

Foundation GCSE: Fraction Problems

Name: _____ Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Find $\frac{3}{4}$ of 24.
2. Find $\frac{2}{5}$ of 60 kg.
3. A class has 30 students. $\frac{2}{3}$ of them are girls. How many boys are in the class?
4. Sarah has read $\frac{3}{8}$ of a 160-page book. How many pages has she read?
5. Find $\frac{5}{6}$ of 54.
6. A car travels 240 miles. It completes $\frac{3}{5}$ of the journey before stopping. How many miles has it traveled?
7. Express 18 minutes as a fraction of 1 hour, in its simplest form.
8. A jacket costs 120 in a sale with $\frac{1}{4}$ off. What was the original price?
9. Liam spends $\frac{1}{3}$ of his pocket money on games and $\frac{1}{4}$ on snacks. What fraction of his pocket money does he have left?
10. In a box of chocolates, $\frac{2}{5}$ are milk chocolate, $\frac{1}{3}$ are dark chocolate, and the rest are white chocolate. What fraction are white chocolate?
11. A tank is $\frac{3}{4}$ full of water. When 15 litres are removed, it is $\frac{1}{2}$ full. What is the total capacity of the tank?
12. Emma eats $\frac{1}{4}$ of a pizza, and John eats $\frac{2}{3}$ of the remainder. What fraction of the whole pizza is left?
13. A gardener plants bulbs: $\frac{2}{7}$ are daffodils, $\frac{1}{3}$ are tulips, and the remaining 24 are crocuses. How many bulbs were planted in total?
14. An investment increases in value by $\frac{3}{8}$. If it is now worth 5,500, what was its original value?
15. Three-fifths of a number is equal to four-sevenths of another number. If the sum of the two numbers is 111, find the numbers.
16. A bag contains red, blue, and green counters. $\frac{3}{8}$ are red, $\frac{1}{4}$ are blue, and there are 15 green counters. How many counters are in the bag in total?
17. A container holds oil. $\frac{1}{3}$ of the oil is used on Monday, $\frac{3}{5}$ of the remainder is used on Tuesday, and 16 litres are left. What was the initial volume of oil?
18. Two pipes fill a pool. Pipe A can fill the pool in 4 hours, and Pipe B can fill it in 6 hours. What fraction of the pool is filled if both pipes run together for 2 hours?
19. A test has two sections. $\frac{2}{3}$ of the students passed Section A, and $\frac{4}{5}$ passed Section B. If $\frac{1}{10}$ failed both sections, what fraction of students passed both?
20. A ball is dropped from a height of 81 metres. Each time it bounces, it reaches $\frac{2}{3}$ of its previous height. Find the total vertical distance traveled by the ball before it comes to rest on the floor.

Answers & Worked Solutions

1. 18
 $24 \div 4 = 6, 6 \times 3 = 18.$
2. 24 kg
 $60 \div 5 = 12, 12 \times 2 = 24.$
3. 10 boys
 $\frac{1}{3}$ are boys ($30 \div 3 = 10$).
4. 60 pages
 $160 \div 8 = 20, 20 \times 3 = 60.$
5. 45
 $54 \div 6 = 9, 9 \times 5 = 45.$
6. 144 miles
 $240 \div 5 = 48, 48 \times 3 = 144.$
7. $\frac{3}{10}$
 $\frac{18}{60} = \frac{3}{10}.$
8. 160
Original is $\frac{4}{3}$ of sale price: $120 \div 3 \times 4 = 160.$
9. $\frac{5}{12}$
 $1 - (\frac{1}{3} + \frac{1}{4}) = 1 - \frac{7}{12} = \frac{5}{12}.$
10. $\frac{4}{15}$
 $1 - (\frac{2}{5} + \frac{1}{3}) = 1 - \frac{11}{15} = \frac{4}{15}.$
11. 60 litres
 $\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$ is 15 l, so total is $15 \times 4 = 60.$
12. $\frac{1}{4}$
Emma eats $\frac{1}{4}$, John eats $\frac{2}{3}$ of $\frac{3}{4}$ ($= \frac{1}{2}$). Total eaten = $\frac{3}{4}$, left = $\frac{1}{4}.$
13. 63 bulbs
 $\frac{2}{7} + \frac{1}{3} = \frac{13}{21}$; remaining $\frac{8}{21}$ is 24 $\implies$ total is 63.
14. 4,000
 $\frac{11}{8}x = 5500 \implies x = 5500 \times \frac{8}{11} = 4000.$
15. 45 and 66
 $\frac{3}{5}x = \frac{4}{7}y$ with $x + y = 111.$
16. 40 counters
 $\frac{3}{8} + \frac{1}{4} = \frac{5}{8}$; green is $\frac{3}{8} = 15 \implies$ total 40.
17. 60 litres
Total used: $\frac{1}{3} + \frac{2}{5} = \frac{11}{15}$. Left: $\frac{4}{15} = 16 \implies 60.$
18. $\frac{5}{6}$
Rates: $\frac{1}{4} + \frac{1}{6} = \frac{5}{12}$ per hr; in 2 hrs: $2 \times \frac{5}{12} = \frac{5}{6}.$
19. $\frac{11}{20}$
 $P(A \cap B) = \frac{2}{3} + \frac{4}{5} - (1 - \frac{1}{10}) = \frac{11}{20}.$
20. 405 metres
 $81 + 2 \left(\frac{54}{1 - 2/3} \right) = 81 + 324 = 405.$