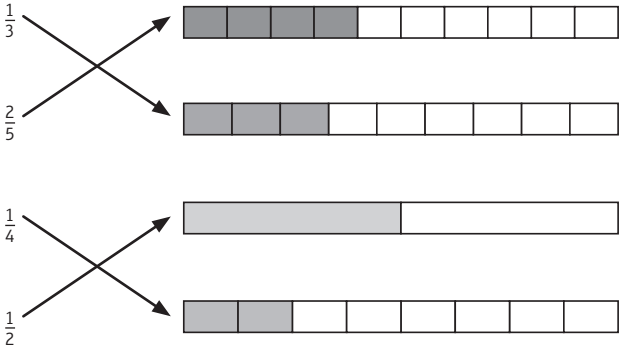
Unit 10: Fractions (2)

Lesson 1: Equivalent fractions (1)

➜ pages 6–8

1. a) $\frac{1}{4} = \frac{2}{8}$
b) $\frac{1}{6} = \frac{2}{12}$
c) $\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$

2. Lines drawn as below:



3. a) $\frac{2}{3} = \frac{6}{9}$
(2 out of 3 parts shaded in the top bar; 6 out of 9 parts shaded in the bottom bar.)

b) $\frac{3}{15} = \frac{1}{5}$
(1 out of 5 parts shaded in the top bar; 3 out of 15 parts shaded in the bottom bar.)

c) $\frac{3}{12} = \frac{2}{8} = \frac{1}{4}$
(1 out of 4 parts shaded in the top bar; 2 out of 8 parts shaded in the middle bar; 3 out of 12 parts shaded in the bottom bar.)

4. $\frac{6}{8} = \frac{3}{4} = \frac{9}{12}$
(3 out of 4 parts shaded in the top bar; 6 out of 8 parts shaded in the middle bar; 9 out of 12 parts shaded in the bottom bar.)

5. Olivia is not correct, as she has not split the whole into 5 equal parts, so the parts are not fifths.
Children may draw bar models to compare and show that $\frac{2}{5} \neq \frac{1}{3}$. Alternatively, they may add a line to the top diagram to split the circle into sixths and label the fraction as $\frac{2}{6}$.

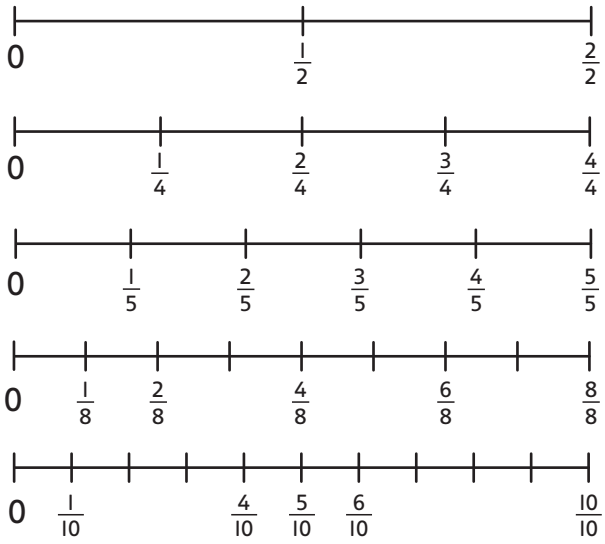
Reflect

An explanation should recognise that if you fold a sheet of paper into equal parts and shade one part, then the size of this shaded part stays the same even if the paper is folded again to make smaller equal parts; for example: I can fold my paper in half and shade in 1 half. If I then fold my paper in half again, I can now see $\frac{2}{4}$ shaded, which is the same as $\frac{1}{2}$.

Lesson 2: Equivalent fractions (2)

➜ pages 9–11

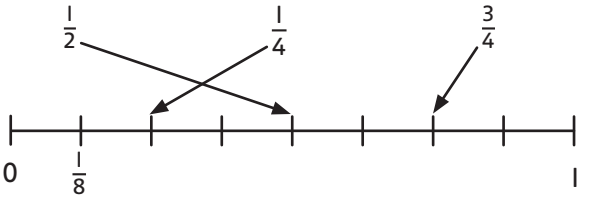
1.



2. a) $\frac{1}{2} = \frac{2}{4}$
b) $\frac{1}{2} = \frac{4}{8}$
c) $\frac{1}{2} = \frac{5}{10}$
d) $\frac{1}{4} = \frac{2}{8}$
e) $\frac{1}{5} = \frac{2}{10}$
f) $\frac{2}{5} = \frac{4}{10}$
g) $\frac{3}{4} = \frac{6}{8}$
h) $\frac{3}{5} = \frac{6}{10}$

3. a) $\frac{1}{3} = \frac{2}{6}$ b) $\frac{2}{3} = \frac{4}{6}$ c) $\frac{1}{2} = \frac{3}{6}$
d) Answers will vary: any three fractions that are not equivalent to $\frac{1}{3}$.

4.



5. $\frac{1}{3}$ written at first mark along the line.
These fractions circled on the bottom number line:
$\frac{1}{9}, \frac{2}{9}, \frac{4}{9}, \frac{5}{9}, \frac{6}{9}, \frac{7}{9}, \frac{8}{9}$.

6. $\frac{2}{2}$ and $\frac{7}{7}$ both equal 1 whole so they are equivalent fractions.
Any fractions equivalent to 1 whole (any fractions with a numerator the same as the denominator).

Reflect

Children need to explain that when they draw number lines to compare fractions, the number lines need to be the same length (the **whole** needs to be the same). They also need to explain that the whole needs to be divided into the number of **equal** parts determined by the denominator before they can compare.

Lesson 3: Equivalent fractions (3)

➜ pages 12–14

1. a) $\frac{1}{8} = \frac{2}{16}$
(1 out of 8 parts shaded in the top bar; 2 out of 16 parts shaded in the bottom bar.)

b) $\frac{4}{5} = \frac{8}{10}$
(4 out of 5 parts shaded in the top bar; 8 out of 10 parts shaded in the bottom bar.)

c) $\frac{3}{4} = \frac{9}{12}$
($\frac{3}{4}$ written at third mark along the top number line; $\frac{9}{12}$ written at ninth mark along bottom number line.)

d) $\frac{3}{4} = \frac{12}{16}$
($\frac{3}{4}$ written at third mark along top number line; $\frac{12}{16}$ written at twelfth mark along bottom number line.)

2. a) Answers will vary. Children could show and compare $\frac{2}{3}$ and $\frac{8}{12}$ pictorially, proving they are equal. Or they could write an explanation of how the numerator and denominator have both been multiplied by 4 to give $\frac{8}{12}$.

b) Answers will vary. Children could show and compare $\frac{2}{5}$ and $\frac{4}{15}$ pictorially, proving they are not equal. Or they could explain that the numerators and the denominators of the two fractions are not related by the same factor or multiple (the numerator of $\frac{2}{5}$ has been multiplied by 2, but the denominator has been multiplied by 3).

3. a) $\frac{6}{10} = \frac{12}{20}$ d) $\frac{4}{8} = \frac{1}{2}$ g) $\frac{4}{32} = \frac{1}{8}$

b) $\frac{3}{4} = \frac{12}{16}$ e) $\frac{5}{11} = \frac{30}{66}$ h) $\frac{12}{36} = \frac{3}{9}$

c) $\frac{8}{12} = \frac{4}{6}$ f) $\frac{5}{15} = \frac{1}{3}$ i) $\frac{5}{7} = \frac{20}{28}$

Children should have drawn a line between f) and h).

4. $\frac{27}{36}, \frac{30}{40}, \frac{33}{44}$

5. Emma is wrong. She has added 1 to the numerator and to the denominator – this does not show equivalence. In order to show equivalence, you need to either multiply both the numerator and the denominator by the same multiple or divide them both by a common factor.

Reflect

Teachers should look for an explanation that you can divide both the numerator and denominator in $\frac{4}{10}$ by the common factor 2 to make $\frac{2}{5}$.

