The Unit Rate

A proportional relationship always multiplies by the same number, the unit rate. That number is the unit rate, how much for one, and its formal name is the constant of proportionality, the number that never changes.

1 THE VOCABULARY
Words we use

Unit rate how much for one.

Constant of proportionality the unit rate; the number it always multiplies by.

Constant never changes.

Compare decide which is more, and say why.

- Watch out for these.
- Hearing constant of proportionality as a new idea. It is the unit rate with a formal name.
- Checking a pair by subtracting. Multiply the input by the constant instead.
- Comparing totals instead of unit rates. $200 for 10 levels is less per level than $150 for 6.
- Comparing rates with different units, like dollars per hour against dollars per lawn.

2 THE METHOD
Find it, check it, compare it

1. FIND table: divide an output by its input. Words: ask how much for one.
2. CHECK A PAIR multiply the input by the constant. Got the output? It fits.
3. LINE UP UNITS comparing needs the same kind of units on both sides.
4. COMPARE the bigger unit rate gives more for the same input.

> **WHY CONSTANT**
> Constant means never changing, like a constant noise. Every row of a proportional table divides to the same number. That is what makes it the constant.

3 THE LANDSCAPER
$140 for 4 hours

140 ÷ 4 = 35	the unit rate: $35 an hour
35 × 6 = 210	6 hours for $210 fits
35 × 10 = 350	10 hours for $350 fits
35 × 2 = 70, not 80	2 hours for $80 does not fit
Mia 45 ÷ 5 = 9; Jordan 40 ÷ 5 = 8	two unit rates, same units
10 × 9 = 90; 10 × 8 = 80	Mia earns more for the same 10 hours

> **THE EXIT TICKET**
> Store A: 1.50 ÷ 6 = 0.25. Store B: 1.20 ÷ 4 = 0.30. Store A has the lower unit rate.

> **SAY IT OUT LOUD**
> The constant of proportionality is the unit rate, the number that never changes.