

1 Evaluate the following, leaving your answer in its simplest form:

a $\frac{1}{2} \times \frac{1}{3}$

b $\frac{1}{4} \times \frac{2}{5}$

c $\frac{3}{4} \times \frac{1}{2}$

d $\frac{3}{7} \times \frac{1}{2}$

e $\frac{2}{3} \times \frac{4}{5}$

f $\frac{1}{3} \times \frac{3}{5}$

g $\frac{1}{3} \times \frac{6}{7}$

h $\frac{3}{4} \times \frac{2}{5}$

i $\frac{5}{16} \times \frac{3}{10}$

j $\frac{2}{3} \times \frac{3}{4}$

k $\frac{1}{2} \times \frac{4}{5}$

l $\frac{9}{10} \times \frac{5}{12}$

m $\frac{14}{15} \times \frac{3}{8}$

n $\frac{8}{9} \times \frac{6}{15}$

o $\frac{6}{7} \times \frac{21}{30}$

p $\frac{9}{14} \times \frac{35}{36}$

2 Evaluate the following, leaving your answer as a mixed number where possible:

a $1\frac{1}{2} \times \frac{1}{3}$

b $1\frac{2}{3} \times 1\frac{1}{4}$

c $2\frac{1}{2} \times 2\frac{1}{2}$

d $1\frac{3}{4} \times 1\frac{2}{3}$

e $3\frac{1}{4} \times 1\frac{1}{2}$

f $1\frac{1}{4} \times 2\frac{2}{3}$

g $2\frac{1}{2} \times 5$

h $7\frac{1}{2} \times 4$

Chapter 1: Number

- 3 I walked two-thirds of the way along Pungol Road which is four and a half kilometres long. How far have I walked?
- 4 One-quarter of Alan's stamp collection were given to him by his sister. Unfortunately two-thirds of these were torn. What fraction of his collection were given to him by his sister and which were not torn?
- 5 A greedy girl eats one-quarter of a cake, and then half of what is left. How much cake is left uneaten?
- 6 Kathleen spent three-eighths of her income on rent, and two-fifths of what was left on food. What fraction of her income was left after buying her food?
- 7 A merchant buys 28 crates, each containing three-quarters of a tonne of waste metal. What is the total weight of this order?
- 8 Which is larger, $\frac{3}{4}$ of $2\frac{1}{2}$ or $\frac{2}{3}$ of $6\frac{1}{2}$?
- 9 After James spent $\frac{2}{5}$ of his pocket money on magazines, and $\frac{1}{4}$ of his pocket money at a football match, he had £1.75 left. How much pocket money did he have in the beginning?
- 10 Eileen lost $\frac{2}{3}$ of her money in the market, but then found $\frac{2}{3}$ of what she had lost. She now had £21. How much did she start with?
- 11 If £5.20 is two-thirds of three-quarters of a sum of money, what is the sum?

EXERCISE 1J

1 Evaluate the following, leaving your answer as a mixed number where possible.

a $\frac{1}{4} \div \frac{1}{3}$ b $\frac{2}{5} \div \frac{2}{7}$ c $\frac{4}{5} \div \frac{3}{4}$ d $\frac{3}{7} \div \frac{2}{5}$

e $5 \div 1\frac{1}{4}$ f $6 \div 1\frac{1}{2}$ g $7\frac{1}{2} \div 1\frac{1}{2}$ h $3 \div 1\frac{3}{4}$

i $1\frac{5}{12} \div 3\frac{3}{16}$ j $3\frac{3}{5} \div 2\frac{1}{4}$

2 A grain merchant has only thirteen and a half tonnes in stock. He has several customers who are all ordering three-quarters of a tonne. How many customers can he supply?

3 For a party, Zahar made twelve and a half litres of lemonade. His glasses could each hold five-sixteenths of a litre. How many of the glasses could he fill from the twelve and a half litres of lemonade?

4 How many strips of ribbon, each three and a half centimetres long, can I cut from a roll of ribbon that is fifty-two and a half centimetres long?

5 Joe's stride is three-quarters of a metre long. How many strides does he take to walk along a bus twelve metres long?

6 Evaluate the following, leaving your answers as mixed numbers wherever possible

a $2\frac{2}{9} \times 2\frac{1}{10} \times \frac{16}{35}$ b $3\frac{1}{5} \times 2\frac{1}{2} \times 4\frac{3}{4}$ c $1\frac{1}{4} \times 1\frac{2}{7} \times 1\frac{1}{6}$ d $\frac{18}{25} \times \frac{15}{16} \div 2\frac{2}{5}$

e $(\frac{2}{5} \times \frac{2}{5}) \times (\frac{5}{6} \times \frac{5}{6}) \times (\frac{3}{4} \times \frac{3}{4})$ f $(\frac{4}{5} \times \frac{4}{5}) \div (1\frac{1}{4} \times 1\frac{1}{4})$

7 An investigation.

a Calculate $\frac{1}{1+1}$. This is the first term in a series.

$\frac{1}{1+1}$

To calculate $1 + \frac{1}{1+1}$ you need to start at the bottom;

$$\text{so } 1 + \frac{1}{1+1} = 1 + \frac{1}{2} = \frac{3}{2} = 1 \div \frac{2}{3} = 1 \times \frac{3}{2} =$$

b Calculate

i $1 + \frac{1}{1 + \frac{1}{1+1}}$

ii $1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1+1}}}$

iii the next two terms in this series.

c Look for the pattern in the answers and see if you can predict the next one. Test this out.