Lesson 4: Comparing fractions

➜ pages 15–17

1. a) $\frac{1}{2} > \frac{1}{3}$ c) $\frac{1}{4} = \frac{4}{16}$

b) $\frac{1}{5} > \frac{1}{6}$ d) $\frac{10}{12} < \frac{9}{10}$

2. a) $\frac{1}{8} > \frac{1}{9}$ c) $\frac{2}{5} < \frac{5}{12}$

b) $\frac{5}{6} > \frac{2}{3}$ d) $\frac{3}{4} < \frac{9}{10}$

3. a) Answers will vary; the denominator must be less than 6.

b) Answers will vary; the denominator must be greater than 6.

c) Answers will vary; the denominator must be less than 8.

d) Answers will vary; the denominator must be greater than 8.

4. Answers will vary; the number of fifth parts must be greater than the number of quarter parts. Some possible solutions are: $\frac{2}{5} > \frac{1}{4}; \frac{3}{5} > \frac{2}{4}; \frac{4}{5} > \frac{3}{4}$.

5. Answers will vary. Some possible solutions are: $\frac{1}{2} = \frac{3}{6}; \frac{1}{3} = \frac{2}{6}; \frac{1}{6} < \frac{2}{3}$.

6. Smallest fraction = $\frac{6}{11}$
Greatest fraction = $\frac{8}{11}$

Reflect

Teachers should check for explanations that the denominator tells us how many equal parts the whole is split into. If the denominator is a smaller number, there are fewer equal parts, so each part is bigger. The larger the dominator, the more equal parts and the smaller each part.

Lesson 5: Comparing and ordering fractions

➜ pages 18–20

1. a) Possible answers: $\frac{7}{12}, \frac{8}{12}, \frac{9}{12}, \frac{10}{12}, \frac{11}{12}, \frac{12}{12}$

b) Possible answers: $\frac{1}{10}, \frac{2}{10}$

c) $\frac{3}{3}$

d) Possible answers: $\frac{6}{9}, \frac{6}{8}, \frac{6}{7}, \frac{6}{6}$

e) The denominator could be any number greater than 3.

f) The denominator could be any number smaller than 10.

g) Answers will vary; the fraction must be greater than $\frac{1}{2}$.

h) Answers will vary; the first fraction must be greater than the second fraction.

i) Answers will vary; the first fraction must be less than the second fraction.

2. a) $\frac{3}{12}, \frac{1}{2}, \frac{7}{12}$

b) $\frac{1}{8}, \frac{1}{5}, \frac{1}{3}$

c) $\frac{4}{10}, \frac{4}{8}, \frac{4}{6}$

3. a) $\frac{1}{5}$ circled

b) $\frac{1}{5}$ written at second mark along number line

4. $\frac{1}{3}, \frac{1}{4}, \frac{1}{5}$

5. $\frac{1}{9}, \frac{3}{7}$ (or possibly $\frac{2}{8}$), $\frac{5}{5}$

Reflect

Answers will vary. Children might find the fraction wall helps them to compare fractions. Some children may comment that it is easier to compare fractions that have the same denominator than those that have different denominators.

Lesson 6: Adding fractions

➜ pages 21–23

1. a) $\frac{6}{7}$ c) $\frac{8}{12}$
b) $\frac{5}{9}$ d) $\frac{10}{10}$

2. a) $\frac{4}{5}$ b) $\frac{3}{4}$

3. a) $\frac{5}{9}+\frac{3}{9}=\frac{8}{9}$ b) $\frac{1}{8}+\frac{2}{8}=\frac{3}{8}$

4. a) $\frac{2}{3}$ d) $\frac{4}{6}$ g) $\frac{8}{10}$
b) $\frac{4}{4}$ e) $\frac{4}{8}$ h) $\frac{12}{12}$
c) $\frac{5}{9}$ f) $\frac{4}{5}$ i) $\frac{3}{7}$

5. Possible answers: $\frac{1}{6}+\frac{4}{6}$; $\frac{2}{6}+\frac{3}{6}$; $\frac{3}{6}+\frac{2}{6}$; $\frac{4}{6}+\frac{1}{6}$

6. a) Lines drawn to join:
$\frac{5}{8}$ to $\frac{3}{8}$
$\frac{1}{2}$ to $\frac{1}{2}$
$\frac{3}{4}$ to $\frac{1}{4}$
b $\frac{1}{5}+\frac{4}{5}=1$
$\frac{3}{6}+\frac{3}{6}=1$
$\frac{3}{10}+\frac{7}{10}=1$

Reflect

Jamilla is correct. When you divide a whole into 5 equal parts, each part is 1 fifth. Adding one fifth and another fifth gives you two of these equal parts, but each part is still 1 fifth, so 1 fifth add 1 fifth equals 2 fifths: $\frac{1}{5}+\frac{1}{5}=\frac{2}{5}$.

Richard is wrong. $\frac{1}{5}$ is equivalent to $\frac{2}{10}$ so $\frac{1}{5}+\frac{1}{5}$ cannot be $\frac{2}{10}$.

Lesson 7: Subtracting fractions

➜ pages 24–26

1. a) $\frac{4}{9}$ c) $\frac{6}{12}$ (or $\frac{1}{12}$)
b) $\frac{2}{10}$ d) $\frac{7}{8}$

2. Max has $\frac{3}{8}$ of the cake left.

3. a) $\frac{2}{3}$
b) $\frac{5}{8}$ c) $\frac{1}{6}$

4. a) $\frac{3}{9}$ d) $\frac{2}{10}$ g) $\frac{4}{6}$
b) $\frac{1}{8}$ e) $\frac{7}{11}$ h) $\frac{8}{9}$
c) $\frac{1}{4}$ f) $\frac{2}{8}$ i) $\frac{1}{9}$

5. Possible pairs are: 0 and $\frac{3}{8}$; $\frac{1}{8}$ and $\frac{4}{8}$; $\frac{2}{8}$ and $\frac{5}{8}$; $\frac{4}{8}$ and $\frac{7}{8}$; $\frac{5}{8}$ and $\frac{8}{8}$

6. $\frac{9}{10}-\frac{7}{10}=\frac{2}{10}$

7. a) $\frac{1}{5}$ c) $\frac{6}{12}$
b) $\frac{1}{9}$ d) $\frac{6}{10}$

Reflect

Teachers should look for an explanation of why the subtraction only affects the numerator (because the subtraction involves taking ninths from ninths so the answer will also be ninths). Children could also show this method pictorially with a bar model or using a number line.

Lesson 8: Problem solving – adding and subtracting fractions

➜ pages 27–29

1. a) $\frac{4}{12}$ of Amy's cupcakes are chocolate or strawberry.
b) $\frac{8}{12}$ of the cupcakes are vanilla.
c) There were more vanilla cupcakes.
There were $\frac{7}{12}$ more vanilla cupcakes than chocolate cupcakes.

2. a) It is windy for $\frac{5}{9}$ of Emma's holiday.
b) It is windy for a greater amount of the holiday because $\frac{5}{9}$ is greater than $\frac{4}{9}$.

3. a) Possible answers: $\frac{0}{10}+\frac{3}{10}$; $\frac{1}{10}+\frac{2}{10}$; $\frac{2}{10}+\frac{1}{10}$; $\frac{3}{10}+\frac{0}{10}$.
b) Possible answers: $\frac{10}{10}-\frac{7}{10}$; $\frac{9}{10}-\frac{6}{10}$; $\frac{8}{10}-\frac{5}{10}$; $\frac{7}{10}-\frac{4}{10}$; $\frac{6}{10}-\frac{3}{10}$; $\frac{5}{10}-\frac{2}{10}$; $\frac{4}{10}-\frac{1}{10}$; $\frac{3}{10}-\frac{0}{10}$.
c) Answers will vary. Ensure the denominators are tenths and the numerators add and subtract to give 3.

