Fractions
Series E – Fractions

Contents

Student book answers 1
Assessment 5
Student progress record 11
Assessment answers 12
Objectives 13

Series Author:
Nicola Herringer

Copyright © 3P Learning
Pages 1–2

1a

b

c

d

2a

b

c

d

3a \( \frac{3}{4} \)

b \( \frac{2}{6} \)

c \( \frac{2}{5} \)

4

5

<table>
<thead>
<tr>
<th>Page</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fraction that is shaded</td>
<td>( \frac{1}{2} )</td>
<td>( \frac{1}{6} )</td>
<td>( \frac{1}{3} )</td>
<td>( \frac{1}{4} )</td>
<td>( \frac{1}{2} )</td>
</tr>
<tr>
<td>Fraction that is unshaded</td>
<td>( \frac{1}{6} )</td>
<td>( \frac{1}{3} )</td>
<td>( \frac{1}{4} )</td>
<td>( \frac{1}{2} )</td>
<td>( \frac{1}{2} )</td>
</tr>
</tbody>
</table>

Pages 3–5

6 Answers will vary.

Sample answers:

\[
\begin{array}{c}
\text{Red} \\
\text{Purple} \\
\text{Yellow} \\
\text{Dark green} \\
\text{Black} \\
\text{Brown} \\
\text{Blue} \\
\text{Orange}
\end{array}
\]

Pages 6–8

6a \( \frac{5}{6} \)

b \( \frac{3}{6} \) or \( \frac{1}{2} \)

c \( \frac{1}{6} \)

7a

Purple

Red

White

Pages 6–8

1a

\( \frac{3}{2} \) of \( \frac{4}{2} = \frac{2}{2} \)

b

\( \frac{3}{4} \) of \( \frac{4}{2} = \frac{2}{2} \)

c

\( \frac{1}{3} \) of \( \frac{12}{12} = 4 \)

2b

\( \frac{1}{3} \) of \( 12 = \frac{4}{2} \)

3a

Brown

b Brown

c Light green

d Purple = \( \frac{4}{10} \); Dark green = \( \frac{6}{10} \)

e Red = \( \frac{2}{9} \); Light green = \( \frac{3}{9} \);

Purple = \( \frac{4}{9} \)

4a \( \frac{3}{4} \)

b \( \frac{1}{2} \)

c \( \frac{1}{4} \)

5a \( \frac{1}{2} \)

b \( \frac{1}{8} \)

c \( \frac{1}{4} \)

3a

\( \frac{3}{2} \) of \( \frac{4}{2} = \frac{2}{2} \)

\( \frac{1}{4} \) of \( \frac{8}{2} = \frac{2}{2} \)
Pages 6–8

3b

\[
12 \div 4 = 3
\]

\[
\frac{1}{4} \text{ of } 12 = 3
\]

c

\[
16 \div 4 = 4
\]

\[
\frac{1}{4} \text{ of } 16 = 4
\]

4a

\[
10 \div 5 = 2
\]

\[
\frac{1}{5} \text{ of } 10 = 2
\]

b

\[
15 \div 5 = 3
\]

\[
\frac{1}{5} \text{ of } 15 = 3
\]

c

\[
20 \div 5 = 4
\]

\[
\frac{1}{5} \text{ of } 20 = 4
\]

5a 4

b 3
c 3
d 3
e 2
f 5

6

\[
\begin{align*}
6 &\quad 8 \\
8 &\quad 8
\end{align*}
\]

7a 2; 4; 2
b 4; 8; 4
c 11; 5; 4

d 3

e 8

8a 6
b 3
c 8
d 4
e 3

Page 9

1 \[
\frac{1}{2} \text{ of } £10 = £5 \text{ or } £10 \div 2 = £5; \]

\[
£5
\]

2 \[
8 \times 4 = 32;
32 \text{ jelly beans}
\]

