JUNIOR CYCLE MATHS · FREE REVISION SHEET

Ratio & proportion

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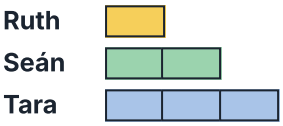
Learning outcomes (2018 specification): N.2b, N.3a. Play the game: **leim.ie/share-it-out.html**

1. What a ratio means

"Girls to boys is 3 : 4" means 3 girls for every 4 boys. **Order matters**: boys to girls is 4 : 3. **Simplify** by dividing every number by the HCF: 12 : 18 = **2 : 3** (÷ 6). **Same units first:** 50 cm : 2 m = 50 : 200 = **1 : 4**. Equivalent ratios: multiply both by the same number (3 : 5 = 12 : 20). Adding the same number does NOT work.

2. Sharing in a ratio

Share €60 in the ratio 1 : 2 : 3. Add the parts: 1 + 2 + 3 = 6. One part = €60 ÷ 6 = €10. Shares: **€10, €20, €30**. Check they add up to €60.



Each share is a **fraction of the total**: Tara gets 3/6 = 1/2. In 2 : 3, the first person gets 2/5 (the bottom is the total number of parts).

3. One share or the difference known

Red : blue = 3 : 5 and there are 21 red. 3 parts = 21, so 1 part = 7 and blue = 5 × 7 = **35**. Ratio 2 : 7, one gets €35 more: 7 − 2 = 5 parts = €35, 1 part = €7, total 9 × 7 = **€63**.

4. Proportion: the unitary method

Find **one** first, then multiply. 4 tickets cost €18. 1 costs €18 ÷ 4 = €4.50, so 7 cost **€31.50**. Recipe for 6 uses 300 g → 50 g each → 9 people need **450 g** (not 303 g).

5. Map scales

Scale 1 : 25 000	Working
6 cm on the map	6 × 25 000 = 150 000 cm = 1 500 m = **1.5 km**
2 km in real life	2 km = 200 000 cm, ÷ 25 000 = **8 cm**

100 cm = 1 m · 1 000 m = 1 km · so 100 000 cm = 1 km

6. Best buy

Find the price of **one** (or of 100 g) in each pack. 6 for €4.20 = 70c each; 10 for €6.50 = 65c each, so the 10-pack is **better value**.

7. Absolute v relative

Absolute = how many or how much (Class B had 15 passes, Class A 12). **Relative** = as a fraction or % of the whole (A: 12/20 = 60%, B: 15/30 = 50%), so **A did better relatively**. Relative change = change ÷ **start**.

Exam tip: write the "1 part" step (€840 ÷ 12 = €70): it earns marks even if a later line slips. Check your shares add to the total. Convert to the same units, and give the answer in the units asked for.

PRACTICE · 34 QUESTIONS

Have a go

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A. Simplify

1. Simplify 12 : 20 _____
2. Simplify 45 : 30 _____
3. Simplify 8 : 12 : 20 _____
4. Write 40 cm : 2 m in its simplest form _____
5. Write 750 g : 2 kg in its simplest form _____
6. Write 20 minutes : 1 hour in its simplest form _____

B. Sharing

7. Share €40 in the ratio 3 : 5. _____
8. Share €90 in the ratio 4 : 5. _____
9. Share 72 sweets in the ratio 5 : 7. _____
10. Share €120 in the ratio 1 : 2 : 3. _____
11. Share €350 in the ratio 2 : 5. _____
12. Boys to girls in a club is 4 : 5. There are 28 boys. How many girls? _____
13. Cordial to water is 1 : 6. There is 900 ml of water. How much cordial? _____
14. Money is shared in the ratio 3 : 8. One person gets €45 more than the other. How much was shared? _____

