



Unit 11 – Fractions (2)

I Add fractions

→ pages 6–8

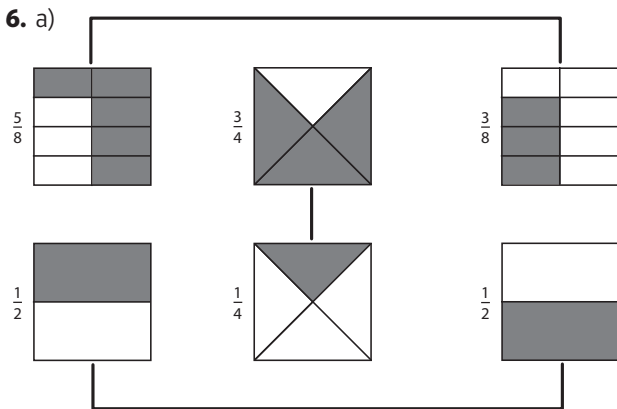
- $\frac{4}{7} + \frac{2}{7} = \frac{6}{7}$
 - $\frac{2}{9} + \frac{3}{9} = \frac{5}{9}$
- $\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$
- $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$
 - $\frac{2}{4} + \frac{2}{4} = \frac{4}{4} = 1$
 - $\frac{3}{9} + \frac{2}{9} = \frac{5}{9}$
- $\frac{7}{10} + \frac{2}{10} = \frac{9}{10}$
 - $\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$

- $\frac{7}{12} + \frac{1}{12} = \frac{8}{12}$
- $\frac{5}{10} + \frac{5}{10} = \frac{10}{10} = 1$
- $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$
- $\frac{4}{6} = \frac{2}{6} + \frac{2}{6}$
- $\frac{1}{8} + \frac{3}{8} = \frac{4}{8}$
- $\frac{3}{7} + \frac{1}{7} = \frac{4}{7}$
- $\frac{8}{10} = \frac{3}{10} + \frac{5}{10}$
- $\frac{3}{12} + \frac{9}{12} = \frac{12}{12} = 1$
- $\frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{3}{7}$

5. Possible solutions are:

$$\frac{0}{6} + \frac{5}{6} \quad \frac{1}{6} + \frac{4}{6} \quad \frac{2}{6} + \frac{3}{6}$$

$$\frac{5}{6} + \frac{0}{6} \quad \frac{4}{6} + \frac{1}{6} \quad \frac{3}{6} + \frac{2}{6}$$



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. To add fractions with the same denominator, add the numerators but keep the denominator the same.

2 Subtract fractions

→ pages 9–11

- $\frac{7}{9} - \frac{3}{9} = \frac{4}{9}$
 - $\frac{7}{10} - \frac{5}{10} = \frac{2}{10}$
 - $\frac{11}{12} - \frac{5}{12} = \frac{6}{12}$
 - $1 - \frac{1}{8} = \frac{7}{8}$
- Max has $\frac{3}{8}$ of the cake left.
- $\frac{5}{9} - \frac{2}{9} = \frac{3}{9}$
 - $\frac{3}{8} - \frac{2}{8} = \frac{1}{8}$
 - $1 - \frac{3}{4} = \frac{1}{4}$
- $\frac{2}{10} = \frac{3}{10} - \frac{1}{10}$
 - $\frac{10}{11} - \frac{7}{11} = \frac{3}{11}$
 - $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$

4. Possible solutions are:

$$\frac{8}{8} - \frac{5}{8} \quad \frac{7}{8} - \frac{4}{8} \quad \frac{6}{8} - \frac{3}{8}$$

$$\frac{5}{8} - \frac{2}{8} \quad \frac{4}{8} - \frac{1}{8} \quad \frac{3}{8} - \frac{0}{8}$$

- $\frac{2}{5} + \frac{2}{5} - \frac{3}{5} = \frac{1}{5}$
 - $\frac{5}{9} + \frac{1}{9} - \frac{2}{9} = \frac{4}{9}$
- $\frac{7}{12} - \frac{1}{12} + \frac{6}{12} = 1$
 - $\frac{9}{10} - \frac{5}{10} + \frac{3}{10} = \frac{7}{10}$

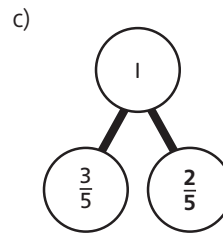
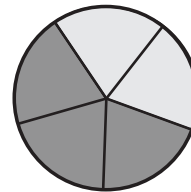
Reflect

Children should give various explanations or use diagrams to show that the difference between $\frac{7}{9}$ and $\frac{2}{9}$ is $\frac{5}{9}$. This is the same as $\frac{7}{9} - \frac{2}{9}$.

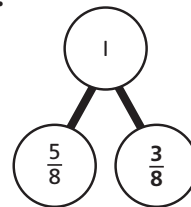
3 Partition the whole

→ pages 12–14

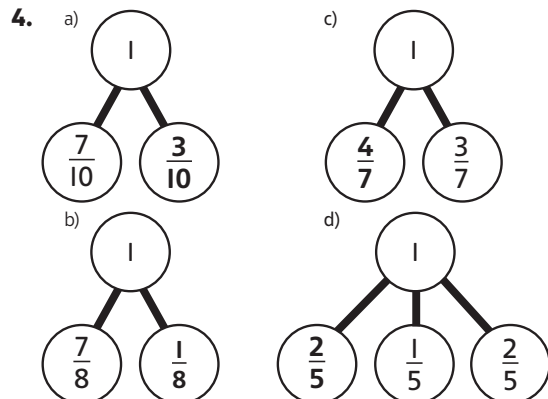
1. a) and b)



2.



3. The sum of the numerators = the denominator
 $3 + 1 = 4$ $4 + 2 = 6$ $4 + 5 = 9$





5. Many solutions are possible, check that the sum of the numerators = the denominator.

For example: $\frac{2}{9} + \frac{7}{9}$ $\frac{3}{11} + \frac{8}{11}$

6. a) $1 - \frac{2}{5} = \frac{3}{5}$ d) $1 - \frac{4}{7} = \frac{3}{7}$
 b) $1 - \frac{3}{5} = \frac{2}{5}$ e) $1 - \frac{3}{9} = \frac{6}{9}$
 c) $1 - \frac{1}{4} = \frac{3}{4}$ f) $1 - \frac{8}{15} = \frac{7}{15}$

Reflect

When the denominators are the same, the sum of their numerators equal that denominator.

