Full-System Carrying Capacity Function (Medium Size)

Let S be the Strength score (integer ≥ 1).

The carrying capacity functions are:

$$(\text{Light}(S),\ \text{Medium}(S),\ \text{Heavy}(S))$$

Piece 1 — Strength less than or equal to 9 (table lookup)

$$(\text{Light}(S),\ \text{Medium}(S),\ \text{Heavy}(S)) = T(S) \quad \text{for } S \leq 9$$

The lookup table:

$$T(S) =$$

S	Light	Medium	Heavy
1	3	6	10
2	6	13	20
3	10	20	30
4	13	26	40
5	16	33	50
6	20	40	60
7	23	46	70
8	26	53	80
9	30	60	90

Piece 2 — Strength greater than or equqal to 10 (formula)

$$d = S - 10, \qquad k = \left\lfloor \frac{d}{5} \right\rfloor, \qquad r = d \bmod 5$$

$$m(r) = \begin{cases} 1.00 & r = 0 \\ 1.17 & r = 1 \\ 1.33 & r = 2 \\ 1.50 & r = 3 \\ 1.75 & r = 4 \end{cases}$$

$$\text{Heavy}(S) = \lfloor 100 \cdot 2^k \cdot m(r) \rfloor$$

$$\text{Medium}(S) = \left\lfloor \frac{2}{3} \text{Heavy}(S) \right\rfloor$$

$$\text{Light}(S) = \left\lfloor \frac{1}{3} \text{Heavy}(S) \right\rfloor$$

Full Combined Definition

$$(\text{Light}(S),\ \text{Medium}(S),\ \text{Heavy}(S)) = \begin{cases} T(S), & S \leq 9 \\ \left(\left\lfloor \frac{1}{3} H(S) \right\rfloor,\ \left\lfloor \frac{2}{3} H(S) \right\rfloor,\ H(S)\right), & S \geq 10 \end{cases}$$

$$H(S) = \left\lfloor 100 \cdot 2^{\lfloor (S-10)/5 \rfloor} \cdot m\left((S-10) \bmod 5\right) \right\rfloor$$

Piece 3 — Size Scaling

Each size category applies a uniform multiplier to all three load bands. Define the size multiplier function $s(Z)$ by:

$$s(Z) = \begin{cases} \frac{1}{8} & Z = \text{Fine}, \\ \frac{1}{4} & Z = \text{Diminutive}, \\ \frac{1}{2} & Z = \text{Tiny}, \\ \frac{3}{4} & Z = \text{Small}, \\ 1 & Z = \text{Medium}, \\ 2 & Z = \text{Large}, \\ 4 & Z = \text{Huge}, \\ 8 & Z = \text{Gargantuan}, \\ 16 & Z = \text{Colossal}. \end{cases}$$

Let $\text{Light}(S)$, $\text{Medium}(S)$, and $\text{Heavy}(S)$ be the carrying-capacity values computed for a Medium creature (from Pieces 1–2). The size-adjusted load limits are then:

$$\text{Light}_Z(S) = \lfloor \text{Light}(S) \cdot s(Z) \rfloor ,$$

$$\text{Medium}_Z(S) = \lfloor \text{Medium}(S) \cdot s(Z) \rfloor ,$$

$$\text{Heavy}_Z(S) = \lfloor \text{Heavy}(S) \cdot s(Z) \rfloor .$$