3 Marley ate \[
\frac{1}{4} \text{ of } 8 = 2 \text{ pieces}
\]

Matt ate \[
\frac{1}{2} \text{ of } 8 = 4 \text{ pieces}
\]

8 – 6 = 2;
2 pieces left

4 \[
\frac{1}{8} \text{ of } 24 = 3 \text{ pink cupcakes}
\]

\[
\frac{1}{8} \text{ of } 24 = 6 \text{ blue cupcakes}
\]

24 – 9 = 15;
15 plain cupcakes

5

\[
\begin{align*}
\text{So } 1\frac{3}{8} \text{ is left.}
\end{align*}
\]

\[
1\frac{3}{8} \text{ pizzas}
\]

Pages 10–11

What to do
Observe students.

Page 12

What to do
Observe students.

Pages 13–14

1a \[
\frac{2}{4}
\]

b \[
\frac{4}{8}
\]

c \[
\frac{5}{5}
\]

d \[
\frac{5}{10}
\]

Observe students.

2 Answers will vary.
Sample answers:

a

\[
\frac{6}{8} = \frac{3}{4}
\]

b

\[
\frac{1}{4} = \frac{2}{8}
\]

Strips 5 and 6: \[
\frac{1}{5}, \frac{1}{10}
\]
Series E – Fractions

Pages 13–14

2c

\[ \frac{4}{10} = \frac{2}{5} \]

d

\[ \frac{3}{4} = \frac{6}{8} \]

3a T
b F
c F
d T
e T
f F

Pages 15–16

What to do
Observe students.

Page 17

1a 40, 100; \( \frac{40}{100} \)
b 25, 100; \( \frac{25}{100} \)
c 19, 100; \( \frac{19}{100} \)

2a

\[ \frac{10}{10} = 1.0 \]

b \( \frac{6}{10} = 0.6 \)
c \( \frac{8}{10} = 0.8 \)

Page 18

1

\[ \frac{1}{10} = 0.1 \]

\[ \frac{2}{10} = 0.3 \]

\[ \frac{3}{10} = 0.5 \]

\[ \frac{4}{10} = 0.7 \]

\[ \frac{5}{10} = 0.9 \]

2a \( 10 \times 1.0 \)

b \( \frac{6}{10} = 0.6 \)
c \( \frac{8}{10} = 0.8 \)

Page 19

1a

\[ \frac{2}{10} \]

b \[ \frac{6}{10} \]

c \[ \frac{8}{10} \]

2a 0.2, \( \frac{4}{10} \), 0.8, \( \frac{9}{10} \)

b 0.1, \( \frac{5}{10} \), \( \frac{9}{10} \), 1.0

Page 20

1a \( \frac{24}{100} = 0.24 \)

b \( \frac{32}{100} = 0.32 \)

Page 21–23

1a

b
c
d

2a

b
c
d
e

3a 2; 20; 0.2
b 6; 60; 0.6
c 17; 0.17
d 27; 0.27

4

\[ \begin{array}{c|c|c|c}
\text{Hundreds} & \text{Tens} & \text{Ones} & \text{Tenths} & \text{Hundredths} \\
\hline
2 & 3 & 4 & 5 & 6 \\
1 & 2 & 3 & 4 & 5 \\
0 & 1 & 2 & 3 & 4 \\
\end{array} \]

5a

\[ \frac{50}{100} = 0.5 \]
Pages 21–23

5b  \[ \frac{25}{100} = 0.25 \]

c  \[ \frac{20}{100} = 0.2 \]

d  \[ \frac{10}{100} = 0.1 \]

6a \[ \frac{50}{100} = 0.5 \]

b \[ \frac{80}{100} = 0.8 \]

c \[ \frac{40}{100} = 0.4 \]

d \[ \frac{75}{100} = 0.75 \]

e \[ \frac{50}{100} = 0.5 \]

f \[ \frac{50}{100} = 0.5 \]