4. Luis read $\frac{2}{10}$ of the book on Wednesday.

5. No, Ebo is not correct as Andy only ate $\frac{1}{7}$ of a pizza, so in total they ate $\frac{4}{7}$ of a pizza between them. Children could check their answer using a bar model or number line.

Reflect

Answers will vary. Ensure children are adding and subtracting fractions with the same denominator when creating their own word problems. Alternatively, some children may write problems around calculations using common fractions; for example: $\frac{3}{4}-\frac{1}{2}=\frac{1}{4}$.

Lesson 9: Problem solving – fractions of measures

➜ pages 30–32

1. a) $\frac{3}{4}$ of the bottles are apple juice.
b) There are 30 bottles of apple juice.

2. Children should have circled:
a) $\frac{1}{3}$ of 1 litre of water
b) $\frac{2}{5}$ of 20 kg
c) $\frac{1}{5}$ of 10 hours
d) $\frac{3}{8}$ of a 12 cm strip of paper.

3. a) Kate played more netball.
b) Kate went swimming on $\frac{6}{10}$ of the days in April. $\frac{6}{10}$ is greater than $\frac{1}{2}$ as this is equivalent to $\frac{5}{10}$, so Kate is correct.

4. Ambika used $\frac{3}{5}$ of the ribbon and Lee used $\frac{1}{5}$, so they used $\frac{4}{5}$ in total. Yes, there was $\frac{1}{5}$ of the ribbon left, which is 2 metres in length.

5. The plant was 18 cm tall at the end of the second week.

Reflect

Look for an explanation that you need to add the fractions that Olivia spent on bananas and cherries, then work out what fraction she has left: $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$; $\frac{5}{5} - \frac{3}{5} = \frac{2}{5}$.
Then work out $\frac{2}{5}$ of £10, which is £4, so Olivia has £4 left.

End of unit check

➜ pages 33–34

My journal

Children may record answers such as follows:

Comparing ◯ with □

- They are unit fractions and the first fraction is smaller than the second.
- The more parts a unit is divided into, the smaller the size of each part.
- Looking at a fraction wall, the bigger the denominator, the smaller the size of the bar.

(Some children may prove this using real examples and show that, for example $\frac{1}{3} < \frac{1}{2}$ or $\frac{1}{10} < \frac{1}{8}$.)

Comparing △ with ⬠

- The denominators are the same, so the greater the numerator the greater the fraction.
- If I look at a fraction strip split into 5 equal parts, the more parts I have, the bigger the fraction is.

(Some children may prove this by using real examples and show that, for example, $\frac{4}{5} > \frac{2}{5}$.)

Unit 11: Time

Lesson 1: Months and years

→ pages 35–37

1. a) 27th September
b) 21st April
c) 29th November
d) 7 days are 1 week, so counting forwards or backwards 7 days will take you to the same day in the following or previous week. You can add or subtract the number of days from the date unless the count goes over the end or start of a month.

2. There are 351 days left in the year.

3. Coloured red: Jan, Mar, May, July, Aug, Oct, Dec
Coloured yellow: Apr, Jun, Sept, Nov
Coloured blue: Feb

4. The time it takes for Earth to travel once around the Sun is 1 year.
Earth takes 365 $\frac{1}{4}$ days to travel once around the Sun.
Most years have 365 days.
Leap years have 366 days.
Every year has 12 months.

5. 29th November (or 30th November if you are counting this day as one of the days left).
333 days

6. Circled: 2036, 2044
'No' circled. 2045 will not be a leap year as it is not a multiple of 4. Leap years usually occur every 4 years, when the year is a multiple of 4.

Reflect

It is true that there were 91 days in January, February and March in 2016 as this was a leap year. 31 days in January, 29 days in February and 31 days in March make 91 days. In 2017, there would have been 90 days as it was not a leap year, so February only had 28 days.

Lesson 2: Hours in a day

→ pages 38–40

1. Children should have drawn hands on to clocks to show the appropriate times:
1 o'clock Wednesday → 1 o'clock Thursday
5 o'clock Friday → 5 o'clock Saturday
Third example completed to show any pair of times with a difference of 24 hours.

2. In top circle (24 hours): A, D, E
In bottom circle (12 hours): B, C

3. All intervals in bar diagrams labelled 24 hours.
2 days = 48 hours
3 days = 72 hours
1 week = 168 hours

4. 12 squares shaded; $\frac{1}{2}$ of a day = 12 hours
6 squares shaded; $\frac{1}{4}$ of a day = 6 hours
8 squares shaded; $\frac{1}{3}$ of a day = 8 hours

5. a) 22 hours
b) 2 hours

6. Answer will vary. Check whether the child is realistic about timings and durations.

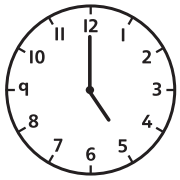
Reflect

Look for an explanation that each day starts at midnight and ends at midnight 24 hours later. The day does not start and end with bedtime.

Lesson 3: Estimating time

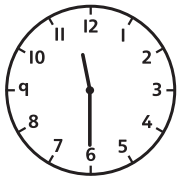
→ pages 41–43

1. a)



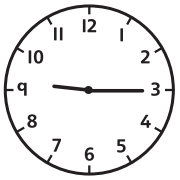
5 o'clock

b)



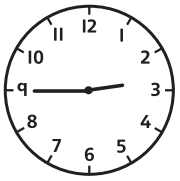
half past 11

c)



quarter past 9

d)



quarter to 3

2. Approximate times:
8 o'clock (minute hand drawn pointing to 12)
Half past 2 (minute hand drawn pointing to 6)
Quarter to 7 (minute hand drawn pointing to 9)

3. Ticked: quarter to 12; twenty-five to 12; five to 12

4. Emma is not right as the hour hand moves during the hour; so if it is half past the hour then the hour hand would point half-way between the two numbers. As the hour hand on the clock is more than half-way between 4 and 5, the time must be after half past 4 but before 5 o'clock.

5. 30 minutes, 15 minutes, 45 minutes, 12 minutes

6. It could be any time between 2 o'clock and quarter past 2 or between quarter to 3 and 3 o'clock.

Reflect

I know that it is half past the hour.
I know that it is between 5 o'clock and 6 o'clock.
I know that it is between 2 o'clock and half past 2.

Lesson 4: Telling time to 5 minutes

➜ pages 44–46

1. 20 minutes past 10
10 minutes past 5
5 minutes past 7
25 minutes past 3
10 minutes to 4
20 minutes to 7
5 minutes to 9
25 minutes to 12

2. a) Minute hand pointing to 9, hour hand between 10 and 11, but closer to 11.
b) Minute hand pointing to 5, hour hand between 10 and 11, but just before half-way.
c) Minute hand pointing to 8, hour hand between 2 and 3, but just after half-way.
d) Minute hand pointing to 2, hour hand between 6 and 7, but just after 6.

3. Lexi has mixed up the minute hand and hour hand of the clock. The time is five to 2.

4. Twenty minutes past 6

5. a) Possible times: twenty minutes to 4; quarter to 4; ten minutes to 4; five minutes to 4
Explanations will vary, but children should recognise that the hour hand must be pointing between 3 and 4, since 3 and 4 add up to 7, so the time is between 3 o'clock and 4 o'clock. The minute hand points to a number that is more than 7 so it must be later than 25 minutes to 4.
b) Answers will vary. Ensure that children's clues work.

Reflect

Explanations will vary. For example: the hour hand is between 3 and 4 so it must be between 3 o'clock and 4 o'clock. The minute hand is pointing to the 7. This means it is 25 minutes to 4 because there are 5 five-minute intervals until the minute hand would reach the 12 to say 4 o'clock.