If the denominators are different, first use equivalent fractions to change the fractions so that they do have the same denominator.

4 Problem solving – add and subtract fractions

→ pages 15–17

1. a) Children should shade the following:



- b) Children should then shade the following:



- c) $\frac{4}{12}$ of the cupcakes are chocolate or strawberry.
 d) $\frac{8}{12}$ of the cupcakes are vanilla.
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 $\frac{5}{9} > \frac{4}{9}$.

3. a) $\frac{1}{10} + \frac{2}{10}$ $\frac{2}{10} + \frac{1}{10}$ $\frac{0}{10} + \frac{3}{10}$ $\frac{3}{10} + \frac{0}{10}$
 b) $\frac{10}{10} - \frac{7}{10}$ $\frac{9}{10} - \frac{6}{10}$ $\frac{8}{10} - \frac{5}{10}$ $\frac{7}{10} - \frac{4}{10}$
 $\frac{6}{10} - \frac{3}{10}$ $\frac{5}{10} - \frac{2}{10}$ $\frac{4}{10} - \frac{1}{10}$ $\frac{3}{10} - \frac{0}{10}$

- c) Many options are possible:
 $\frac{a}{10} + \frac{b}{10} - \frac{c}{10} = \frac{3}{10}$, where $a + b - c = 3$

Examples:

$\frac{1}{10} + \frac{3}{10} - \frac{1}{10}$ $\frac{1}{10} + \frac{4}{10} - \frac{2}{10}$ $\frac{1}{10} + \frac{5}{10} - \frac{3}{10}$
 $\frac{2}{10} + \frac{2}{10} - \frac{1}{10}$ $\frac{2}{10} + \frac{3}{10} - \frac{2}{10}$
 $\frac{3}{10} + \frac{4}{10} - \frac{4}{10}$ $\frac{4}{10} + \frac{5}{10} - \frac{6}{10}$

4. a) $\frac{2}{10}$
 b) $\frac{3}{10}$
 c) $\frac{2}{10}$

Reflect

Many answers are possible. Check that children use fractions with the same denominator at this point and that their word problems make sense.

5 Unit fractions of a set of objects

→ pages 18–20

1. a) **10** cars
 b) **4** apples
 c) **7** cards
 d) **9** melons
2. Each class gets 6 books.
3. a) $\frac{1}{10}$ of 30 = **3** b) $\frac{1}{2}$ of £18 = **£9**
 $\frac{1}{10}$ of 40 = **4** $\frac{1}{3}$ of £18 = **£6**
 $\frac{1}{10}$ of 50 = **5** $\frac{1}{6}$ of £18 = **£3**
 $\frac{1}{10}$ of 60 = **6** $\frac{1}{9}$ of £18 = **£2**
4. **14** balloons are green.
5. a) $\frac{1}{4}$
 b) $\frac{1}{5}$
 c) $\frac{1}{10}$

Reflect

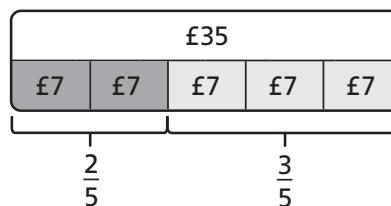
Children should mention using division, dividing by the denominator.

6 Non-unit fractions of a set of objects

→ pages 21–23

1. a) **5**
 b) **10**
2. a) **16** kg b) **12** km
3. a) **15** pencils
 b) **12** km
 c) **15** dog biscuits
 d) **120** g
4. **50** m of the garden has flowers.
5. a) $\frac{2}{3}$ of 48 = 32
 b) $\frac{2}{3}$ of 27 = 18

Reflect





7 Reason with fractions of an amount

→ pages 24–26

- 24**
 - 30**
- $\frac{1}{3}$ of **15** = 5
 $\frac{1}{3}$ of **18** = 6
 $\frac{1}{3}$ of **27** = 9
 - $\frac{1}{2}$ of **6** = 3
 $\frac{1}{3}$ of **9** = 3
 $\frac{1}{4}$ of **12** = 3
- 10**
 - 15**
 - 35**
- 32**
- 14**
 $\frac{1}{5}$ of 20 = 4 $\frac{1}{5}$ of 50 = 10
 10 + 4 = **14**
 Or: $\frac{1}{5}$ of (20 + 50) = $\frac{1}{5}$ of 70 = **14**
- 30**
 $\frac{1}{10}$ = 6 $\frac{1}{2} = \frac{5}{10} = 5 \times 6 = \mathbf{30}$
 Or: $\frac{1}{10}$ = 6, so the number is $10 \times 6 = 60$
 Half of 60 = **30**

Reflect

Children's answers will vary, depending on which question is chosen.

8 Problem solving – fractions of measures

→ pages 27–29

- There are **12** red and blue counters altogether.
- There are **16** cm of ribbon left.
- Millie spends **£25** in total.
 - No, she does not have enough money left. She has spent half of her £50, so she only has £25 left.
- $\frac{1}{2}$ of **24** is equal to $\frac{1}{3}$ of 36.
- Holly baked **24** muffins.

Reflect

Children's answers may vary. Some may work out $\frac{3}{5}$ of 40 cm and subtract that from 40 cm. Some may realise that $\frac{2}{5}$ is left, so will work out $\frac{2}{5}$ of 40 cm.

End of unit check

→ pages 30–31

My journal

Check that children use calculations involving $\frac{1}{3}$ of 18 = 6 or $\frac{2}{3}$ of 18 = 12 in some format.

Power play

Game, so no answers required.

