROLL

1d20 + 7

Roll one d20 and add 7.

LONGSWORD DAMAGE

1d8 + 4

Roll one d8 and add 4.

GREATSWORD DAMAGE

2d6 + 4

Roll two d6 and add 4.

FIREBALL DAMAGE

8d6

Roll eight d6 and total them.

HEALING POTION

2d4 + 2

Roll two d4 and add 2.

ABILITY SCORE GENERATION

4d6 drop the lowest

Roll four d6, ignore the lowest, add the other three.

ADVANTAGE

2d20 drop the lowest 1

Keep the higher die.

DISADVANTAGE

2d20 drop the highest 1

Keep the lower die.

A SIMPLE WAY TO PARSE ANY DICE FORMULA

When you see a dice formula, read it in this order:

1. How many dice are being rolled?
2. What type of dice are they?
3. Is there a modifier?
4. Does the modifier apply to the total or to each die?
5. Are there advanced rules like drop, reroll, minimum, or maximum?

For example:

4d6 drop the lowest 1

Read it like this:

- roll 4 dice
- each die is a d6
- drop the lowest 1 die
- add the rest

Or:

1d10 + 5, minimum 2 per die

Read it like this:

- roll 1 d10
- add 5 to the total
- but the die itself cannot count lower than 2

COMMON MISTAKES BEGINNERS MAKE

CONFUSING 2d6 WITH 1d12

These are not the same.

Both can produce totals in a similar range, but **2d6** clusters around the middle while **1d12** is flat and swingy.

FORGETTING WHETHER A MODIFIER APPLIES TO TOTAL OR EACH DIE

This can completely change the result.

MIXING UP DROP AND REROLL

Dropping a die removes it. Rerolling gives it another chance.

ASSUMING ALL GAMES USE THE SAME NOTATION THE SAME WAY

Most systems use similar notation, but the exact rules can vary. Always check the system or tool settings when something seems ambiguous.

HOW THIS APPLIES TO DND DICE ROLLER

DnD Dice Roller supports the simple and advanced patterns most players actually use:

The grammar is the same. That is the point of a grammar.

- standard rolls like **d20**, **2d6**, and **1d8 + 3**
- multiple roll lines
- modifiers to total or each die
- drop lowest or highest
- reroll lowest or highest
- minimum or maximum per die

That means the site can handle basic D&D rolls, 5E style advantage and disadvantage setups, ability score rollers, and more unusual AD&D or homebrew rules without needing a separate calculator.

FINAL THOUGHTS

Dice notation looks cryptic for about five minutes, then it becomes second nature.

Once you understand the pattern, you can read things like **1d20 + 5**, **2d6 + 3**, **4d6 drop the lowest**, or **1d10 minimum 2 per die** almost instantly.

That is one of the nice things about tabletop games. A short line of notation can describe a lot of mechanical detail without taking up much space.

If you are new to it, start by practicing with a few simple examples:

- **d20**
- **2d6**
- **1d8 + 3**
- **4d6 drop the lowest**

After that, the rest tends to click into place very quickly.

NOTATION FOR THINGS THAT ARE NOT DICE

Once you can read XdY , you can write it, and once you can write it you can put it on anything.

- **1d(players)** — who explains the rules to the new guy.
- **1d(NPCs in the room) + charisma** — who the bard talks to first. Not the one they intended.
- **2d6 drop lowest** — how many hours the session actually lasts.
- **1d100 – your level** — chance the DM has prepared for what you just did. It only gets worse.
- **4d6 drop lowest, reroll 1s** — your character. **3d6 in order** — your character's parents' opinion of your character.
- **1d20 + 0** — the honest roll. No modifier, no story, just the number. Once a session, roll one of these for something that matters and let it stand.



DND DICE ROLLER

ROLL WITH US

dnddiceroller.com is the free roller that remembers your lists, follows you from laptop to phone, and never asks you to install anything. Six thousand of you a day can't be wrong. Well, you can, but the dice aren't.

UNCURSE YOUR DICE

Convinced your d20 hates you? **True Randomness** cuts every roll from a signed public pulse published by the US National Institute of Standards and Technology, and shows you which one. Blame physics, not the dice. Find it under **Unlock**.

FIND YOUR PEOPLE

The **Directory** at dnddiceroller.com/directory lists 59 dice makers, map artists, rules tools and table gear we'd actually use. Sell something for the table? Get listed.

TAKE IT TO THE PUB

Legend Roller puts the same roller in your pocket, iOS and Android, with profiles for every character you've ever loved and lost.