MR. BOUYER SCIENCE | FACTOR LABELS

How to Build a Railroad Track

A simple setup for dimensional analysis and unit conversions

Every factor has two parts: 6 apples

number label (unit)

The labels guide the entire track.

Six Steps

1. Write the given over 1.
   Begin with the known amount exactly as it appears in the problem.
2. Make a railroad track.
   Draw a long horizontal line and a vertical divider for each conversion factor.
3. Place the conversion diagonally.
   Put matching labels across from each other - one on top and one on bottom.
4. Cross out matching labels.
   If they do not cancel diagonally, turn the conversion factor over.
5. Do the math.
   Multiply across the top, multiply across the bottom, and then divide.
6. Write the remaining label.
   The unit that did not cancel must be part of the final answer.

WORKED EXAMPLE

12 feet = _____ inches

Conversion factor: 1 foot = 12 inches

Feet cancels diagonally.

Inches is the label left.

$$\frac{\cancel{12\ \text{ft}}}{1} \times \frac{12\ \text{in}}{\cancel{1\ \text{ft}}} = \frac{144\ \text{in}}{1}$$

Answer: 144 inches

Before you box your answer, ask:

1. Did the unwanted label cancel?

2. Does the final answer include the remaining label?

NAME

CLASS / DATE

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