Unit 12 – Money

I Pounds and pence

→ pages 32–34

- There is **9** pounds and **72** pence.
 - There is **£27** and **74p**.
 - There is **£0** and **56p**.
- There is more than one correct answer. One option is:
 - £4 and 20p



b) £7 and 59p



- Two possible options are:

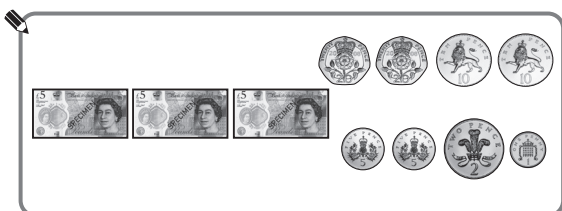


b) The greatest amount he can make with five of these coins is **£5** and **50p**.

- The fewest coins needed to make £2 and 48p is six.



- Kate has £14 and 35p. Zac has £18 and 50p. Richard's amount must be in-between Kate and Zac's amounts. Richard's three notes must all be £5 notes, as anything larger would be more than Zac's amount. His eight coins could be various combinations, not totalling more than £3 and 49p. For example, the notes and coins below total £15 and 73p.



Reflect

Reena may have read the 1 on the 1p coin as £1, and thought she had three £1 coins, or £3, and then one 10p and two 5ps total 20p.

2 Convert pounds and pence

→ pages 35–37

- Sets A, B and D should be ticked.
- There was **186p** in the money box. This is the same as **£1** and **86p**.
- 630p** or **£6** and **30p**
 - 908p** or **£9** and **8p**
- 68p
 - £3 and 94p
 - £4 and 50p
 - 724p
- 350p = £3 and **50p**
 - 429p = **£4** and **29p**
 - 504p = **£5** and **4p**
 - 185p** = £1 and 85p
 - 308p** = £3 and 8p
 - 448p** = **£4** and 48p
 - 1,870p = **£18** and **70p**

Coin	Number of coins needed to make £3
£1	3
50p	6
20p	15
10p	30
5p	60
2p	150
1p	300

Reflect

There are 100p in £1, so in £2 there are 200p. So, £2 and 72p is the same as 200p + 72p = 272p.



3 Add money

→ pages 38–40

- $£1 + £2 = £3$ and $60p + 13p = 73p$
There is **£3** and **73p** in total.
- $£1 + £2 = £3$
 $35p + 45p = 80p$
The total cost is **£3** and **80p**.
- a) The total is **£8** and **57p**.
b) The total is **£9** and **53p**.
- a) **£3** and **95p**
b) **£4** and **15p**
- $£4$ and $45p + £2$ and $70p = £7$ and **15p**
- a) The table tennis bats and water bottle add together to make the greatest cost.
 $£6$ and $40p + £2$ and $69p = £9$ and $9p$
b) The tennis ball and knee pads add together to make **£4** and $60p$
 $£2$ and $56p + £2$ and $4p = £4$ and $60p$
c) The tennis ball and water bottle add together to make $525p$.
 $£2$ and $56p$ is $256p$. $£2$ and $69p$ is $269p$.
 $256p + 269p = 525p$.

Reflect

Children may use more than one method. Check their method is efficient and gives the correct answer. They may choose to add all the pounds, then all the pence. For example:

$$£2 \text{ and } 36p + £2 \text{ and } 87p = £2 + £2 = £4,$$

$$36p + 87p = £1 \text{ and } 23p$$

$$£4 + £1 \text{ and } 23p = £5 \text{ and } 23p$$

Or, children may convert the two amounts to pence and then add them together. For example:

$$236p + 287p = 523p = £5 \text{ and } 23p$$

4 Subtract money

→ pages 41–43

- Mia has **£6** and $70p$ to start with. She spends **£5** and $47p$.
Mia has **£1** and **23p** left.
- Max has **£10** and $36p$ to start with. He spends **£7** and $90p$.
Max has **£2** and **46p** left.
- a) The helmet costs **£16** more than the pump.
b) The helmet costs **£123** less than the bike.
- The difference is $45p$.

- a) $£1$ and $85p - £1$ and $42p = 43p$
b) $£4$ and $12p - £3$ and $80p = 32p$
c) $£7 - 84p = £6$ and $16p$
d) $£3$ and $92p - £2$ and $97p = 95p$

Reflect

Children should show their method, such as adding on or subtracting to find the difference.

$$£2 \text{ and } 40p - £1 \text{ and } 55p = 85p$$

5 Find change

→ pages 44–46

- a) $£1$ and $20p$
b) $66p$
- a) $£3$ and $25p$
b) $£8$ and $93p$
- Nick did receive the correct change.
 $£10 - £4$ and $70p = £5$ and $30p$
- Alex: **£14** and **0p**
Zac: **£8** and **25p**
- a) $30p + 30p = 60p$. $£2 - 60p = £1$ and $40p$
Emma will receive **£1** and $40p$ change.
b) $£2 - 30p = £1$ and $70p$
The difference between $90p$ and $£1$ and $70p$ is $80p$.
The ruler cost $80p$.

Reflect

Check children understand how to find the change, for example by counting on.

$$£2 \text{ and } 18p + 82p = £3 + £2 = £5, \text{ so the change will be } £2 \text{ and } 82p.$$



End of unit check

→ pages 47–48

My journal

Children's answers will vary. Check they use the detail in the pictures to create their money problem.

For example: It is a hot day. Jamie goes to the café and buys an ice cream for £2 and 45p and a water for £2 and 72p. How much change will she get from a £10 note?

$$£2 \text{ and } 45\text{p} + £2 \text{ and } 72\text{p} = £5 \text{ and } 17\text{p}$$

$$£5 \text{ and } 17\text{p} + 83\text{p} = £6 + £4 = £10$$

Jamie will get £4 and 83p change.

Power puzzle

400 g butter costs £1 and 75p

2 eggs cost 40p

400 g sugar costs £1 and 40p

400 g flour costs £1 and 4p

50 g cocoa costs 90p

1 pack of sprinkles costs 87p

Aki spends £6 and 36p

$$£10 - £6 \text{ and } 36\text{p} = £3 \text{ and } 64\text{p}$$

Aki gets **£3** and **64p** change.



