Fractions Exam Practice

Q1. Work out $\frac{2}{5} + \frac{1}{3}$

$= \frac{6}{15} + \frac{5}{15}$

$= \frac{11}{15}$

Answer: $\frac{11}{15}$

(2 marks)

Q2. Work out $\frac{5}{7} - \frac{2}{6}$

$= \frac{30}{42} - \frac{14}{42}$

$= \frac{16}{42}$

Answer: $\frac{8}{21}$

(2 marks)

Q3. (i) Write $2\frac{3}{4}$ as an improper fraction.

$\frac{11}{4}$

Answer: $\frac{11}{4}$

(2 marks)

(ii) Work out $2\frac{3}{4} \times \frac{2}{9}$, simplifying your answer.

$= \frac{11}{4} \times \frac{2}{9}$

$= \frac{22}{36}$

$= \frac{11}{18}$

Answer: $\frac{11}{18}$

(2 marks)

Q4. Work out $\frac{3}{7} \div \frac{9}{10}$, simplifying your answer.

$= \frac{3}{7} \times \frac{10}{9}$

$= \frac{30}{63}$

$= \frac{10}{21}$

Answer: $\frac{10}{21}$

(2 marks)

Q5. Calculate $\frac{2}{5} \times 9$

$= \frac{2}{5} \times \frac{9}{1}$

$= \frac{18}{5}$

$(= 3\frac{3}{5})$

Answer: $\frac{18}{5}$ or $3\frac{3}{5}$

(1 mark)

Q6. Calculate $1\frac{2}{15} + 3\frac{2}{3}$

$= \frac{17}{15} + \frac{11}{3}$

$= \frac{17}{15} + \frac{55}{15}$

$= \frac{82}{15}$

$(= 5\frac{7}{15})$

Answer: $\frac{82}{15}$ $(5\frac{7}{15})$

(2 marks)

Q7. Find $\frac{3}{8}$ of 120

$\frac{1}{8}$ of 120 = 15

(or $\frac{3}{8} \times 120 = 45$)

$\Rightarrow \frac{3}{8}$ of 120 = 45

Answer: 45

(4 marks)

Q8. Work out $5\frac{5}{7} \div 3\frac{2}{9}$, giving your answer as a mixed number.

$= \frac{40}{7} \div \frac{29}{9}$

$= \frac{40}{7} \times \frac{9}{29}$

$= \frac{306}{203}$

$= 1\frac{103}{203}$

Answer: $1\frac{103}{203}$

(3 marks)

Q9. Work out $\frac{3}{\frac{2}{10}}$

$= \frac{3}{1} \div \frac{2}{10}$

$= \frac{3}{1} \times \frac{10}{2}$

$= \frac{30}{2}$

$= 15$

Answer: 15

(2 marks)

Q10. Work out $\frac{2}{15} \div 8$, simplifying your answer.

$\frac{2}{15} \div \frac{8}{1}$

$= \frac{2}{15} \times \frac{1}{8}$

$= \frac{2}{120}$

$= \frac{1}{60}$

Answer: $\frac{1}{60}$

(2 marks)

Q11. Let a, b and c be positive whole numbers with b < c. Write $a\frac{b}{c}$ as an improper fraction.

$\frac{ac+b}{c}$

(check: $\frac{ac+b}{c} = \frac{ac}{c} + \frac{b}{c}$

$= a + \frac{b}{c}$)

$= a\frac{b}{c}$

Answer: $\frac{ac+b}{c}$

(2 marks)

Applied Mixed Practice Problems

Q12. In year 7, exactly 13/18 of the pupils are going to go on a field trip.

a) Find the fraction of pupils who are not going on the trip.

$\frac{5}{18}$

Answer: $\frac{5}{18}$

(1 mark)

b) Could there be 144 students in year 7? Explain your answer.

Yes, because $\frac{5}{18}$ of 144 = 30; only a whole number of students is possible.

Answer: Yes

(2 marks)

Q13. In a box there are 450 chocolates. One third of them contain nuts. $\frac{3}{5}$ of those containing nuts are hazelnuts. Work out the fraction of the chocolates which do not contain hazelnuts.

- $\frac{2}{3}$ of 450 = 300 which do not contain any nuts, so therefore no hazelnuts.
- 450 − 300 = 150 contain nuts
- $\frac{3}{5}$ of 150 = 90 contain hazelnuts, so 150 − 90 = 60 do not contain hazelnuts
- Total not containing hazelnuts is 300 + 60 = 360

Answer: 360

(3 marks)

Q14. Roger gives $\frac{2}{15}$ of his savings to his children, and $\frac{3}{8}$ to charity. His best friend also receives an amount of money, equal to half that which his children receive. Work out what fraction of the money he still has left.

• $\frac{2}{15} + \frac{3}{8} = \frac{16}{120} + \frac{45}{120}$

$= \frac{61}{120}$ (to the children & charity)

• $\frac{1}{2}$ of $\frac{61}{120} = \frac{1}{2} \times \frac{61}{120}$

$= \frac{61}{240}$ to his friend

• He has $1 - \frac{61}{120} - \frac{61}{240}$ left,

$= \frac{240 - 122 - 61}{240}$

$= \frac{57}{240}$

$= \frac{19}{80}$

Answer: $\frac{19}{80}$

(3 marks)

Q15. State which of these sums results in the smallest answer.

A) $\frac{1}{3} - \frac{1}{4}$ B) $\frac{1}{4} - \frac{1}{5}$ C) $\frac{1}{5} - \frac{1}{6}$ D) $\frac{1}{6} - \frac{1}{7}$ E) $\frac{1}{7} - \frac{1}{8}$

E

Answer: E

(1 mark)

Q16.

a) Find values of a and b which satisfy the equation, $\frac{1}{4} + \frac{a}{b} = \frac{13}{24}$

$\frac{a}{b} = \frac{13}{24} - \frac{1}{4}$

$\frac{a}{b} = \frac{13 - 6}{24}$

$\frac{a}{b} = \frac{7}{24}$

Answer: $a = 7,\ b = 24$

(2 marks)

b) State another value of a and b which satisfies the equation in part (a)

$\frac{7}{24} = \frac{14}{48} = \frac{21}{72} = \cdots$ so $a = 14,\ b = 48$

is also possible.

Answer: $a = 14\ \ b = 48$

(1 mark)

Q17. Two design students are discussing a project which uses a rectangular wooden block.

Abbey suggests they cut ¼ off the block from each end, whilst Barry suggests that they cut $\frac{3}{10}$ off the block at one end.

Decide which student's suggestion will give them the most material left, and by what fraction of the total amount.

Abbey: $1 - \frac{1}{4} - \frac{1}{4} = \frac{1}{2}$ left

Barry: $1 - \frac{3}{10} = \frac{7}{10}$ left

Barry's suggestion leads to there being the most material left, by $\frac{7}{10} - \frac{1}{2}$,

which is $\frac{7}{10} - \frac{5}{10}$

$= \frac{2}{10}$

$= \frac{1}{5}$ of the total amount.

Answer: _____

(3 marks)