Year 8 Fractions and Recurring Decimals – Revision Notes

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Year 8 · Maths · Fractions and Recurring Decimals · Key ideas and worked examples

For grown-ups and learners: read each part and try the worked example. Then work through the sheets: Foundation, Developing, Challenge, then Mixed Practice to revise everything. Show your working: it earns marks in tests and helps you spot mistakes.

1. Recurring decimals

Some fractions give decimals that go on for ever in a repeating pattern: 1/3 = 0.333..., 5/11 = 0.454545... (the **45** recurs). Write the fraction in its simplest form and look at the denominator. It gives a **terminating** decimal only if the denominator has no prime factors other than 2 and 5. So 7/20 = 0.35 terminates, but 5/6 = 0.8333... recurs because 6 = 2 × 3.

Example: Write 2/11 as a recurring decimal. Which digit or digits recur?
→ Divide: 2 ÷ 11
→ The remainders repeat, so the digits 18 recur
→ 0.1818...
Answer: 0.1818... (the 18 recurs)

2. Subtracting mixed numbers

Estimate first: 5 1/4 − 2 5/6 is about 5 − 3 = 2. Then change to improper fractions with a common denominator: 63/12 − 34/12 = 29/12 = **2 5/12**.

Example: 5 1/4 − 1 11/12 = ? Give your answer as a mixed number in its simplest form.
→ Estimate: about 5 − 2 = 3
→ As improper fractions: 21/4 − 23/12
→ = 10/3 = 3 1/3
Answer: 3 1/3

3. Multiplying and dividing with integers

To work out 6 × 4 3/8, multiply both parts: 6 × 4 = 24 and 6 × 3/8 = 18/8 = 2 1/4, so the answer is **26 1/4**. Dividing by a fraction is the same as multiplying by its reciprocal: 6 ÷ 3/4 = 6 × 4/3 = **8**.

Example: 15 ÷ 3/4 = ?
→ Dividing by 3/4 is the same as multiplying by 4/3
→ 15 × 4/3 = 20
Answer: 20

4. Using the laws of arithmetic

Look for a simpler way. For example, 2/5 × 37 + 3/5 × 37 = (2/5 + 3/5) × 37 = **37**. Also 0.25 × 13 × 4 = 0.25 × 4 × 13 = **13**.

Think like a mathematician: test a few cases (**specialising**), look for the rule that always works (**generalising**), and explain why you are sure (**convincing**). When you check someone's working, say what is wrong and how to **improve** it.

Common mistakes: subtracting the smaller fraction from the larger one in a mixed number. Multiplying only the whole-number part. Multiplying by the fraction instead of dividing. Thinking every fraction terminates.