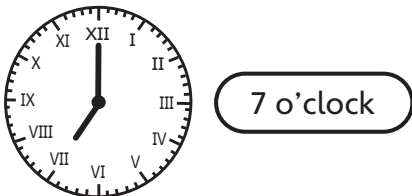
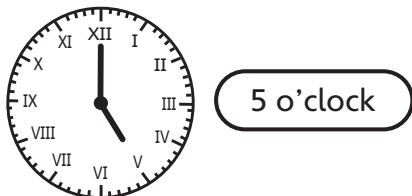
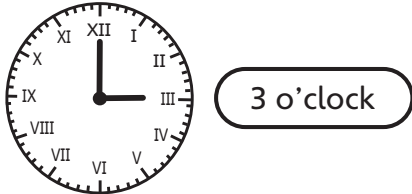
Unit 13 – Time

I Roman numerals to 12

→ pages 49–51

- 1. a) **2** c) **6**
 b) **5** d) **10**
- 2. a) **1** e) **7**
 b) **10** f) **8**
 c) **9** g) **4**
 d) **12**

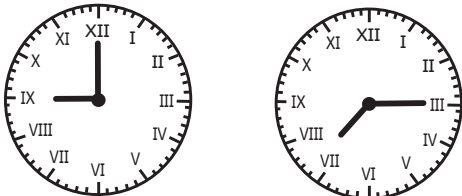
3.



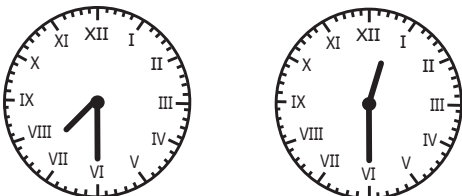
- 4. a) 6 o'clock c) Half past 10
 b) 2 o'clock d) Half past 4

5. Children should draw hands correctly on the clock faces to show the following times:

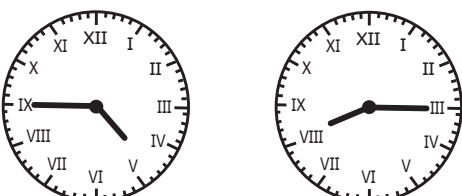
- a) 9 o'clock c) quarter past 7



- b) half past 7 d) half past 12



- 6. a) quarter to 5 b) quarter past 8



Reflect

Children’s answers will vary depending on the times they choose to draw.

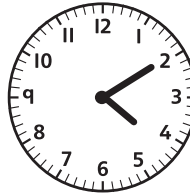
2 Tell the time to 5 minutes

→ pages 52–54

- 1. a) **20 minutes past 10**
 b) **5 minutes past 7**
 c) **10 minutes past 5**
 d) **25 minutes past 3**
- 2. a) **10 minutes to 4**
 b) **5 minutes to 9**
 c) **20 minutes to 7**
 d) **25 minutes to 12**

3. Children should draw hands correctly on the clock faces to show the following times:

- a) 10 minutes past 4 c) 20 minutes to 3



- b) 25 minutes past 10 d) 10 minutes past 6



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

5. Twenty minutes past 6

- 6. Possible times: twenty minutes to 4; quarter to 4; ten minutes to 4; five minutes to 4
Children’s explanations will vary, but they 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.

Reflect

Children’s 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.



3 Tell the time to the minute

→ pages 55–57

1. Children should draw minute hands correctly on the clocks as follows:

a) Minute hand pointing to 9th interval



b) Minute hand pointing to 42nd interval



c) Minute hand pointing to 24th interval



2. Children should draw hands correctly on the clocks as follows:

a) Minute hand pointing to the 13th interval, hour hand between 1 and 2 but closer to 1.



b) Minute hand pointing to the 48th interval, hour hand between 7 and 8 but closer to 8.



c) Minute hand pointing to the 27th interval, hour hand almost half-way between 5 and 6.



- 3. a) **12** minutes past **4** d) **24** minutes to **4**
- b) **21** minutes past **8** e) **18** minutes to **12**
- c) **29** minutes past **2** f) **6** minutes to **3**

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. Simon 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 may 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.

4 Read time on a digital clock

→ pages 58–60

1. **3:17** 17 minutes past 3

12:38 38 minutes past 12

7:22 22 minutes past 7

- 2. a) **20** minutes to **8**
- b) **5** minutes to **3**
- 3. a) **25** minutes to **5**
- b) **43** minutes to **10**

- 4. a) **7:10**
- b) **8:35**
- c) **4:15**
- d) **6:50**

- 5. a) 25 minutes past 2
- b) Quarter to 4
- c) 22 minutes past 7
- d) 23 minutes to 10

6. **6:10**

Reflect

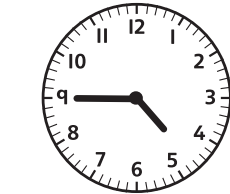
Children's answers will vary.



5 Use am and pm time

→ pages 61–63

- 2:15 am and 10:29 am
 - 2:28 pm, 9:30 pm and 10:45 pm
- Children should draw hands correctly on the clocks as follows:
 - 8:30 pm
 - 4:45 am



b) 1:15 am



d) 10:07 pm



- 7:10
 - 3:25
- 6:15 pm
 - 7:30 am
 - 4:09 pm
- 7:32 pm or 7:32 am

- 11:55
- 5:08
- 9:40 am
- 12:01 am

- Children should draw hands correctly on the clock faces to show 25 past 4.



b) Both analogue clocks show the same picture because analogue clocks do not distinguish between am and pm.

- Children's answers will vary. One example is 6:40.



6:40

Reflect

Children's answers will vary. If it is dark and it is past midnight it will be dark until the morning. Any time between 12 am (midnight) and 12 pm (midday) is an 'am' time and children should understand that, for some of this time, it is dark.

6 Years, months and days

→ pages 64–66

- Children should circle June 4.

January S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	February S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	March S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	April S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
May S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	June S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	July S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	August S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
September S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	October S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	November S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	December S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

- Saturday
- Friday
- 4 weeks
- 23 November
- 30

- Months with 31 days: January, March, May, July, August, October, December
 - Months with 30 days: April, June, September, November
 - Months with fewer than 30 days: February

- 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.

- There are 351 days left in the year.

- Circled: 2036 and 2044
 - No, 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.



