

MATH · Y6

Bar Models — Ratio & Proportion

The most reliable method for SATs ratio problems

How ratio bar models work

A ratio of 3:2 means 3 parts of one thing for every 2 parts of another. To draw the bar model, draw 3 equal small bars for the first thing and 2 equal small bars for the second thing — same-sized parts. Example: '60 sweets shared in ratio 3:2 between Tom and Sam.' Draw $3 + 2 = 5$ small bars total. Each small bar = $60 \div 5 = 12$. Tom gets $3 \times 12 = 36$. Sam gets $2 \times 12 = 24$. The bar model makes 'parts' visible, which is the trick to all ratio reasoning.

Set 1: Sharing in a ratio

1. £30 shared in ratio 2:3. How much each?
2. 48 sweets shared in ratio 3:5. How many each?
3. 36 children split in ratio of boys to girls 4:5. How many of each?
4. £56 shared in ratio 2:5. How much each?
5. 80 stickers shared in ratio 3:7. How many each?
6. A 90cm rope cut in ratio 4:5. How long is each piece?

Set 2: Find total from part

1. Two numbers are in ratio 2:3. The smaller is 16. What is the total?
2. Children split in ratio 3:4. There are 21 boys. How many in total?
3. Two amounts are in ratio 5:8. The larger is £56. What is the total?
4. A recipe uses flour and sugar in ratio 5:2. If 250g flour, how much sugar?



5. Counters are red and blue in ratio 7:3. There are 14 red. How many blue?
6. A class has 32 children in ratio 5:3 boys to girls. How many boys, how many girls?

Set 3: Find difference from ratio

1. £45 shared in ratio 2:7. How much MORE does the second person get?
2. Sam:Tom marbles in ratio 5:8, total 65. How many more does Tom have?
3. Recipe of jam to butter in ratio 4:1, total 200g. How much MORE jam than butter?
4. Class voted 3:1 for Option A over Option B, total 32 children. How many MORE voted A?
5. Two cinema screens in ratio 2:5, total seats 280. How many more seats in larger?

Set 4: Multi-step ratio problems (SATs style)

1. A class has 30 children. The ratio of boys:girls is 3:2. Half the boys wear glasses. How many boys wear glasses?
2. £120 is shared in ratio 1:2:3 between Tom, Sam and Maya. How much each?
3. A school has children in Y5:Y6 ratio 5:4. There are 81 children in total in those years. Y6 children are split into classes of 9. How many Y6 classes?
4. A recipe makes 16 cookies and uses flour:sugar:butter in ratio 4:1:2. If 1kg flour is used, how much sugar and butter?
5. Sam and Maya have stickers in ratio 4:7. Maya gives Sam 6 stickers and now they have equal numbers. How many did each have to start?

Answer key

Set 1: 1. £12 and £18 2. 18 and 30 3. 16 and 20 4. £16 and £40 5. 24 and 56 6. 40cm and 50cm

Set 2: 1. 40 (8 parts \times 5) 2. 49 (7 parts \times 7) 3. £91 (13 parts \times 7) 4. 100g (5 parts:2 parts means 50g per part) 5. 6 6. 20 boys, 12 girls

Set 3: 1. £25 (5 parts \times £5) 2. 15 more (3 parts \times 5) 3. 120g more (3 parts \times 40g) 4. 16 more (2 parts \times 8) 5. 120 more (3 parts \times 40)

Set 4: 1. 9 (18 boys, half = 9) 2. £20, £40, £60 3. 4 classes (36 Y6 children \div 9)

4. 250g sugar, 500g butter 5. Sam started with 16, Maya with 28 (after transfer both have 22)

