Fractions and decimals

- Using division to convert fractions to decimals
- Understanding that a recurring decimal is a fraction
- Ordering fractions

Keywords

You should know

explanation 1 online

1 Write each decimal as a fraction in its lowest terms.

a 0.8 **b** 0.45 **c** 0.72 **d** 0.98

e 0.125 **f** 0.255 **g** 0.312 **h** 0.782

2 Change these decimals to mixed numbers and simplify as far as possible.

a 2.75 **b** 14.35 **c** 55.55 **d** 36.625

e 79.235 **f** 124.452 **g** 163.128 **h** 201.402

explanation 2a explanation 2b explanation 2c online

3 Use division to change these fractions to decimals.

a $\frac{1}{5}$ **b** $\frac{3}{8}$ **c** $\frac{9}{5}$ **d** $\frac{23}{4}$ **e** $\frac{37}{8}$

For the questions that follow, you can use a calculator.

4 Use a calculator to write each fraction as a decimal.

a $\frac{1}{40}$ **b** $\frac{1}{16}$ **c** $\frac{2}{22}$ **d** $\frac{5}{33}$

e $\frac{3}{50}$ **f** $\frac{45}{32}$ **g** $\frac{126}{75}$ **h** $\frac{99}{45}$

5 This table shows the amount of homework Amy had last week.

Subject	Maths	English	Science	History	Geography	RS	French	Art	Music
Minutes	50	45	55	30	30	15	35	20	20

a What was the total time Amy spent on homework last week?

b What fraction of that time did she spend on each subject?

c Change each of the fractions in part **b** into a decimal.

6 **a** Use a calculator to help you write $\frac{1}{3}$ as a decimal.

b What do you notice about the answer on the calculator display?

c Write down what you think $\frac{2}{3}$ will be as a decimal.

d Check your answer using a calculator.

e Write down what you think $\frac{3}{3}$ will be as a decimal.

f Use your answers to explain why $0.999\ldots = 1$.

g Predict the decimal forms of $\frac{4}{3}$, $\frac{5}{3}$, $\frac{6}{3}$ and $\frac{7}{3}$.

7 Using $\frac{1}{3} = 0.333...$ work out the decimal equivalents of $\frac{1}{6}$, $\frac{1}{9}$, and $\frac{1}{12}$.

8 **a** Work out $\frac{1}{9} + \frac{1}{11}$ writing your answer as a fraction.

b Find $\frac{1}{9}$ and $\frac{1}{11}$ as decimals and add them together.

c What do you notice about your answers to parts **a** and **b**?

d Use your results to predict $\frac{17}{99}$ as a decimal.

e Now predict $\frac{1}{99}$ as a decimal.

f What do you think $\frac{1}{999}$, $\frac{547}{999}$ and $\frac{58}{999}$ will be as decimals?

9 **a** Convert each fraction to a decimal.

i $\frac{1}{2}$ **ii** $\frac{2}{3}$ **iii** $\frac{3}{7}$ **iv** $\frac{7}{9}$

v $\frac{5}{11}$ **vi** $\frac{6}{15}$ **vii** $\frac{7}{16}$ **viii** $\frac{11}{12}$

b **i** Which fractions in part **a** give terminating decimals?

ii Which fractions in part **a** give recurring decimals?

10 Write three recurring decimals and their equivalent fractions.

11 Copy and complete this table of sevenths.

Fraction	$\frac{1}{7}$	$\frac{2}{7}$	$\frac{3}{7}$	$\frac{4}{7}$	$\frac{5}{7}$	$\frac{6}{7}$
Decimal	0.142 857 14…					

What do you notice about the decimals?

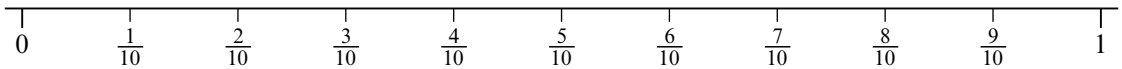
explanation 3a explanation 3b online

12 Write the fractions in each group in order of size, smallest first.

a $\frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}$ **b** $\frac{7}{8}, \frac{5}{6}, \frac{3}{4}, \frac{1}{2}$

c $\frac{5}{8}, \frac{4}{7}, \frac{2}{3}$ **d** $\frac{7}{11}, \frac{9}{16}, \frac{13}{20}$

13 Copy this number line.



Mark and label the following fractions on the number line as accurately as you can.

a $\frac{2}{5}$ **b** $\frac{1}{3}$ **c** $\frac{4}{7}$ **d** $\frac{6}{20}$ **e** $\frac{7}{12}$

14 Which number is greater?

a 0.21 or $\frac{3}{16}$ **b** 0.25 or $\frac{4}{15}$ **c** $\frac{8}{23}$ or 0.36 **d** $\frac{27}{34}$ or 0.78

15 Write each pair of fractions with a common denominator.
Work out the fraction that is exactly halfway between the pairs.

a $\frac{2}{5}$ and $\frac{4}{9}$ **b** $\frac{3}{5}$ and $\frac{5}{7}$ **c** $\frac{1}{2}$ and $\frac{3}{5}$ **d** $\frac{2}{3}$ and $\frac{7}{8}$

16 Find three fractions between $\frac{2}{9}$ and $\frac{3}{11}$.