Lesson 5: Telling time to the minute (I)

➜ pages 47–49

1. Minute hand pointing to 9th interval
Minute hand pointing to 42nd interval
Minute hand pointing to 24th interval
Minute hand pointing to 53rd interval

2. a) Minute hand pointing to the 13th interval, hour hand between 1 and 2 but closer to 1
b) Minute hand pointing to 8, hour hand over half-way between 8 and 9
c) Minute hand pointing to the 48th interval, hour hand between 7 and 8 but closer to 8
d) Minute hand pointing to 27th interval, hour hand almost half-way between 5 and 6

3. 2nd clock on the left (26 minutes past 3) matched to 3rd clock on the right (26 minutes to 3)
3rd clock on the left (9 minutes to 2) matched to 4th clock on the right (9 minutes past 2)
4th clock on the left (22 minutes to 12) matched to 1st clock on the right (22 minutes past 12)

4. Kate has correctly noticed that the long hand shows five minutes to the hour, but she has also seen that the short hand is after the 2, and thought that this meant it was five minutes to 2, not 3.

5. She checks 7 times (12 minutes past 9, 20 minutes past 9, 28 minutes past 9, 24 minutes to 10, 16 minutes to 10, 8 minutes to 10 and 10 o'clock).

Reflect

Answers will vary. Children might explain that each small interval stands for 1 minute, and each large interval between marked numbers stands for 5 minutes. You can count in 5s and then 1s to work out the number of minutes past or to the hour.

Lesson 6: Telling time to the minute (2)

➜ pages 50–52

1. a) Minute hand pointing to 6, hour hand half-way between 8 and 9
b) Minute hand pointing to 3, hour hand quarter-way past 1
c) Minute hand pointing to 9, hour hand three-quarters of the way between 4 and 5
d) Minute hand pointing to 7th interval, hour just past 10

2. a) 7:10
b) 3:25
c) 11:55
d) 5:08

3. a) 6:15 pm
b) 7:30 am
c) 4:09 pm
d) 9:40 am
e) 12:01 am

4. 7:32 am or 7:32 pm

5. a) On both clocks, the minute hand is drawn pointing to the 5 and the hour hand drawn pointing just under half-way between 4 and 5.
b) Both clocks look the same because analogue clocks do not show whether a time is am or pm.

6. 1:23 am and 1:23 pm; 2:34 am and 2:34 pm; 3:45 pm (am is given); 4:56 am and 4:56 pm

7. Possible times: 12:07, 12:16, 12:25, 12:34, 12:43, 12:52, 11:08, 11:17, 11:26, 11:35, 11:44, 11:53, 10:09, 10:18, 10:27, 10:36, 10:45, 10:54, 9:01, 9:10, 8:02, 8:11, 8:20, 7:03, 7:12, 7:21, 7:30, 6:04, 6:13, 6:22, 6:31, 6:40, 5:05, 5:14, 5:23, 5:32, 5:41, 5:50, 4:06, 4:15, 4:24, 4:33, 4:42, 4:51, 3:07, 3:16, 3:25, 3:34, 3:43, 3:52, 2:08, 2:17, 2:26, 2:35, 2:44, 2:53, 1:09, 1:18, 1:27, 1:36, 1:45, 1:54

Reflect

From 12 midnight till 12 noon it is am because it is before midday. So 1:35 am is very early in the morning and it is still dark at this time.

Lesson 7: Telling time to the minute (3)

→ pages 53–55

1. a) Hour hand half-way between 3 and 4
b) Hour hand between 6 and 7 but closer to 6
c) Hour hand just under half-way between 8 and 9
d) Hour hand three-quarters of the way between 1 and 2
e) Hour hand just over half-way between 9 and 10
f) Hour hand a quarter of the way between 1 and 2

2. a) 04:52, 03:52, 02:52, 01:52, 00:52
b) 17:09, 18:09, 19:09, 20:09, 21:09

3. 20:00 is the 24-hour clock equivalent of 8 pm or 8 o'clock in the evening.

4. a) Minute hand pointing to the 12th interval, hour hand pointing to just after 5
b) Minute hand pointing to 8, hour hand pointing just after half-way between 11 and 12

5. 19:05, 19:14, 19:23, 19:32, 19:41, 19:50, 19:46, 19:55

6. Answers will vary. Ensure that times and am/pm match the 24-hour time; for example, 03:40 and twenty minutes to 4 am (or 3:40 am).
Latest time is 23:44 (16 minutes to midnight or 11:44 pm)
Earliest time is 00:01 (1 minute after midnight or 12:01 am)

Reflect

An explanation that the hour is more than 12, so it is a 24-hour clock time. In the 24-hour clock, times after 12:00 are pm, so this time is in the evening: 6:58 pm.

Lesson 8: Finding the duration

→ pages 56–58

1. a) 38 minutes (clock shaded from 07:12 to 07:50; +38 minutes on number line)
b) 43 minutes (first clock shaded from 11:45 to 12:00 and second clock from 12:00 to 12:28; +15 minutes and +28 minutes on number line)
c) 46 minutes (first clock shaded from 13:38 to 14:00 and second clock from 14:00 to 14:24; +22 minutes and +24 minutes on number line)

2. a) Durations written into the table:
21 minutes
31 minutes
41 minutes
51 minutes
b) The answers get 10 minutes greater each time because the start time minutes are the same and the end time minutes are 10 minutes more each time.

3. The tanker takes 91 minutes to fill up with milk.

4. False. Max has not taken into account that the duration is over an hour, so he would need to add another 60 minutes to 35. This makes it 95 minutes.

5. 150 minutes

6. Possible answers: start 13:01, end 13:53; start 13:02, end 13:54; start 13:03, end 13:55; start 13:04, end 13:56; start 13:05, end 13:57; start 13:06, end 13:58; start 13:07, end 13:59

Reflect

Children's questions will vary. Ensure that the end time is after the start time, unless the question crosses over midnight.

Lesson 9: Comparing duration

→ pages 59–61

1. a) 26 minutes (clocks shaded from 18:09 to 18:35)
b) 25 minutes (clocks shaded from 18:52 to 19:17)
Alex practises for the longer time on Monday.

2. Lee's dad parks for 63 minutes. He should pay £1 as he did not park over 65 minutes.

3. a) Bus B is quicker. Bus A and B leave 10 minutes apart, but they do not arrive 10 minutes apart. If Bus B were to arrive 10 minutes later, it would arrive at 10:33. As it arrives 6 minutes before this time, I know it is 6 minutes faster than Bus A.
b) Bus C is quicker. Buses C and D leave 10 minutes apart, but they do not arrive 10 minutes apart. If Bus D were to arrive 10 minutes later, it would arrive at 11:22. As it arrives 3 minutes after this time, I know it is 3 minutes slower than Bus C.

4. 1 hour 9 minutes is longer. 1 hour = 60 minutes, so 1 hour 9 minutes = 69 minutes. 69 minutes is a longer time than 63 minutes.

5. Answers will vary: activities must total 110 minutes or less; for example, the science experiment and school library visit would take 60 + 35 minutes = 95 minutes so could be done before home time.
Exact time: science experiment, school library visit, spelling test (60 minutes + 35 minutes + 15 minutes = 110 minutes).

Reflect

Adventure film = 105 minutes; space film = 100 minutes. Adventure film is longer.

Children could also use the fact that they start 10 minutes apart, but do not finish 10 minutes apart. If the space film was the same length as the adventure film it would finish at 17:10; however, it finishes at 17:05 so it must be shorter.

Lesson I0: Finding start and end times

→ pages 62–64

1. I will get into the fair at 1:38 pm. (Clock to show 1:38.)

2. a) First clock to show 2:32; second clock to show 2:51
End time, 2:51 pm
b) First clock to show 3:03; second clock to show 3:52
Start time, 3:03 pm

3. 2:53 pm
Answers will vary. A possible explanation is: count back 2 minutes to 3:00 and then count back 7 minutes to 2:53.

4.