Pages 24–25

1a \[ \frac{4}{10} \]

b \[ \frac{4}{10} \]

c \[ \frac{4}{10} \]

d \[ \frac{4}{10} \]

e \[ \frac{4}{10} \]

2a 0.6

b 0.9

c 1.7

d 4.6

e 7.5

3a 0.17

b 0.06

c 0.63

d 0.02

e 0.48

Page 26

1a 3.7; 5.5; 7.3; 7.5

b 23.2; 23.3; 30.1; 32.2; 33.2

2a 4.53; 4.34; 3.54; 3.43; 3.34

b 76.07; 70.67; 70.06; 67.76; 67.67

Page 27

1a 3

b 10

c 18

d 35

e 200

f 688

Page 28

1a \( \frac{1}{4} \); 0.25

b \( \frac{3}{4} \); 0.75

c \( \frac{1}{2} \); 0.5

d \( \frac{1}{2} \); 0.5

e \( \frac{3}{4} \); 0.75

f \( \frac{1}{4} \); 0.25

Pages 30–31

What to do

Observe students.

3a–f Answers will vary.
1. Write the fraction shown on each shape:

   a
   [Diagram of a shape divided into four parts with one part shaded]
   [Blank fraction bar]

   b
   [Diagram of a shape divided into six parts with three parts shaded]
   [Blank fraction bar]

   c
   [Diagram of a shape divided into eight parts with four parts shaded]
   [Blank fraction bar]

   d
   [Diagram of a shape divided into four parts with one part shaded]
   [Blank fraction bar]

2. Show $\frac{1}{2}$ in a different way on each shape:

   [Three diagrams of shapes divided into six parts with three parts shaded]

3. Show $\frac{1}{4}$ on each shape:

   [Three diagrams of shapes divided into eight parts with two parts shaded]

Skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Not yet</th>
<th>Kind of</th>
<th>Got it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interprets the numerator and denominator of a fraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Represents halves and quarters of an object in different ways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interprets the numerator and denominator of a fraction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Working with fractions

Name __________________

4 Connect the fractions to their places on the number line:

a
\[
\begin{array}{c}
1/2 \\
1/4 \\
5/8 \\
\end{array}
\]

\[
0 \quad \quad \quad \quad \quad \quad 1
\]

b
\[
\begin{array}{c}
1/2 \\
3/4 \\
\end{array}
\]

\[
0 \quad \quad \quad 1
\]

c
\[
\begin{array}{c}
3/8 \\
5/8 \\
1/4 \\
1/2 \\
3/4 \\
\end{array}
\]

\[
0 \quad \quad \quad 1
\]

5 Circle the bigger fraction in each pair:

a \( \frac{1}{3} \) and \( \frac{1}{4} \)  

b \( \frac{1}{5} \) and \( \frac{1}{2} \)  

c \( \frac{3}{8} \) and \( \frac{1}{4} \)

d \( \frac{1}{4} \) and \( \frac{1}{8} \)  

e \( \frac{1}{4} \) and \( \frac{2}{3} \)  

f \( \frac{1}{2} \) and \( \frac{4}{10} \)

6 Write T for true or F for false next to each pair of fractions:

a \( \frac{1}{3} > \frac{1}{4} \)  

b \( \frac{1}{2} = \frac{4}{8} \)  

c \( \frac{2}{3} < \frac{1}{6} \)  

d \( \frac{2}{4} = \frac{3}{6} \)

Skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Not yet</th>
<th>Kind of</th>
<th>Got it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders common fractions with different denominators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finds equivalence between halves, quarters and eighths</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7 Circle the fraction given for each group and complete the statements:

a  \( \frac{1}{3} \) of 12 triangles

\[ \triangle \triangle \triangle \triangle \triangle \triangle \]

b  \( \frac{1}{4} \) of 16 stars

\[ \star \star \star \star \star \star \star \star \star \star \star \star \star \star \star \]

