

GCSE Maths Fractions (Higher): check-up and exam-style questions: answers

GCSE Maths - Fractions - Higher - Test yourself

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch03-fractions/higher/check-up-and-exam-style-questions/

Exercise 3G Check-up (non-calculator) Non-calculator

1 Work out $2\frac{1}{3} \div 1\frac{3}{4}$.

Answer: $1\frac{1}{3}$

2 Increase 72 by $\frac{5}{8}$.

Answer: 117

3 Does $\frac{9}{70}$ give a terminating decimal? Explain.

Answer: No. $70 = 2 \times 5 \times 7$ and 7 is a prime factor other than 2 or 5.

4 Write $0.\dot{6} + 0.\dot{3}$ as a single fraction.

Answer: $\frac{2}{3} + \frac{1}{3} = 1$

5 Write $0.\dot{7}\dot{2}$ as a fraction in its simplest form.

Answer: $\frac{8}{11}$

6 Simplify $\frac{x^2 - 16}{x + 4}$.

Answer: $x - 4$

7 Write $\frac{x}{2} + \frac{x+1}{5}$ as a single fraction.

Answer: $\frac{7x+2}{10}$

8 Solve $\frac{x+2}{3} = \frac{x-1}{2}$.

Answer: $2(x+2) = 3(x-1)$ so $x = 7$

9 A number is increased by $\frac{1}{4}$ and then decreased by $\frac{1}{5}$. Is the result bigger or smaller than the original?

Answer: $\frac{5}{4} \times \frac{4}{5} = 1$: the same.

10 Write $0.3\dot{5} = 0.35555\dots$ as a fraction.

Answer: $\frac{16}{45}$

Exercise 3H Exam-style questions

Non-calculator

- 1 Work out $2\frac{1}{3} \div 1\frac{3}{4}$. [3 marks]

Answer: $1\frac{1}{3}$

- 2 Work out $(\frac{3}{4} + \frac{5}{6}) \div (\frac{1}{1} - \frac{2}{3})$. [3 marks]

Answer: $4\frac{3}{4}$

- 3 Write $0.\dot{2}\dot{7}$ as a fraction in its simplest form. [3 marks]

Answer: $\frac{3}{11}$

- 4 Prove that $0.58333... = \frac{7}{12}$. [3 marks]

Answer: Let $x = 0.58333...$ Then $100x = 58.333...$ and $1000x = 583.333...$ Subtract: $900x = 525$, so $x = \frac{525}{900} = \frac{7}{12}$.

- 5 A coat is reduced by $\frac{1}{5}$. In a further sale the new price is reduced by $\frac{1}{4}$. The final price is £90. Work out the original price. [4 marks]

Answer: £150

- 6 Simplify fully $\frac{x^2 + 5x + 6}{x^2 - 9}$. [3 marks]

Answer: $\frac{x+2}{x-3}$

- 7 Simplify fully $\frac{x^2 - 4}{x + 3} \div \frac{x - 2}{x^2 + 3x}$. [3 marks]

Answer: $x(x+2)$

- 8 Write $\frac{2}{x+1} + \frac{3}{x-2}$ as a single fraction in its simplest form. [3 marks]

Answer: $\frac{5x-1}{(x+1)(x-2)}$

- 9 Solve $\frac{2x+1}{3} - \frac{x-1}{2} = 1$. [4 marks]

Answer: $x = 1$

- 10 Solve $\frac{5}{x+1} = \frac{2}{x-2}$. [4 marks]

Answer: $x = 4$

- 11 Show that $\frac{1}{n} - \frac{1}{n+1} = \frac{1}{n(n+1)}$. [3 marks]

Answer: Common denominator: $((n+1) - n)/(n(n+1)) = 1/(n(n+1))$

- 12 Pipe A fills a tank in 6 hours. Pipe B fills the same tank in 3 hours. How long do they take together?

Answer: 2 hours [3 marks]

- 13** Without a calculator, explain whether $\frac{11}{80}$ gives a terminating or recurring decimal. [2 marks]

Answer: $80 = 2^4 \times 5$. Only 2s and 5s, so it terminates.

- 14** The area of a rectangle is $(x^2 + 5x + 6)$ cm². Its length is $(x + 3)$ cm. Its perimeter is 20 cm. Find x . [4 marks]

Answer: Width = $x + 2$. Perimeter $2(2x + 5) = 20$, so $2x + 5 = 10$, $x = 2.5$

- 15** Show that $\frac{n}{n+1} > \frac{n-1}{n}$ for all positive integers n . [4 marks]

Answer: $\frac{n}{n+1} - \frac{n-1}{n} = \frac{1}{n(n+1)} > 0$