

Ratios

Definition: A ratio is a comparison of **similar** quantities. Quantities in a ratio must be expressed in the same units.

Example #1:

Here, we're comparing measures in kilograms.

3kg : 5kg

= 3 : 5 ← "3 to 5"

= $\frac{3}{5}$ ← Two-term ratios can be expressed as fractions; any ratio with more than two terms cannot be expressed as a fraction

Example #2:

1kg : 40g : 200g ← Can't be done—units are different

We have to convert either one of the units into **grams** or **kilograms**.

1 000g : 40g : 200g ← Remember: there are a thousand grams in every kilogram

= 100 : 4 : 20 ← Reduce—common factor of 10

= 25 : 1 : 5 ← Lowest form—common factor of 4

Like fractions, ratios must be reduced to their lowest form. That is, there are no common factors in any of the terms other than 1.

Questions

- Keeping in mind that you must use the same units, express each set of numbers as ratios in the order that they appear.
 - 2m, 4m
 - a quarter, a nickel
 - 48 mm, 10 cm
 - 5 km, 1000 m
 - 9 pennies, 1 quarter
 - 1 kg, 500 g
 - \$4, 100 cents
 - 2 nickels, 10 cents
 - 1 metre, 120 cm
 - 4 pennies, 1 dime, and 4 nickels
 - 1 km, 500 m, 400 cm
- Remembering that two-term ratios can be expressed as fractions, express your answer in ratio form and reduce to lowest form where necessary.
 - $\frac{4}{5}$
 - $\frac{2}{3}$
 - $\frac{3}{12}$
 - $\frac{20}{40}$
 - $\frac{100}{25}$
- Find an equivalent ratio for each of the following. Express in fraction form.
 - 4 : 5
 - 9 : 15
 - 9 : 4
 - 4 : 20
 - 11 : 14
 - 63 : 72
 - 26 : 13
 - 52 : 36
 - 25 : 35
 - 245 : 285

Answers

1. a) 1 : 2 b) 5 : 1 c) 12 : 25 d) 5 : 1
 e) 9 : 25 f) 1 : 5 g) 4 : 1 h) 1 : 1
 i) 5 : 6 j) 2 : 5 : 10 k) 250 : 125 : 1

2. a) 4 : 5 b) 2 : 3 c) 1 : 4 d) 1 : 2 e) 4 : 1

3. Many possibilities.