7 Days and hours

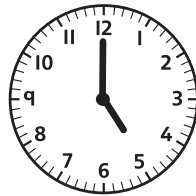
→ pages 67–69

- 24 hours
 - 12:00 am
 - 12:00 pm
- Children should draw hands correctly on to clocks to show the appropriate times with the correct labels:
 - 1 o'clock Wednesday 1 o'clock Thursday



b) 5 o'clock Friday

5 o'clock Saturday



- Children's answers will vary; should be completed to show any pair of times with a difference of 24 hours.
- In top circle (24 hours): A, D, E
In bottom circle (12 hours): B, C
 - 4 hours until midnight
 - 6 hours until midnight
 - 10 hours until midnight
 - 12 hours until midnight
 - 14 hours until midnight
 - 22 hours until midnight
 - 16 hours
 - There are 24 hours in a day and he slept for 8 hours. $24 - 8 = 16$
 - 12 hours (children shade 12 squares)
 - 6 hours (children shade 6 squares)
 - 8 hours (children shade 8 squares)

Reflect

Children's answers will vary. Check whether they are realistic about timings and durations.

8 Hours and minutes – start and end times

→ pages 70–72

- First clock shows 2:32. Children should draw hands on the second clock to show 2:52.
End time: **2:52 pm**
 - 10:50**
 - First clock shows 4:30. Children should draw hands on the second clock to show 5:15.
End time: **5:15 pm**
 - 6:22**
- 7:10**
 - Children should draw hands correctly on the first clock to show 3:03. Start time: **3:03 pm**; children should draw hands on the second clock to show 3:52. End time: 3:52 pm
 - 10:50 am**
- 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.
- | | Start time | Queuing time (duration) | End time |
|---------------|------------|-------------------------|----------|
| Bouncy castle | 1:16 pm | 22 minutes | 1:38pm |
| Big dipper | 2:12pm | 25 minutes | 2:37 pm |
| Go karts | 3:48 pm | 26 minutes | 4:14pm |
| Runaway train | 4:42pm | 24 minutes | 5:06 pm |
- 1:34 pm. Explanations will vary, but children may say that you can add 2 hours because each hour is 60 minutes and then subtract 1 minute as you are 1 minute less than an hour.

Reflect

The TV program ends at 12:20.
Explanations will vary. Some children will see that 35 minutes is just 25 minutes less than 1 hour and so will add 1 hour and adjust by subtracting 25 minutes. Some children will add on 15 minutes to make 12:00 and then add on 20 minutes to make 12:20.



9 Hours and minutes – durations

→ pages 73–75

- 40 minutes
 - 38 minutes
 - 35 minutes
 - 37 minutes
- 40 minutes
 - 43 minutes
 - 47 minutes
 - 44 minutes
- Durations completed in the table as follows:
Feeding the pigs: 21 minutes
Cleaning out the stables: 31 minutes
Mending a fence: 41 minutes
Collecting the eggs: 51 minutes
- 68 minutes which is 1 hour and 8 minutes.

Reflect

Children’s answers will vary.

10 Hours and minutes – compare durations

→ pages 76–78

- 26 minutes practising.
 - 27 minutes practising.
Alex practises for the longer time on Saturday.
- Lee’s dad parks for 63 minutes.
He should pay £1 as he did not park over 65 minutes.
- Bus C 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 am.
As it arrives 6 minutes before this time, I know it is 6 minutes faster than Bus A.
Bus B and C leave 56 minutes apart, but they do not arrive 56 minutes apart. If Bus C were to arrive 56 minutes later, it would arrive at 11:23 am.
As it arrives 11 minutes before this time, I know it is 11 minutes faster than Bus B.
- Mo takes 74 minutes to finish the race and Jamie takes 73 minutes to finish the race.
Jamie was faster.
- 1 hour and 56 minutes
 - 12:14 pm

Reflect

Adventure film = 75 minutes; space film = 100 minutes.
The space 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 16:40; however, it finishes at 17:05 so it must be longer.

11 Minutes and seconds

→ pages 79–81

- Line drawn to 45 seconds
 - Line drawn to 40 seconds
 - Line drawn to 35 seconds
 - Line drawn to 55 seconds

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

- It takes Ebo 45 seconds.
- 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.
- Answers will vary. How accurate were 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.



12 Solve problems with time

→ pages 82–84

- Children should circle the paddling pool.
- The length of time to eat a grape. → Seconds
The length of time to play a game of rounders. → Minutes
The length of time to fly to New York. → Hours
The length of time it takes for a baby to become an adult. → Years
- Hours
 - Seconds
 - Minutes
 - Days
 - Months
- Danny ran the race in a shorter time.
- Children’s 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

Children’s answers will vary.

End of unit check

→ pages 85–87

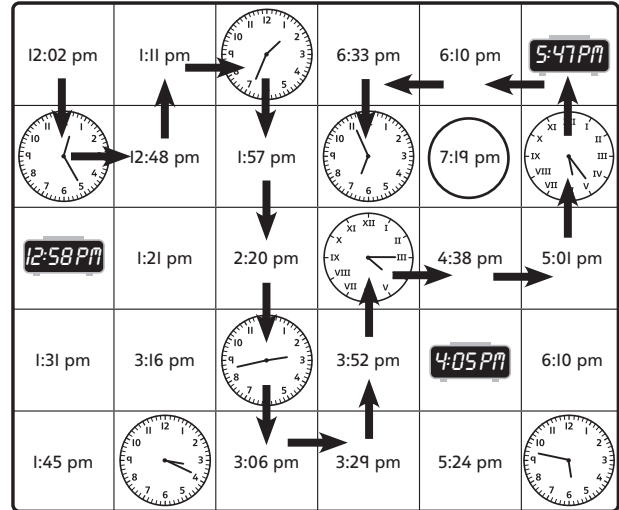
My journal

- 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.
 - 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.
 - 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.

- Children’s answers will vary. Check that they 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 time showing 7:19.



