

Pack B · Fluency

Answer all questions. Show your working. Questions are grouped by challenge level.

1. Find a fraction equivalent to $\frac{num}{den}$ with a denominator greater than 50. Justify that it is equivalent.

2. Simplify $\frac{num}{den}$ fully. State the HCF you used and why dividing by it gives the simplest form.

3. Which fraction is larger: $\frac{a}{d}$ or $\frac{b}{d}$? Justify by explaining what the numerator tells you.

4. Calculate $\frac{a}{d} + \frac{b}{d}$ and simplify your answer. Explain why the denominator does not change when adding.

5. Calculate $\frac{a}{d} - \frac{b}{d}$ in its simplest form. Check your answer by adding back.

6. Find $\frac{num}{den}$ of 32. Explain why you divide by the denominator to find a unit fraction of an amount.

7. Find 50% of 60 in two different ways. Show both methods give the same answer.

8. Write $2\frac{num}{den}$ as an improper fraction. Justify by explaining what each whole number contributes.

9. Write $\frac{num}{den}$ as a mixed number. Check by converting back to an improper fraction.

10. Write $\frac{num}{den}$ as a decimal. Explain the connection between the fraction and the decimal.

11. Calculate $\frac{a}{p} + \frac{b}{q}$. Give your answer in its simplest form.

12. Calculate $\frac{a}{p} - \frac{b}{q}$. Give your answer in its simplest form.

13. Calculate $\frac{a}{p} \times \frac{b}{q}$. Give your answer in its simplest form.

14. Calculate $\frac{a}{p} \div \frac{b}{q}$. Give your answer in its simplest form.

15. Find $\frac{\text{num}}{\text{den}}$ of 60.

16. Write 60% as (a) a decimal and (b) a fraction in its simplest form.

17. Find 30% of 90.

18. Calculate $1\frac{a}{p} + 2\frac{b}{q}$.

19. Write $\frac{a}{p}$, $\frac{b}{q}$, and $\frac{c}{r}$ in order from smallest to largest.

20. Increase £60 by 15%.

21. Find the HCF of 30 and 42, then use it to simplify $\frac{a}{b}$ fully.

22. What is 15% of -£60?

23. Calculate $1\frac{a}{p} \times 2\frac{b}{q}$.

24. Calculate $3\frac{a}{p} \div 1\frac{b}{q}$.

25. Decrease £200 by 45%.

26. Write $\frac{num}{den}$ as a decimal. State whether it is terminating or recurring.

27. Write $-\frac{a}{p}$ and $-\frac{b}{q}$ in order from smallest to largest.

28. Find the value of $3a + 1$ when $a = \frac{num}{den}$.

29. Find $\frac{num}{den}$ of 3 m. Give your answer in centimetres.

30. 35% of a number is 63. What is the number?

31. A jacket costs £120. It is reduced by 20% and then by a further 15%. What is the final price?
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32. After a 25% increase, a price is £90. What was the original price?
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33. Solve $\frac{\text{num}}{\text{den}} \times x = 18$.
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34. Find the value of $a^2 + b$ when $a = \frac{a\text{num}}{a\text{den}}$ and $b = \frac{b\text{num}}{b\text{den}}$.
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35. Calculate $2\frac{a}{p} + 1\frac{b}{q} - \frac{c}{r}$.
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36. Arrange in order from smallest to largest: $-\frac{3}{4}$, $\frac{1}{3}$, $-\frac{1}{2}$, $\frac{2}{5}$.
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37. Convert the recurring decimal $0.\overline{dig}$ to a fraction in its simplest form.
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38. A price changes from £60 to £45. Find the percentage change and state whether it is an increase or decrease.
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39. $\frac{a}{b}$ of a class of 48 students passed a test. Of those who passed, $\frac{c}{d}$ also completed the homework. How many students both passed and completed the homework?
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40. Shop A sells 250g of cereal for £0.90. Shop B sells the same cereal: 400g for £1.32. Which is the better value? Show your working.
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