Unit II: Decimals (2)

Lesson I: Making a whole

1. a) $0·2 + 0·8 = 1$ c) $0·48 + 0·52 = 1$
b) $0·9 + 0·1 = 1$ d) $0·07 + 0·93 = 1$

2. a) $0·61$ b) $0·87$

3. a) $0·3 + 0·7 = 1$; missing part is seven $0·1$ counters
b) $0·1 + 0·5 + 0·4 = 1$; missing part is five $0·1$ counters
c) Different answers possible but two missing numbers must total $0·8$; for example: $0·1 + 0·2 + 0·7$; missing parts to show numbers chosen (using $0·1$ counters)

4. a) $0·4$ c) $0·68$
b) $0·16$ d) $0·91$

5. a) $0·23 + 0·77 = 1$
b) $1 = 0·11 + 0·89$
c) Different answers possible but two missing digits must total 10; for example:
$1 − 0·61 = 0·39$
d) Different answers possible but two missing digits must total 9; for example:
$0·86 = 1 − 0·14$

6. a) Different arrangements are possible but $0·3$ must be in the centre; $0·5$ and $0·2$ complete a row/column; $0·6$ and $0·1$ complete a column/row; for example:

	0·6	
0·5	0·3	0·2
	0·I	
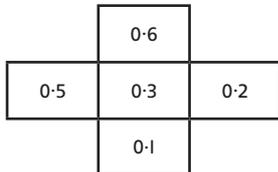
b) Different arrangements are possible but $0·48$ must be centre number; $0·2$ and $0·32$ complete a row/column; $0·23$ and $0·29$ complete a column/row; for example:

	0·23	
0·32	0·48	0·2
	0·29	
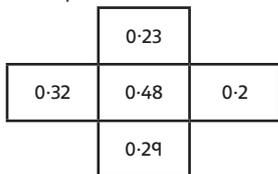
Reflect

Possible calculations: $0·1 + 0·9 = 1$, $0·2 + 0·8 = 1$, $0·3 + 0·7 = 1$ … $0·9 + 0·1 = 1$ (some children may include $0 + 1 = 1$ and $1 + 0 = 1$)

Using number bonds to 10 and dividing each number by 10 would give these calculations.

Lesson 2: Writing decimals

1. a) $6·8$ c) $10·5$
b) $7·09$ d) $0·04$

2. Missing section in model: $0·4$
$3·49 = 3$ ones $+ 4$ tenths $+ 9$ hundredths

3. Image A does not represent $0·12$.

4. Missing elements in table completed:
a) $7·21$
b) 2 tens + 9 ones + 3 tenths + 4 hundredths $29·34$
c) 1 hundred + 5 ones + 6 tenths $105·6$
d) $17·01$
e) $0·53$
f) $0·53$
Children should notice that e) and f) are both $0·53$; this is because 1 tenth equals 10 hundredths and so 5 tenths are equal to 50 hundredths, i.e. $0·53 = 5$ tenths and 3 hundredths = 53 hundredths.

5. Mo $= 4·27$, Emma $= 4·24$, Danny $= 8·24$ (assuming that each number is chosen by only one child)

6. Zac $= 54·6$, Ambika $= 3·77$, Luis $= 53·96$

Reflect

Lee is not correct; the number is $30·47$ which is not a 3-digit number. The number contains 4 digits, even though one of the digits is a zero.

Lesson 3: Comparing decimals

1. a) Circled: $9·9$ $9·5 < 9·9$
b) Circled: $8·31$ $8·13 < 8·31$
c) Circled: $20·06$ $20·06 > 20·05$
d) Circled: $100·52$ $100·25 < 100·52$

2. Richard needs to consider the position of the counters in the place value grid, not the number of counters overall. Both numbers have 3 ones, but $3·21$ has 2 tenths whereas $3·07$ has 0 tenths. So, $3·21$ is bigger than $3·07$ ($3·21 > 3·07$).

3. $0·23 < 0·32$

4. a) $4·56 < 4·72$
b) $12·9 < 18·7$
c) $9·45 > 9·05$
d) $3·18 > 3·12$
e) $26·39 < 27·49$
f) $120·26 = 120·26$
g) 3 tenths + 5 hundredths < 5 tenths + 4 hundredths

5. a) Different answers possible:
6·04, 6·14, 6·24, 6·34. 6·44, 6·54, 6·64
b) Different answers possible; for example:
2·03 < 2·34, 2·13 < 2·35, 2·23 < 2·36,
2·33 < 2·37 …
c) Different answers possible but whole number part of each number must be 19; for example:
19·25 < 19·31, 19·35 < 19·42, 19·45 < 19·53 …

6. Different answers possible:
29·93, 29·94, 29·95, 29·96, 29·97, 29·98, 29·99, 30·00, 30·01, 30·02

Reflect

Isla should start with the tens.

Then she should look at the ones.

Then she should look at the tenths and then the hundredths.