Unit 14 – Angles and properties of shapes

I Turns and angles

→ pages 88–90

- Now he faces the **café**.
 - Now he faces the **pond**.
- In the top row, the first and second diagrams should be ticked.
In the bottom row, the second and third diagrams should be ticked.
- Answers will vary depending on what children can see in their classroom after making one right-angle turn clockwise.
 - Answers will vary depending on what children can see in their classroom after making three right-angle turns anticlockwise. They should notice that they are facing the same direction and so the descriptions in a) and b) should be the same.
- She is facing **west**.
 - She could be facing **east** or **west**.
 - She was facing **south-west** (SW).
 - She could make one right-angle turn anticlockwise or three right-angle turns clockwise.

Start	1 turn	2 turns	3 turns	4 turns

Start	1 turn	2 turns	3 turns	4 turns

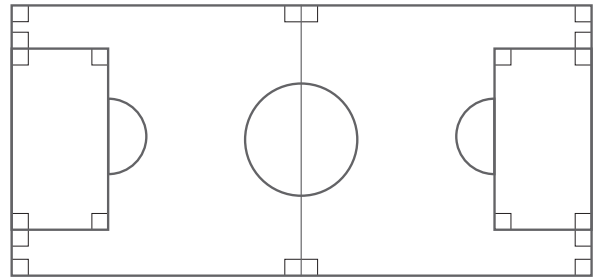
Reflect

Children should make four right-angle turns in a row and notice that they are facing the same direction as when they started.

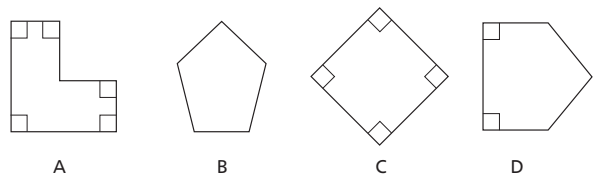
2 Right angles in shapes

→ pages 91–93

- Children should correctly identify and mark the 20 right angles, as shown:

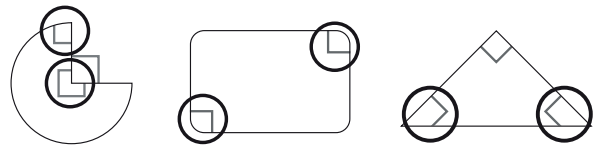


- Children should correctly mark the right angles for each shape, as shown:

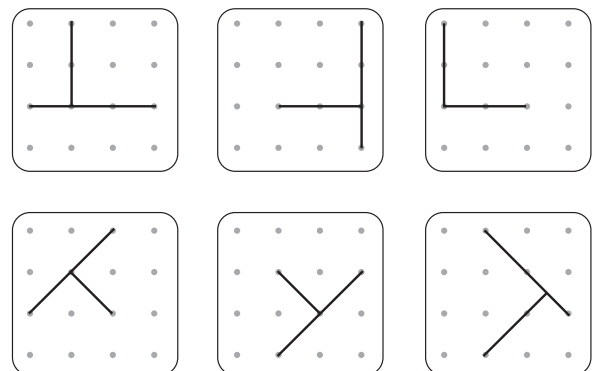


Shape B has no right angles.

- Children should correctly identify and circle the incorrect right angles, as shown:



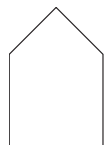
- Children should accurately draw lines on each diagram that are perpendicular to the existing lines, for example:



- Children should describe where they can see right angles in their classrooms, for example: the corner of a desk, the corner of a textbook, the corner of the whiteboard, the corner of the window or door.
- Ambika's shape is the shape in the top right-hand corner of the grid.

Reflect

Children should accurately draw one shape with three right angles, for example:





3 Compare angles

→ pages 94–96

- Angle 1: Less than a right angle
Angle 2: Greater than a right angle
Angle 3: A right angle
- Children should complete the table by drawing any three angles that are less than a right angle in the top row and any three angles that are greater than a right angle in the bottom row.
They do not need to measure their angles but they could use a right-angle checker to check their drawings.
- Obtuse Acute Obtuse
- Children should use the pinboard dots to help them draw three acute angles, three obtuse angles and three right angles.
- Check children's predictions.
Actual numbers are: **12** acute angles, **6** right angles, **8** obtuse angles

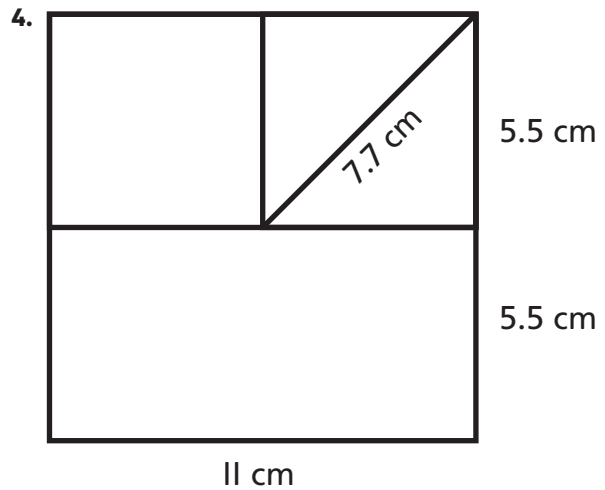
Reflect

Children should identify and describe where they can see acute and obtuse angles in their school.
For example, the angle that an open door makes, the angle that an open pair of scissors makes, the angles at the corner of desks if they are not right angles, the angles where two walls meet, if the room is not a rectangle.

4 Measure and draw accurately

→ pages 97–99

- A = 3 cm, B = 4 cm, C = 5 cm
Children should accurately draw the lines to match each of the lines that they measure.
- Children should draw two lines to split the 15 cm wide box into three squares, each measuring 5 cm × 5 cm.
- The missing lengths for shape A are **30 mm** and **40 mm**.
The missing lengths for shape B are **24 mm** and **36 mm**.
The missing lengths for shape C are **23 mm** and **38 mm**.
Children should correctly draw the shapes to match each of the shapes that they measure.
 - Children are likely to say that: Shape **A** is most accurate because the missing side lengths are a whole number of centimetres and so are easier to draw.
Children are likely to say that: Shape **C** was the most difficult to draw accurately because it had the greatest number of sides.



Reflect

Children's explanations will vary, for example:
Step 1: Use a ruler and a pencil.
Step 2: Look for 5 cm on the ruler and use the pencil to draw a line to this mark.
Step 3: Look for another 5 mm and increase the line by this amount. You now have a line that is 5 cm and 5 mm in length.

