Guide to:
Combining ratios

maths Links

Explanation:

To combine two separate ratios such as **a : b** and **b : c** into a single three-part ratio **a : b : c**, identify the item that appears in both ratios (here, **b**). Find the **lowest common multiple (LCM)** of the two numbers representing that shared item.

Multiply all parts of each ratio so that the shared item has the exact same value in both ratios, then write them together as **a : b : c**. Once combined, you can add the parts to solve total-amount problems or compare any two quantities directly.

Example 1: Given that **a : b = 2 : 3** and **b : c = 4 : 5**, find the ratio **a : b : c** in its simplest form.

Solution:

Match **b** using the LCM of 3 and 4, which is **12**:
• Multiply **a : b = 2 : 3** by 4 → **8 : 12**
• Multiply **b : c = 4 : 5** by 3 → **12 : 15**
Combine the three parts together:
Answer: a : b : c = 8 : 12 : 15

Example 2: In a bag of **66** counters, **red : blue = 3 : 2** and **blue : green = 5 : 4**. How many blue counters are there?

Solution:

Match **blue** (LCM of 2 and 5 is **10**):
• **R : B = 15 : 10** and **B : G = 10 : 8** → **15 : 10 : 8**
Total parts = 15 + 10 + 8 = **33 parts**
1 part = 66 ÷ 33 = **2 counters**; Blue = 10 × 2 = 20
Answer: 20 blue counters

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