	Start time	Queue length (duration)	End time
Bouncy castle	1:16 pm	22 minutes	1:38 pm
Big dipper	2:12 pm	25 minutes	2:37 pm
Go karts	3:48 pm	26 minutes	4:14 pm
Runaway train	4:42 pm	24 minutes	5:06 pm

5. Mo has forgotten that there are only 60 minutes in an hour, so 65 minutes is the same as 1 hour and 5 minutes. Therefore, his poster will be ready an hour and 5 minutes later than 5 minutes past 4, which is 10 minutes past 5.

6. a) It could have started at 2:21, 2:22, 2:23 or 2:24.
b) It ends at 1:34 pm.
An efficient method is to add on 2 hours and adjust by taking off 1 minute.

Reflect

The lesson ends at 7:40 pm.

Explanations will vary. Some children will see that 55 minutes is just 5 minutes less than 1 hour and so will add 1 hour and adjust by subtracting 5 minutes. Some children will add on 15 minutes to make 7 pm and then add on 40 minutes to make 7:40 pm.

Lesson II: Measuring time in seconds

→ pages 65–67

1. a) Line drawn to 45 seconds
b) Line drawn to 40 seconds
c) Line drawn to 35 seconds
d) Line drawn to 55 seconds

2.

Activity	Time in minutes	Time in seconds
Bouncing a ball	$\frac{1}{2}$ a minute	30 seconds
Running on the spot	2 minutes	120 seconds
Skipping	$1\frac{1}{2}$ minutes	90 seconds
Star jumps	1 minute	60 seconds

3. It takes Ebo 40 seconds.

4. Jamie's stopwatch shows 17 seconds because 1 minute equals 60 seconds and 60 – 43 = 17 seconds. Max's stopwatch shows 36 seconds because 1 minute equals 60 seconds and 60 – 24 = 36 seconds.

5. Answers will vary. How accurate were the children at estimating 1 minute?

Reflect

Children should show an understanding that 1 second is a specific measurement of time (for example, the time it takes to say '1 elephant'.) Bella could count to 60 elephants to give her a better estimate of 1 minute.

End of unit check

→ pages 68–70

My journal

1. a) I know that the time is 25 minutes to 3 because …

Explanations will vary. Children should be able to explain that they know the time because the minute hand is pointing to 7 (or the 35th interval), which means 25 minutes to the hour, and the hour hand is just over half-way between 2 and 3.

b) I know that the time is 17 minutes past 8 because …

Explanations will vary. Children should be able to explain that they know the time because the minute hand is pointing to the 17th interval, which means 17 minutes past the hour, and the hour hand is pointing to 8.

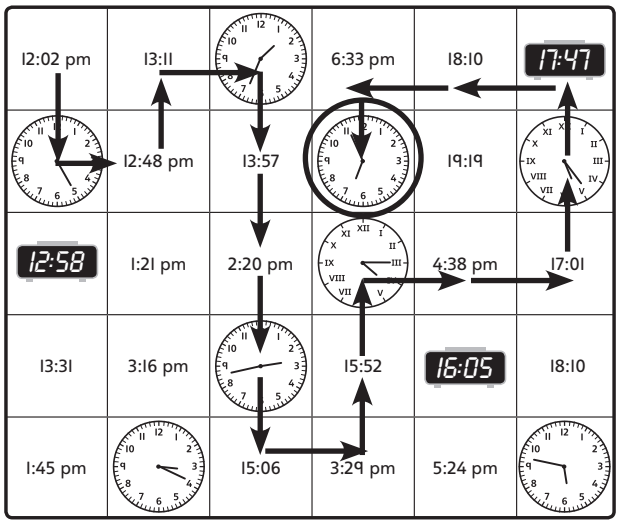
c) I know that the time is 9 minutes to 5 because …

Explanations will vary. Children should be able to explain that they know the time because the minute hand is pointing to the 51st interval, which means 9 minutes to the hour, and the hour hand is pointing to 5.

2. Answers will vary. Check that children have drawn the hands on their clocks correctly and have used a variety of ways to write their times, using the 24 hour clock and/or using am and pm. Ensure that they choose an appropriate time for the activity that they have chosen to record.

Power play

Children will end on the clock showing 4 minutes to 7.



Unit I2: Angles and properties of shapes

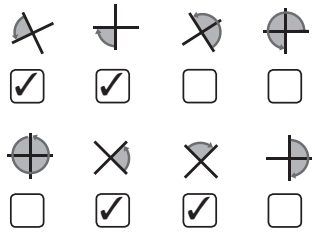
Lesson I: Turns and angles

→ pages 71–73

1. a) Now he faces the café.

b) Now he faces the pond.

2.



3. Answers will vary, but children should notice that they end up facing in the same direction.

4. a) She is facing west.

b) She could be facing west or east.

c) Southwest

d) One right angle anticlockwise or three right angles clockwise

5.

Starting position	Quarter turn clockwise	Two right-angle turns anticlockwise	Quarter turn anticlockwise	Three-quarter turn anticlockwise then a quarter turn clockwise

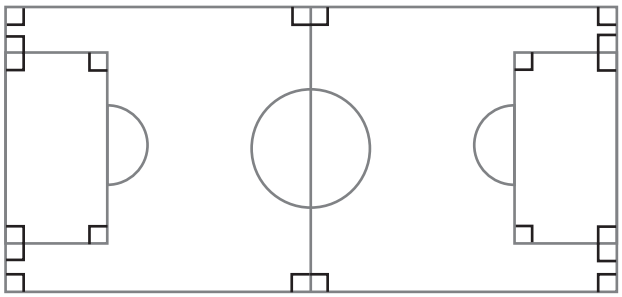
Reflect

When I turn by two right angles, I will face the opposite direction.
When I turn by four right angles, I will face the same direction.

Lesson 2: Right angles in shapes

→ pages 74–76

1.



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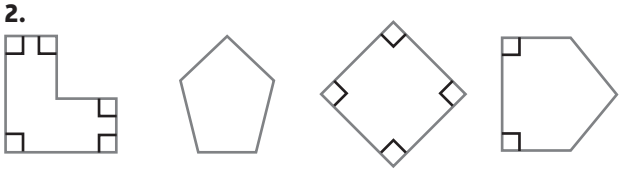
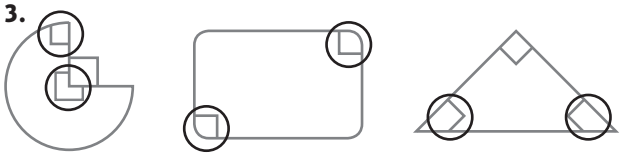


A B C D

3.



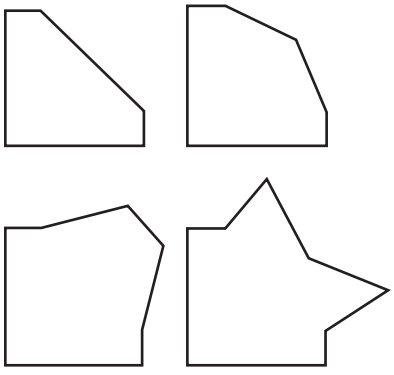
4. Answers will vary. Children should have drawn a line that is perpendicular to the existing line, to create at least one right angle. Children can draw their own pair of perpendicular lines in the final two diagrams.

5. Answers will vary. Typical items that show right angles include books, doors, tables or the whiteboard.

6. Children should have coloured the cross.

Reflect

Answers will vary. Ensure that children are drawing accurately with a ruler and that the shape has at least three internal right angles. Possible answers include a square, a rectangle, an irregular pentagon with three right angles, and an L shape. Children who interpret the question as specifying 'exactly three right angles' will discover that they need to draw an irregular polygon with five or more sides, either convex or concave, that looks like three corners of a square or rectangle with extra sides added. Some possibilities are shown.



Lesson 3: Comparing angles

➜ pages 77–79

1. First angle joined to 'less than a right angle'
Second angle joined to 'greater than a right angle'
Third angle joined to 'a right angle'

2. Drawings will vary. Children should show three angles of between 0 and 90 degrees in the top row and three angles of between 90 and 180 degrees in the bottom row.