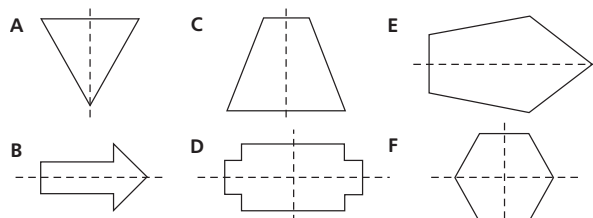
5 Horizontal and vertical

→ pages 100–102

- neither horizontal neither vertical
- There are 2 horizontal lines and 8 vertical lines.
- Children should complete the table with the correct lines, for example:

A	B	C

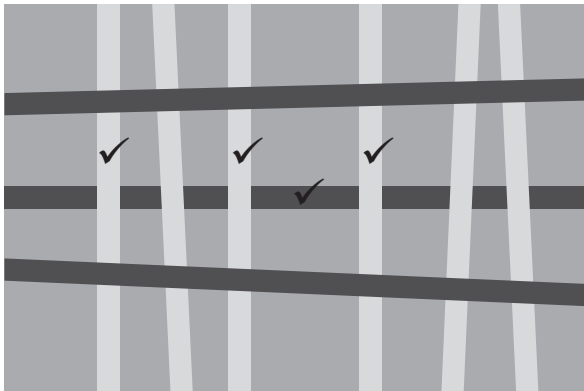
- Children should correctly draw lines on the shapes, as shown:



- To change a vertical line into a horizontal line, it would need to turn 90° (or one right-angle turn) either clockwise or anticlockwise.
To change a horizontal line into a vertical line, it would need to turn 90° (or one right-angle turn) either clockwise or anticlockwise.



6. Children should correctly identify and tick the vertical and horizontal lines, as shown:



Reflect

Children should describe where they might see something that is horizontal or vertical outside of the classroom. For example: a flat road or pavement could be horizontal, or the wall of a building could be vertical.

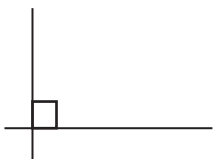
6 Parallel and perpendicular

→ pages 103–105

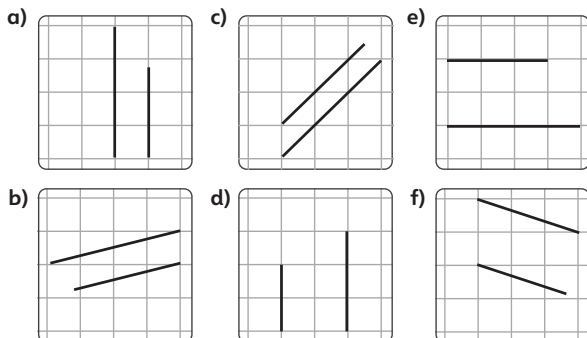
1. Children should correctly draw parallel lines, for example:



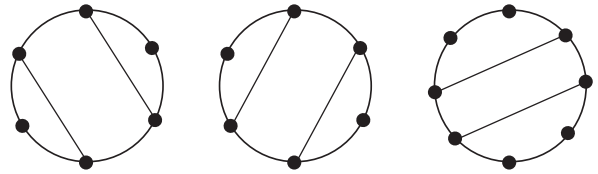
2. Children should correctly draw perpendicular lines, and mark each right angle, for example:



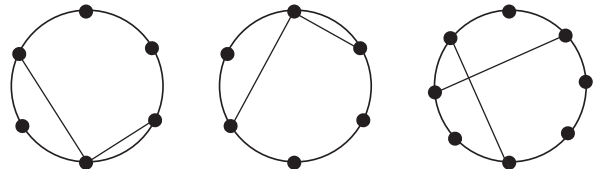
3. a) and d) should be ticked.
 4. Children should draw lines on each diagram that are parallel to the existing lines but different in length, for example:



5. a) Children should draw a pair of lines on each diagram that are parallel to each other, for example:



- b) Children should draw a pair of lines on each diagram that are perpendicular to each other, for example:



Reflect

Children's answers will vary; for example: parallel lines never meet and perpendicular lines meet at a right angle.

7 Recognise, draw and describe 2D shapes

→ pages 106–108

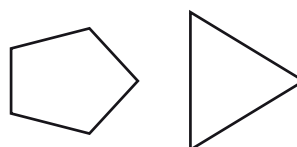
1. Triangle Pentagon Rectangle Hexagon
 2. E is not a quadrilateral because it has 6 sides. It is a hexagon.
 3. Children should accurately draw three different pentagons. Check each shape has five sides.
 4. a) Shapes that need to include two horizontal and two vertical lines:



- b) Shapes that need to include a pair of perpendicular sides but no parallel lines:



- c) Shapes that have no parallel or perpendicular sides but need to have one line of horizontal symmetry:





5. Children should draw different quadrilaterals and discuss the shapes with a partner. Check that all shapes have four sides.

Reflect

A rectangle has four sides, two pairs of parallel sides and perpendicular sides, and four right angles.

8 Recognise and describe 3D shapes

→ pages 109–111

1. a) cube
 b) square-based pyramid
 c) cuboid
 d) sphere
 e) triangular prism
 f) cylinder

2.

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

3.

4.

	More than one rectangular face	One rectangular face
Prism	B D	
Not a prism	C	A

5. Children's answers will vary, for example:
 I notice that both the shapes have at least one rectangular face and all their sides are symmetrical. The cuboid has 6 faces and 12 edges. All the sides of the cuboid have two pairs of parallel sides but the pyramid has no parallel sides.

Reflect

A cube has:
 6 identical square faces
 8 vertices
 12 edges all the same length

9 Make 3D shapes

→ pages 112–114

1. a) **6** cubes c) **6** cubes e) **5** cubes
 b) **8** cubes d) **6** cubes f) **6** cubes
2. Reena has made 4 different cuboids.
 ($1 \times 2 \times 4$, $1 \times 2 \times 3$, $2 \times 2 \times 4$ and $2 \times 2 \times 3$)
3. a) **12** sticks **8** marshmallows
 b) **8** sticks **5** marshmallows
 c) **6** sticks **4** marshmallows
4. The triangular prism and the square-based pyramid should be circled.
5. You need 9 sticks and 6 marshmallows. Join three sticks together to make an equilateral triangle. Repeat so you have two equilateral triangles. Join these two equilateral triangles together using one stick to connect each matching vertex, so three sticks in total.

