AQA · GCSE · MATHEMATICS • EXERCISE SHEET

1.2.1 Fractions

Name: _____ Class: _____ Date: _____

KEY WORDS improper fraction

<!– Session 2 native-skill companion –>

Objective

Practise fractions within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Exact fractions and mixed-number operations · Foundation

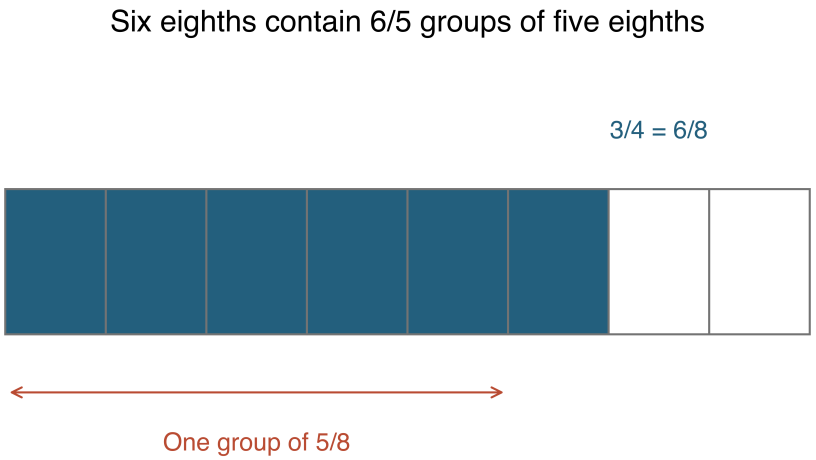
Convert mixed numbers to improper fractions. Add or subtract using a common denominator; multiply numerators and denominators; divide by a nonzero fraction by multiplying its reciprocal. Cancel common factors, not added terms. These rules also apply to negative fractions.

$$\frac{3}{4} \div \frac{5}{8} = \frac{3}{4} \times \frac{8}{5} = \frac{6}{5}$$

1½-¾=6/4-3/4=3/4. Also (-2/3)×(9/4)=-18/12=-3/2 and (3/4)÷(5/8)=(3/4)×(8/5)=6/5. A common denominator gives 5/6+3/4=10/12+9/12=19/12. Check division by multiplying 6/5 by 5/8 to recover 3/4. Exact multiples of π follow ordinary arithmetic: $3\pi+2\pi=5\pi$ and $6\pi/3=2\pi$. Leave an answer such as 5π exact when requested; $\pi\approx3.14$ would introduce approximation. For subtraction, 5/6-3/4=10/12-9/12=1/12; for a negative mixed number, -1½ means -(1+1/2)=-3/2.

Adding denominators does not preserve the unit size: 1/2+1/3 is not 2/5. Cancel only factors of a whole numerator and denominator. A division by zero is undefined.

For a non-calculator question show the common denominator or reciprocal step. Convert 19/12 to 1 7/12 if a mixed number is requested; round only when the question explicitly needs a decimal.



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 (Foundation) Find 1½-¾.

2.2 (Foundation) Find (-2/3)×(9/4).

2.3 (Foundation) Find (3/4)÷(5/8).

3 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: To add two fractions, add their numerators and add their denominators.

Solutions

2.1 6/4-3/4=3/4=0.75.

2.2 (-2×9)/(3×4)=-18/12=-1.5.

2.3 Multiply by 8/5: 24/20=6/5=1.2.

3.1 False. 1/2+1/2=1, while (1+1)/(2+2)=1/2. Use a common denominator and add the adjusted numerators.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.