3. obtuse acute obtuse

4. Answers will vary. Using the points of the peg board, children should show three angles of between 0 and 90 degrees in the top row, three angles of between 90 and 180 degrees in the second row, and three angles of 90 degrees in the final row.

5. Answers may vary, but the following is the correct prediction:
12 acute angles (2 × 2 complementary; 8 supplementary with the obtuse angles)
6 right angles (2 × 2 supplementary, + 2)
8 obtuse angles (8 supplementary with the acute angles)
(Children will not know the vocabulary 'supplementary' and 'complementary' but they may be able to spot and use the principles in their predictions.)

Reflect

Answers will vary. Typical obtuse and acute angles can be formed in open books, open doors, two pencils or rulers. Children may discover shapes around the room that have acute or obtuse angles. Children can use an angle measurer (or a right angle) to decide whether an angle is acute or obtuse.

Lesson 4: Drawing accurately

➜ pages 80–82

1. Lines drawn of the following lengths:
A: 3 cm
B: 4 cm
C: 5 cm

2. Ensure the child measures accurately, marking both the top and bottom lines to find 5 cm before drawing a line to connect the marks.

3. a) Shapes measured, sides labelled and then shapes copied:
A: horizontal line = 29 mm; diagonal line = 39 mm
B: vertical line = 23 mm; horizontal line = 35 mm
C: vertical line = 23 mm; horizontal line = 38 mm
b) Answers will vary. Ensure the child has justified their reasons.

4. a) Rectangle will be 11 cm × 55 mm.
b) Square will be 55 mm × 55 mm.
c) Each right-angled triangle will have perpendicular sides of length 55 mm and hypotenuse approximately 78 mm long.

Reflect

Step 1: Place your ruler flat on your paper and find 0.
Step 2: Place your pencil on 0 and draw a line to 5 cm.
Step 3: Extend your line for 5 smaller intervals (mm).
You will have drawn a line 5 cm and 5 mm long.

Lesson 5: Types of line (I)

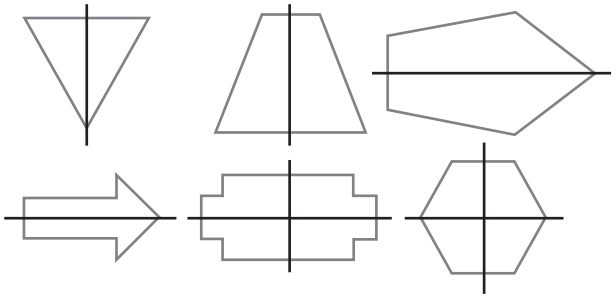
➜ pages 83–85

1. neither horizontal neither vertical

2. There are 2 horizontal lines and 8 vertical lines.

3. Answers will vary. Child should show 3 horizontal, 3 vertical and 3 neither horizontal nor vertical lines.

4.



5. Turn all shapes by a quarter-turn (right-angle turn) to change the symmetry lines from vertical to horizontal or vice versa.

6. Lines ticked:
From top to bottom: middle line (horizontal)
From left to right: the first, third and fourth lines (vertical)

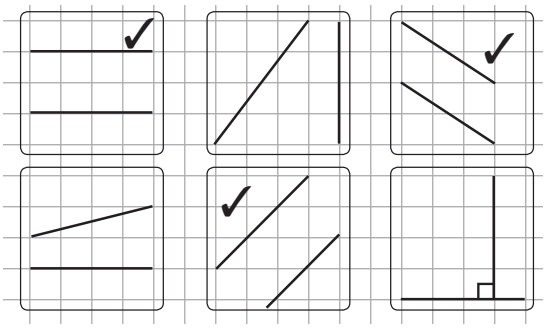
Reflect

Answers will vary. Typical answers might include:
horizontal – the playground, tables
vertical – trees, lampposts, wall of the school

Lesson 6: Types of line (2)

➜ pages 86–88

1. a)



b) Answers will vary. Children should draw lines with lengths that differ from the original lines but that are demonstrably parallel to them using the grid.

2. Answers will vary. Check that children demonstrate understanding of the difference between parallel and perpendicular lines, labelling accurately.

3. Answers will vary.
Examples of parallel lines include: train tracks, lanes in an athletics track, road markings, edges of buildings, edges of a slide.
Examples of perpendicular lines include: adjacent edges of window and door frames, line where the road meets a lamppost or building, chair and table legs to the floor.

4. Dexter is wrong: the lines are parallel. When you measure a distance from a line, you should place the ruler so that it is perpendicular to the line. Dexter needs to move the right-hand ruler so that it is vertical. This will show that the lines are the same (perpendicular) distance apart.

5. a) Answers will vary. Ensure each pair of lines drawn are parallel using opposing pairs of dots.
b) Answers will vary. Ensure each pair of lines drawn are perpendicular. In the first two diagrams the only solutions use the vertices of a kite shape. There are more possibilities for the third and fourth diagrams.

Reflect

1. Parallel lines always stay the same distance apart so they will never touch.

2. Parallel lines do not have to be the same length.

3. Perpendicular lines will meet at right angles.

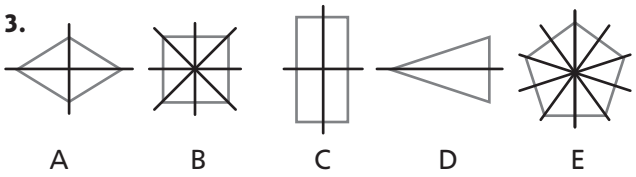
Lesson 7: Recognising and describing 2D shapes

➜ pages 89–91

1. triangle pentagon rectangle hexagon

2. Shape E is not a quadrilateral. A quadrilateral is a shape with 4 sides; this shape has 6 sides so it is a hexagon.

3.



A B C D E

4. a) Children should draw and label two rectangles (possibly including squares).
b) Answers will vary. The shapes that show one pair of perpendicular sides and no parallel sides include a right-angled triangle, a kite with just one right angle or an irregular quadrilateral with just one right angle.
c) Answers will vary. Shapes that show no perpendicular or parallel sides but have one line of horizontal symmetry include kites or semicircles.

5. A3 B1 F6 E2 C4

Reflect

A rectangle is a quadrilateral that has 2 pairs of parallel sides, 4 right angles and 4 pairs of perpendicular lines.

Lesson 8: Recognising and describing 3D shapes

➜ pages 92–94

1. cube cuboid triangular prism
square-based pyramid sphere cylinder

2. Numbers written into table as follows:

Vertices:	8	4	5	8
Faces:	6	4	5	6
Edges:	12	6	8	12

3. a) matched to ii)
b) matched to i)
c) matched to iii)

4. Answers written into the table as follows:

Prism	B, D	
Not a prism	C	A

5. Answers will vary. A possible response could be:
Both shapes have at least one square face, have some parallel and perpendicular edges and have lines of symmetry.
The cuboid has 6 faces, 8 vertices and 12 edges, but the pyramid has 5 faces, 5 vertices and 8 edges.

Reflect

A cube has 6 square faces, 8 vertices and 12 edges. The cube has parallel and perpendicular edges and faces.

Lesson 9: Constructing 3D shapes

➜ pages 95–97

1. 6 cubes; 6 cubes; 5 cubes
8 cubes; 6 cubes; 6 cubes

2. Reena has made 4 different cuboids.

3. A: 12 sticks; 8 marshmallows
B: 8 sticks; 5 marshmallows
C: 6 sticks; 4 marshmallows

4. Children should have circled 2 shapes from: triangular prism, square-based pyramid, cuboid

5. Answers will vary. An example answer could be: First make two triangles of the same size with 6 sticks and 6 marshmallows. Then attach the two triangle faces parallel to each other using 3 sticks to join the vertices.