C. Proportion, maps and best buys

15. 5 pens cost €3.25. How much do 8 pens cost? _____
16. A recipe for 4 people uses 300 g of pasta. How much for 10 people? _____
17. A recipe for 6 people uses 450 ml of milk. How much for 4 people? _____
18. 3 kg of potatoes cost €7.50. How much do 5 kg cost? _____
19. A map has a scale of 1 : 25 000. 8 cm on the map is how many km? _____
20. A map has a scale of 1 : 50 000. 4.5 km in real life is how many cm on the map? _____
21. Which is better value: 6 rolls for €2.70 or 8 rolls for €3.44? _____
22. A car uses 6 litres of petrol per 100 km. How much petrol for 250 km? _____

D. Absolute v relative (and a few more)

23. Class A: 18 of 24 students passed. Class B: 21 of 30 passed. Which class had MORE passes? _____
24. Which class did better RELATIVELY? Show the percentages. _____
25. Bread went from €2.00 to €2.40. Milk went from €1.00 to €1.30. Which had the bigger ABSOLUTE increase? _____
26. Which had the bigger RELATIVE (percentage) increase? _____
27. A town grew from 4,000 to 5,000 people. What is the absolute increase? _____
28. What is the relative (percentage) increase for the town? _____
29. Red to blue is 2 : 3. What fraction of the counters are red? _____
30. Fill the gap: 4 : 7 = 28 : ? _____

Questions 31–34 are on the next page.

EXAM-STYLE · THEN CHECK

Exam corner + answers

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E. Exam-style questions (show your work)

31. Ana, Barry and Cáit share €630 in the ratio 2 : 3 : 4. (a) How much does each get? (b) What fraction of the money does Cáit get?

32. A recipe for 8 cookies uses 200 g of flour, 120 g of butter and 80 g of sugar. (a) How much of each is needed for 20 cookies? (b) Write flour : butter : sugar in its simplest form.

33. A map has a scale of 1 : 20 000. (a) A walk is 9 cm long on the map. How long is it in km? (b) A park is 600 m long. How long is it on the map?

34. (a) Coffee: 400 g for €6.00 or 250 g for €3.90. Which is better value? (b) Club X: 45 of its 60 members played in a match. Club Y: 52 of its 80 members played. Which club had the bigger proportion playing?

Answers

A	1. 3 : 5 · 2. 3 : 2 · 3. 2 : 3 : 5 · 4. 1 : 5 · 5. 3 : 8 · 6. 1 : 3
B	7. €15.00 and €25.00 · 8. €40.00 and €50.00 · 9. 30 and 42 · 10. €20.00, €40.00, €60.00 · 11. €100.00 and €250.00 · 12. 35 · 13. 150 ml · 14. €99.00
C	15. €5.20 · 16. 750 g · 17. 300 ml · 18. €12.50 · 19. 2 km · 20. 9 cm · 21. 8 for €3.44 (43c each v 45c) · 22. 15 litres
D	23. Class B (21 > 18): absolute · 24. Class A (75% v 70%) · 25. Bread (40c v 30c) · 26. Milk (30% v 20%) · 27. 1,000 people · 28. 25% · 29. 2/5 · 30. 49
E	31. (a) 9 parts, 1 part = €70: **€140, €210, €280** (b) **4/9** · 32. (a) ÷ 8 then × 20: **500 g, 300 g, 200 g** (b) **5 : 3 : 2** · 33. (a) 9 × 20 000 = 180 000 cm = **1.8 km** (b) 60 000 cm ÷ 20 000 = **3 cm** · 34. (a) Per 100 g: €1.50 v €1.56, so **400 g** (b) X 75% v Y 65%: **Club X**

Got one wrong? Check: did you keep the order of the ratio? Did you add the parts to get the total number of parts? Did you find ONE first (unitary method)? Did you change to the same units? For "who did better", did you compare fractions or percentages, not just the numbers? Then play **Share It Out** at leim.ie/share-it-out.html: the "Go back over these" list at the end shows the rule for each mistake.

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