

Double-Triangular Distribution Explained

The Double-Triangular Distribution is a statistical approach used for **effort estimation** in project management and software engineering. It is a modified version of the **PERT (Program Evaluation and Review Technique) formula**, which accounts for different possible estimates:

Formula:

$$E = \frac{a + 4m + b}{6}$$

Where:

- **a** = Optimistic estimate (best-case scenario)
- **m** = Most likely estimate (realistic case)
- **b** = Pessimistic estimate (worst-case scenario)
- **E** = Expected effort (in man-hours or time units)

How It Works:

- It assumes that most tasks follow a **triangular probability distribution** where the **most likely estimate (m)** has the highest weight (4 times more) in the formula.
- The formula helps in calculating a **balanced expected effort** based on **best-case, worst-case, and most likely case**.

Use Case Example:

If a task has:

- Optimistic estimate (**a**) = 120 hours
- Most likely estimate (**m**) = 170 hours
- Pessimistic estimate (**b**) = 200 hours

Then, using the **double-triangular distribution formula**:

$$E = \frac{120 + 4(170) + 200}{6} = \frac{120 + 680 + 200}{6} = \frac{1000}{6} = 166.6 \text{ man-hours}$$