6. Table completed:

Sticks:	9	12	15	18
Marshmallows:	6	8	10	12

Answers may vary. One possible pattern is that the number of sticks is always 3 times the number of sides of the non-rectangular face in the prism. The number of marshmallows is always 2 times this number.

Reflect

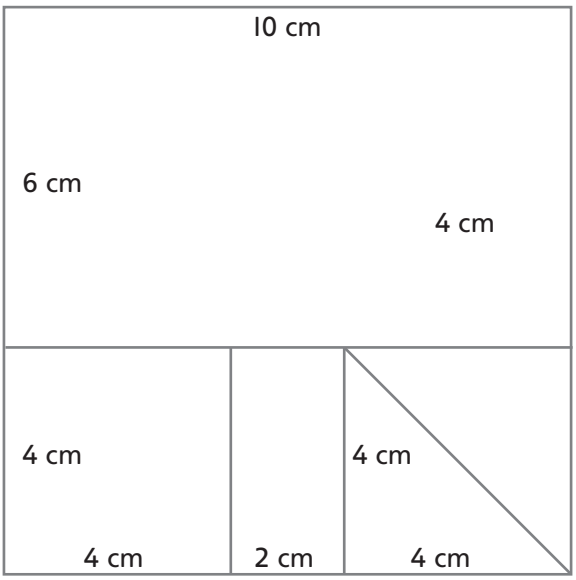
Answers will vary. Children might mention: learning that angles (acute, obtuse and right) are part of a turn; drawing and measuring lines accurately; learning about parallel and perpendicular lines; learning how to describe 2D and 3D shapes; learning how to make 3D shapes.

End of unit check

➜ pages 98–100

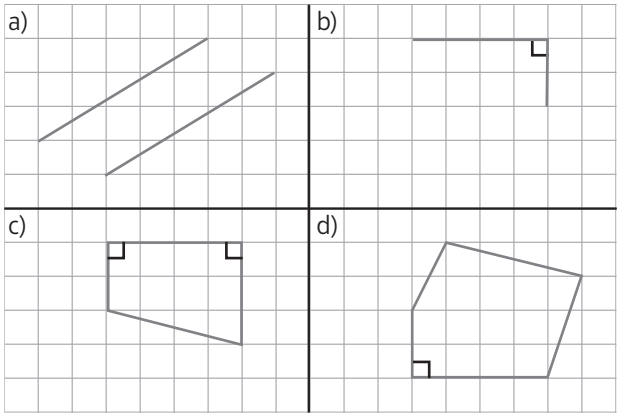
My journal

1 a. How the child splits up the square will vary. This is a possible solution



1 b. Answers will vary. Children should provide an explanation of how they used a ruler to measure and draw horizontal and vertical lines, making sure lines were perpendicular or parallel when necessary.

2. Answers will vary. This is a possible solution.



Unit I3: Mass

Lesson I: Measuring mass (I)

→ pages 101–103

1. a) Arrow pointing to the first mark after 200 g.
b) Arrow pointing half-way between the first and second marks after 100 g.
c) Arrow pointing to the third mark after 0 kg.
d) Arrow pointing half-way between the third and fourth mark after 0 kg.

2. The second pair of scales could measure kg whilst the first pair of scales could measure g.

3. No, the arrow is pointing half-way between 200 g and 400 g, which means the scale shows a mass of 300 g.

4. a) Answers will vary. Possible answers include:
8 kg – a medium-sized bike, a school bag full of books, 8 bags of sugar
180 g – a fork, a small box of raspberries, a small tub of cheese
28 g – 1 small piece of cheese, an AA battery, 3 one-pound coins
b) Answers will vary – ensure children have written objects that are plausible estimates for the mass.

Reflect

Answers will vary, but encourage children to draw a number line with intervals of 100 g and then mark out 200 g, 500 g and 600 g.

Lesson 2: Measuring mass (2)

→ pages 104–106

1. a) Pointer pointing half-way between 2 and 3 kg.
b) Pointer pointing half-way between 8 and 9 kg.
c) Pointer pointing at the first mark after 3 kg

2. 2 kg 50 g 2 kg 100 g 2 kg 125 g

3. a) approximately 3 kg 400 g and 3 kg 700 g
b) approximately 11 kg and 11 kg 500 g
c) approximately 2 kg 90 g

4. If the mass of the spade is just under 8 kg 500 g, this would be closer to 8 kg than 9 kg. If the mass of the spade is just over 9 kg 500 g then it would be closer to 10 kg than 9 kg (9 kg 500 g also rounds up to 10 kg). Since the mass of the spade to the nearest kg is 9 kg, it must be in the range 8 kg 500 g to 9 kg 499 g.

Reflect

Find the difference between the two marked amounts.
Count the number of intervals between the two marked amounts.
Divide the difference by this number to find the value of each interval.
Use this to read the scale.

Lesson 3: Measuring mass (3)

→ pages 107–109

1. Masses written into part-whole models:
a) 1 kg; 376 g
b) 1,020 g
c) 3,246 g
d) 2 kg; 2 g

2. Masses written into table:
1,456 g
2 kg 132 g
1,088 g
0 kg 654 g

3. a) 1,400 g 1 kg 400 g
b) 2,500 g 2kg 500 g
c) 1,050 g 1 kg 50 g

4. Lee is incorrect. The difference between each labelled amount is 1 kg or 1,000 g. There are 10 intervals between 1 kg and 2 kg, and 1,000 ÷ 10 = 100. This means that each interval is worth 100 g. The arrow is pointing at the ninth mark after 1 kg, so the mass of the sugar is 1 kg 900 g. Lee thought the intervals were going up in 10 g, not 100 g.

5. Answers will vary. Some possible solutions are:
2 kg + 500 g + 100 g + 100 g + 10 g + 10 g + 10 g + 10 g + 10 g
1 kg + 1 kg + 500 g + 100 g + 100 g + 10 g + 10 g + 10 g + 10 g + 10 g

Reflect

Answers will vary. Ideas could include:
Just grams – cooking ingredients, precious metals like gold
Kilograms and grams – weight of a person, weight of luggage at the airport

Lesson 4: Comparing masses

→ pages 110–112

1. a) 1,321 g > 1 kg 300 g
b) 1 kg 8 g < 1,080 g
c) 2 kg 10 g = 2,010 g
d) 983 g > 0 kg 899 g

2. Top right scales circled

3. a) ≈ 1,750 g
b) ≈ 1,422 g
c) ≈ 1,250 g

4. Answers will vary.
B – any mass less than 1 kg 20 g
C – any mass greater than 1 kg 20 g
D – any mass less than that given for B

5. a) 1 kg 500 g 1,540 g 1,999 g 2 kg
b) 1,001 g 1,010 g 1 kg 100 g 1,110 g
c) 1,070 g 1 kg 700 g 1 kg 707 g 1,777 g

Reflect

An explanation that when comparing numbers children know they need to compare the largest value columns first, and then, if these values are the same, look at the next largest value column. Max is incorrect because he did not compare the hundred gram column before comparing the ten gram column. You can see that 1 kg 265 g is bigger than 1 kg 157 g as 2 hundred is bigger than 1 hundred.

Lesson 5: Adding and subtracting masses

→ pages 113–115

1. + 850 g
15 kg
6 kg 950g

2.

1 kg 800 g	
1 kg 200 g	600 g

1 kg 100 g	
550 g	550 g

1 kg 300 g	
900 g	400 g

1 kg 750 g	
1 kg 440 g	310 g

3. a) Alex has 150 g left.
b) Zac needs 950 g more.
c) Alex buys 1 kg 200 g (or 1,200 g) of flour.

4. Answers will vary. Ensure that children's questions involve subtraction.

5. a) 900 g
b) 550 g
c) 1 kg 100 g (or 1,100 g)
d) 1 kg 80 g (or 1,080 g)
e) 2 kg 710 g (or 2,710 g)

Reflect

Answers will vary.