8 Find the fraction of these numbers:

a  \( \frac{1}{4} \) of 12 =

b  \( \frac{1}{3} \) of 9 =

c  \( \frac{1}{8} \) of 16 =

d  \( \frac{1}{5} \) of 15 =

e  \( \frac{1}{4} \) of 20 =

f  \( \frac{1}{10} \) of 20 =

9 Solve these fraction word problems.

a  Josh scattered a packet of 36 jelly beans onto his desk. \( \frac{1}{6} \) of the jelly beans were black. How many jelly beans were NOT black?

b  Nina and Drew made a pizza and cut it into 8 pieces. Nina ate \( \frac{1}{2} \) and Drew ate \( \frac{3}{8} \). How many pieces were left?
Types of fractions

Name ______________________

1 Shade and label these models to show equivalent fractions:

a  \[ \frac{1}{4} = \frac{8}{16} \]

b  \[ \frac{1}{5} = \frac{10}{25} \]

c  \[ \frac{1}{6} = \frac{12}{24} \]

d  \[ \frac{1}{3} = \frac{6}{18} \]

2 Make the fractions equivalent:

a  \[ \frac{1}{4} = \frac{8}{16} \]

b  \[ \frac{1}{5} = \frac{10}{25} \]

c  \[ \frac{1}{6} = \frac{12}{24} \]

d  \[ \frac{1}{3} = \frac{6}{18} \]

3 Insert the fraction or decimal equivalent:

a  \[ \frac{1}{2} = \frac{4}{8} \]

b  \[ \frac{1}{2} = 0.25 \]

c  \[ \frac{3}{4} = \frac{9}{12} \]


Skills

<table>
<thead>
<tr>
<th></th>
<th>Not yet</th>
<th>Kind of</th>
<th>Got it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finds equivalence between fractions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognises and writes decimal equivalent to [ \frac{1}{4}, \frac{1}{2}, \text{ and } \frac{3}{4} ]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1 Fill in the missing tenths as fractions and decimals:

\[
\begin{array}{cccccccc}
& & & & & & & \\
& & & & & & & \\
2 & \frac{1}{10} & & & & 5 & \frac{1}{10} & 8 & \frac{1}{10} \\
& & & & & & & \\
0.3 & & & 0.4 & & 0.7 & & 0.9 \\
\end{array}
\]

2 Show each grid as hundredths and decimals:

\[
\begin{array}{cccccccc}
\text{a} & \text{Hundredths} & \quad & \text{Decimals} \\
\quad & \quad & \quad & \\
\text{b} & \text{Hundredths} & \quad & \text{Decimals} \\
\quad & \quad & \quad & \\
\end{array}
\]

3 The value of the digit ‘3’ in 4.32 is ‘3 tenths’. What are the values of these digits:

\[
\begin{array}{cccccccc}
\text{a} & \text{‘6’ in 6.97} & \quad & \quad & \text{b} & \text{‘9’ in 42.09} & \quad & \quad \\
\quad & \quad & \quad & \quad & \quad & \quad & \quad & \\
\text{c} & \text{‘2’ in 0.52} & \quad & \quad & \text{d} & \text{‘4’ in 7.41} & \quad & \quad \\
\quad & \quad & \quad & \quad & \quad & \quad & \quad & \\
\text{e} & \text{‘0’ in 0.98} & \quad & \quad & \text{f} & \text{‘7’ in 536.76} & \quad & \quad \\
\quad & \quad & \quad & \quad & \quad & \quad & \quad & \\
\end{array}
\]

Skills

| Uses decimal notation for tenths and hundredths | Not yet | Kind of | Got it |
| Finds equivalence between tenths, hundredths and decimals | | | |
| Identifies the value of digits as 1s, 10ths and 100ths | | | |
4 Order these decimals from smallest to largest:

34.43  33.34  34.14  33.41  33.14

5 Round these decimals to one decimal place:

a 3.22 = [ ]
b 76.06 = [ ]
c 17.55 = [ ]
d 40.39 = [ ]
e 101.89 = [ ]
f 572.05 = [ ]

6 Solve these divisions by 10 and 100:

a 32 ÷ 10 = [ ]
b 78 ÷ 10 = [ ]
c 54 ÷ 100 = [ ]
d 195 ÷ 100 = [ ]
e 604 ÷ 10 = [ ]
f 203 ÷ 100 = [ ]

7 Solve these decimal word problems:

a If I buy five packets of sweets, each costing £1.25, how much money do I spend in total?

b The fastest athlete in a 100-metre race runs 10.02 seconds. The slowest runs 12.38 seconds. What is the difference in time between the fastest and slowest athletes?

Skills

<table>
<thead>
<tr>
<th>Skills</th>
<th>Not yet</th>
<th>Kind of</th>
<th>Got it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compares and orders decimals up to 2 decimal places</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rounds decimals to 1 decimal place</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divides by 10 and 100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solves decimal word problems</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What went well:
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

What I need to improve:
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

ASSESSMENT ANSWERS

Pages 5–7

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

b $\frac{3}{8}$

c $\frac{7}{10}$

d $\frac{3}{8}$

2 Answers will vary. Sample answer:

3 Answers will vary. Sample answer:

4a

b

c

5a $\frac{1}{3}$

b $\frac{1}{2}$

c $\frac{3}{8}$

d $\frac{1}{4}$

e $\frac{2}{5}$

f $\frac{1}{2}$

6a T

b T

c F

d T

7a

b

8a 3

b 3

c 2

d 3

e 5

f 2

9a $\frac{1}{2} \times 36 = 6$

$36 - 6 = 30$; 30

b $\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$; 1

Page 8

1 Answers will vary. Sample answers:

a

b

c

5a 3.2

b 76.1

c 17.6

d 40.4

e 101.9

f 572.1

6a 3.2

b 7.8

c 0.54

d 1.95

e 6.04

f 2.03

7a £6.25

b 2.36 seconds

3a 0.5

b $\frac{1}{4}$

c 0.75

Pages 9–10

2a 85; 0.85

b 78; 0.78

3a 6 units

b 9 hundredths

c 2 hundredths

d 4 tenths

e 0 units

f 7 tenths

4 33.14; 33.34; 33.41; 34.14; 34.43

5a 3.2

b 76.1

c 17.6

d 40.4

e 101.9

f 572.1

6a 3.2

b 7.8

c 0.54

d 1.95

e 6.04

f 2.03

7a £6.25

b 2.36 seconds
<table>
<thead>
<tr>
<th>Topic</th>
<th>Reference</th>
<th>Strand</th>
<th>Substrand</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working with fractions</td>
<td>3F1b</td>
<td>Number</td>
<td>Fractions</td>
<td>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</td>
</tr>
<tr>
<td>Working with fractions</td>
<td>3F3</td>
<td>Number</td>
<td>Fractions</td>
<td>Compare and order unit fractions, and fractions with the same denominators.</td>
</tr>
<tr>
<td>Working with fractions</td>
<td>4F10a</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</td>
</tr>
<tr>
<td>Types of fractions</td>
<td>4F2</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Recognise and show, using diagrams, families of common equivalent fractions.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>4F1</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>4F6a</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and similar.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>4F6b</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Recognise and write decimal equivalents of any number of tenths or hundredths.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>4F7</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Round decimals with one decimal place to the nearest whole number.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>4F8</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Compare numbers with the same number of decimal places up to two decimal places.</td>
</tr>
<tr>
<td>Fractions and decimals</td>
<td>4F9</td>
<td>Number</td>
<td>Fractions (including decimals)</td>
<td>Find the effect of dividing a 1- or 2-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths.</td>
</tr>
</tbody>
</table>