Lesson 4: Ordering decimals

➜ pages 15–17

1. 6·7, 7·2, 7·9

2. a) 10·97 (bottom left)
b) 10·97 > 10·79 > 10·09 > 10·07

3. a) 7·42, 27·24, 27·48, 72·45
b) 5·94, 5·49, 4·59, 4·53

4. List D is not in ascending order.

5. Aki is incorrect; the numbers are ordered biggest to smallest not smallest to biggest.

6. a)

Name	Time (in seconds)
Andy	27·79
Mo	28·02
Lee	28·24
Danny	28·42
Ebo	29·53

b) Andy was the fastest.
c) Ebo was the slowest.

7. Different answers possible; for example:
4·01, 4·19, 5·01, 5·02, 5·12 (check that numbers are in ascending order)

Reflect

0·62 and 0·65 both have 6 tenths but 0·62 has 2 hundredths whereas 0·65 has 5 hundredths, so 0·65 is bigger than 0·62. 0·71 has 7 tenths which is more than 6 tenths, so 0·71 is bigger than both 0·62 and 0·65. Thus 0·62 < 0·65 < 0·71.

Lesson 5: Rounding decimals

➜ pages 18–20

1. a) 2·7 is between 2 and 3.
2·7 rounded to the nearest whole number is 3.
b) 10·3 is between 10 and 11.
10·3 rounded to the nearest whole number is 10.
c) 28·3 is between 28 and 29.
28·3 rounded to the nearest whole number is 28.

2. a) 9·6 rounded to the nearest whole number is 10.
b) 20·8 rounded to the nearest whole number is 21.

3. a) 5   e) 50
b) 13   f) 150
c) 65   g) 400
d) 0   h) 90

4. Mo's number cannot be 55·5 since this will be 56 when rounded to the nearest whole number.

5. a) 4·9 rounded to the nearest whole number is 5.
b) 8·5 rounded to the nearest whole number is 9.
c) Possible missing digit: 1, 2, 3 or 4 (or 0)
d) Possible answers: 22·5, 22·6, 22·7, 22·8, 22·9, 23·0, 23·1, 23·2, 23·3 or 23·4

6. Possible answers: 80·3 or 80·4

Reflect

Look at the tenths to see whether to round down to the nearest whole number or to round up. If there are 4 or less tenths round down and if there are 5 or more tenths round up. There are 6 tenths in 43·6 and since this is 5 or more tenths then 43·6 is rounded up to 44.

Lesson 6: Halves and quarters

➜ pages 21–23

1. a) $0·25 = \frac{1}{4}$ (or an equivalent fraction; for example: $\frac{25}{100}$)
b) $0·50 = \frac{1}{2}$ (or an equivalent fraction; for example: $\frac{50}{100}$)

2. a) 75 squares shaded
b) $\frac{3}{4} = 0·75$

3. a) $\frac{1}{4} = 0·25$ c) $\frac{3}{4} = 0·75$
b) $\frac{2}{4} = 0·5$ d) $\frac{1}{2} = 0·5$

4. a) 1 square shaded
b) 12 squares shaded
c) 6 squares shaded

5. Bella is correct; 0·5 is equivalent to $\frac{1}{2}$ and so Zac and Emma have the same number of apples (6 each).

6. 0·25 is equivalent to $\frac{1}{4}$. $\frac{1}{4}$ = 6 counters. Thus, the total number of counters is $6 × 4 = 24$. Hence there are $24 – 6 = 18$ grey counters.
Lee has 18 grey counters.

Reflect

Grid should show 75 squares shaded which are 75 hundredths ($\frac{75}{100}$), which is equal to 0·75.

Lesson 7: Problem solving – decimals

→ **pages 24–26**

1. 1 kg = 1,000 g
   3 kg = 3,000 g
   8,600 g = 8 kg and 600 g
   5,300 g = 5 kg and 300 g

2. 2 kg 200 g   2 kg   200 g   2 g

3. Circled:
   a) 1,000 ml   c) 8 litres
   b) 1 l 500 ml   d) 2,030 ml

4. 3 children are tall enough to go on the ride.

5. The width of the football field is 300 metres.

6. a) 500 m
   b) 6 km and 300 m
   c) 5,700 m
   d) 3,500 m
   e) 3,050 m

7. a) 800 ml
   b) 2,950 g
   c) 1 kg and 700 g

8. 102 millilitres < 450 ml < $\frac{1}{2}$ a litre (500 ml) < 0·25 of 4 litres (1,000 ml) < 1 l 200 ml (1,200 ml)

Reflect

Explanations will vary but children should recognise that you need to multiply by 1,000 since 1 litre = 1,000 ml, 1 kg = 1,000 g and 1 km = 1,000 m.

End of unit check

→ **pages 27–28**

My journal

Same: All numbers are decimals and contain the digits 2 and 7. 7·2 and 7·20 have the same value.

Different: The values of the digits are different for the cards 7·20 and 0·27.

Power puzzle

Container	Number of litres the container holds
glass	0·2 l
jug	1 l
bucket	7 l
barrel	140 l
paddling pool	1,120 l

It would take 5,600 glasses to fill the paddling pool.