Lesson 6: Problem solving – mass

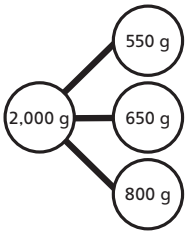
→ pages 116–118

1. Masses in number lines from left to right:
a) 470 g 620 g 770 g 920 g 1070 g (or 1 kg 70 g)
b) 250 g 500g 750 g 1 kg (or 1,000 g)
1 kg 250 g (or 1,250 g)

2. 450 g of nuts

3. Amal had 550 g of clay left.

4.



The middle guinea pig weighs 650 g.

5. The mass of the heart is 1,225 g.
□ = 1,110 g ÷ 2 = 555 g
⌓ = 2,000 g – (3 × 555 g) = 335 g
♡ = 2 × 335 g + 555 g = 1,225 g

Reflect

Answers will vary. Ensure children's questions make sense and give an answer of 2 kg and 550 g.

End of unit check

→ pages 119–120

My journal

1. First you calculate the mass of the pineapple:
500 + 200 + 50 + 5 = 755 g.

Then you work out the total mass of the pineapple and melon by reading the scale: 1 kg 300 g.

Now you can work out the mass of the melon by subtracting the mass of the pineapple from the total mass: 1,300 – 755 = 545 g.

The mass of the melon is 545 g.

Unit 14: Capacity

Lesson 1: Measuring capacity (1)

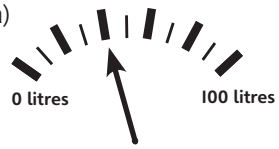
→ pages 121–123

1. a) 375 ml b) 65 ml c) 550 ml

2. a) litres
b) millilitres
c) litres
d) litres or millilitres
e) millilitres

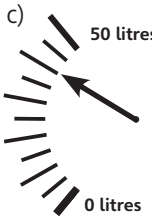
3. A C B

4. a)

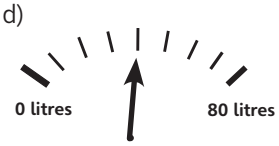


b)

c)



d)



5. First scale: Divide line into two equal parts; mark this interval 100 ml.
Second scale: Divide line into 10 equal parts; mark first interval from bottom as 100 ml.
Third scale: Divide line into 5 equal parts; mark first interval from bottom as 100 ml (or divide line into 10 equal parts and mark second interval from bottom as 100 ml).

Reflect

Look for an explanation of the need to work out what each interval is worth by finding the difference between marked amounts and dividing this by the number of intervals between them.

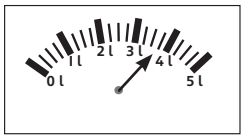
Lesson 2: Measuring capacity (2)

→ pages 124–126

1. a) Capacities completed as:
1 l 700 ml 1 l 500 ml
0 l 500 ml 1 l 0 ml
b) First jug: 1,000 ml 900 ml = 1,900 ml
Second jug: 1,000 ml 200 ml = 1,200 ml
Third jug: 1,000 ml 700 ml = 1,700 ml

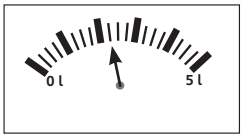
2. A Shaded to the third mark above 1 litre
B Shaded to the second mark above 1 litre
C Shaded to half-way between 3 and 4 litres

3. A



3 l 750 ml

B



2 l 250 ml

4. Jug B was used.

5. Answers will vary but should be in the range of 1 l 100 ml to 1 l 300 ml.

Reflect

Scale showing a litre split into 4 intervals to be labelled: 0 ml, 250 ml, 500 ml, 750 ml and 1,000 ml (or 1 l).

Scale showing a litre split into 5 intervals to be labelled: 0 ml, 200 ml, 400 ml, 600 ml, 800 ml and 1,000 ml (or 1 l).

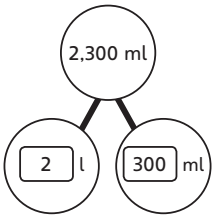
Lesson 3: Measuring capacity (3)

→ pages 127–129

1. a) 1,100 ml = 1 l and 100 ml

b)

2,300 ml		
1,000 ml	1,000 ml	300 ml
1 l	1 l	300 ml
2 l 300 ml		



2,300 ml = 2 l 300 ml

2. Answers may vary. Children may choose to use a bar model or a part-whole model.
3 l 700 ml = 3,700 ml

3. a) 2,270 ml
b) 3,450 ml

4. a) 400 ml = 0 l 400 ml
b) 300 ml = 0 l 300 ml

5. Shaded up to half-way between the second and third mark above 1,000 ml.
1,250 ml = 1 l 250 ml

6. 1 litre and 2 litres written by bold marks on jug.
2,250 ml between second and third mark above 2 litres.

Reflect

Answers will vary. The explanation should include that you need to use the fact that 1 l = 1,000 ml to help you. Children may suggest checking how many thousands of ml there are in the amount; this will give how many litres there are. The rest can be left as ml.

Lesson 4: Comparing capacities

➜ pages 130–132

1. a) 1 l 200 ml < 2 l 100 ml
b) 1 l > 900 ml
c) 500 ml = $\frac{1}{2}$ l
d) 2 l 100 ml > 1 l 999 ml

2. 25 l | 2 l 250 ml | 2,100 ml | 300 ml

3. B | D | A | C

4. D | B | A | C

5. A = 1,000 ml | C = 1,250 ml | D = 1,400 ml | B = 1,500 ml

6. Jessica should choose bowl C.

7. Reasoning will vary, for example: Container A has a capacity of 2 l and is about $\frac{3}{4}$ full. This means it contains about 1,500 ml or 1·5 l. Container B holds 1·5 l when full, but it is not full, so it contains less than 1·5 litres. Therefore container A has more liquid in it.

Reflect

Answers will vary. Encourage an explanation of converting all the amounts to the same units before comparing, starting from the column with the greatest value first.

Lesson 5: Adding and subtracting capacities

➜ pages 133–135

1. a) 450 + 300 = 750 ml
The total of the two amounts is 750 ml.
b) The total of the two amounts is 2 l.
c) 5 l 675 ml

2. There is 1 l 750 ml left in the bottle.

3. 4 l = 1 l = 3 l
500 ml – 150 ml = 350 ml
There will be 3 l 350 ml left in the large container.

4. James needs 1 l 500 ml more water.

5. There are 550 ml in cylinder C.

Reflect

Answers may vary. Some children may convert 2 l 800 ml to 2,800 ml before adding this to 1,250 ml to get 4,050 ml. Others may convert 1,250 ml to 1 l 250 ml and then add the litres and millilitres separately. This gives 3 l 1,050 ml, which is the same as 4 l 50 ml.

Lesson 6: Problem solving – capacity

➜ pages 136–138

1. 800 ml (in the bar model)
Paolo bought 800 ml of water altogether.

2. 500 ml in each of the 4 parts in the bar model
Each glass holds 500 ml of water.

3.

40 l			
10 l	10 l	10 l	10 l
30 l			10 l

Frederica has 30 l of fuel left.

4.

250 ml	250 ml	250 ml	$\frac{1}{2}$ litre
750 ml			500 ml
1,250 ml			

The total is 1,250 ml. This is 1 l and 250 ml of milk in total.

5. Alfredo needs to drink 7 more glasses.
Jen needs to drink 9 more glasses.

6. He needs 2 l and 500 ml more cream.

7. You will need 7 l 500 ml.

Reflect

Answers will vary. Encourage children to explain their different steps and the reasons for these steps. Children should consider the need to convert between litres and millilitres.

End of unit check

➜ pages 139–140

My journal

4 l				250 ml
1,000 ml	1,000 ml	1,000 ml	1,000 ml	250 ml
4,250 ml				

$2\frac{1}{2}$ l		
1,000 ml	1,000 ml	500 ml
2,500 ml		

3,750 ml			
1,000 ml	1,000 ml	1,000 ml	750 ml
3,000 ml			750 ml