6.

Sticks	9	12	15	18
Marshmallows	6	8	10	12

The number of marshmallows needed is twice the number of sides that each end face has. The number of sticks needed is three times the number of sides that each end face has.

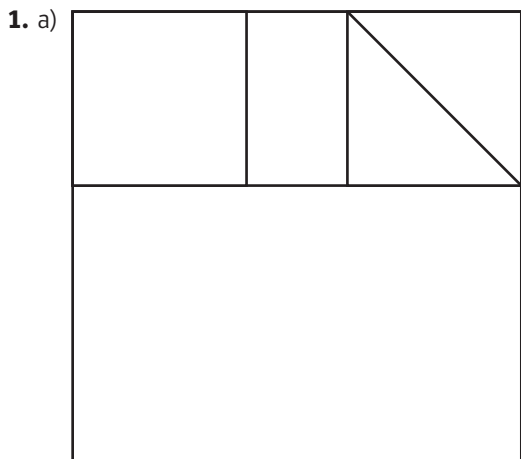
Reflect

Answers will vary. Children should list the three most important things that they have learnt in the unit.

End of unit check

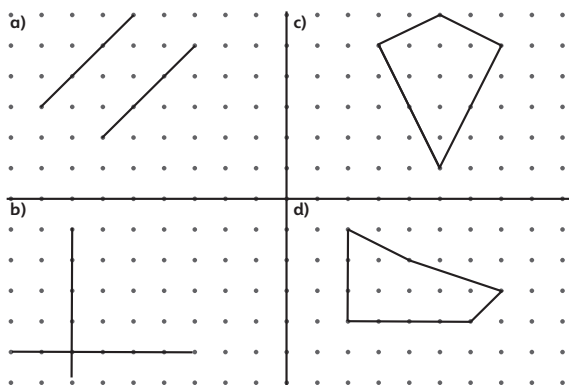
→ pages 115–117

My journal



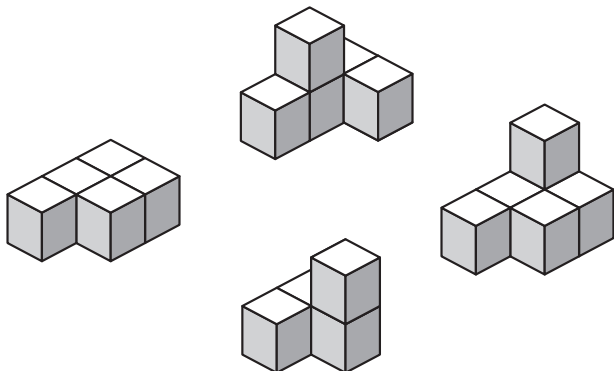
b) Children’s answers will vary but should include an explanation using the words vertical, horizontal, parallel, angle, right angle and measure.

2. Children should follow the instructions to draw lines and shapes on the grid, for example:



Power play

Children should build 3D shapes using cubes. The 3D shapes should have no symmetry. Some examples are given in the Practice Book:





Unit 15 – Statistics

I Interpret pictograms (I)

→ pages 118–120

1. a) Each symbol represents 2 children.
 $4 \times 2 = 8$
8 children said their favourite fruit was an apple.

b) Each symbol represents 2 children.
 $3 \frac{1}{2} \times 2 = 7$
7 children said their favourite fruit was a banana.

2. a) **Flapjack** was most popular.

b) 1 symbol represents 10 children.
30 children chose flapjack as their favourite snack.

c) 1 symbol represents 10 children.
15 children chose popcorn as their favourite snack.

d) 1 symbol represents 10 children.
5 children chose cheese straws as their favourite snack.

3. 1 symbol represents 2 animals.
31 animals are on the farm.

4. a) Wednesday

b)

Monday	20
Tuesday	14
Wednesday	25
Thursday	15

5. Richard has used different symbols; suitcases are not all the same size; there is no key; symbols are not regularly spaced; Caribbean and USA do not match 1 suitcase = 10 people; pictogram has no title.

Reflect

Children’s answers will vary. The key is important for a pictogram because it shows how many units are represented by a symbol.

2 Interpret pictograms (2)

→ pages 121–123

1. a) There are 4 symbols for Greece and 2 for France.
 $4 - 2 = 2$
 1 symbol represents 10 people.
 $2 \times 10 = 20$
20 more people said Greece was their favourite destination.

b) **65** people chose Greece or Portugal.
 Greece = $4 \times 10 = 40$
 Portugal = $2 \times 10 + 5 = 25$
 $40 + 25 = 65$

c) **100** people were asked in total.

d) Children’s answers will vary.

2. a) **3** children in Year 2 read sci-fi books.

b) **12** children in Year 3 read comedy books.

c) **20** children read history books.

d) **3** children in Year 3 read adventure books.

e) Ebo is incorrect.
 19 children in Year 2 read comedy books and 12 children in Year 3 read comedy books.
 Therefore more children in Year 2 read comedy books than children in Year 3.

3. a) **Posh Squash** orangeade contains the least sugar.

b) Isla could make sure the symbol represents the same amount of sugar in each pictogram to make the pictograms easier to compare. Isla could also choose a different shape to make sure the pictograms are clearer.

Reflect

Children’s answers will vary. For example: Pictograms need a key, a title and consistently sized and spaced pictures.

3 Draw pictograms

→ pages 124–126

1. Children will need to draw a pictogram with circles representing each person.
 Each circle = 1 person so they will need to draw 7 circles for football, 5 circles for athletics, 2 circles for tennis and 6 circles for rounders.

2. Children should complete the pictogram as follows:
 orange will need $3 \frac{1}{2}$ symbols, apple will need 2 symbols and blackcurrant will need $2 \frac{1}{2}$ symbols.



3.

Treat	Number of children
cake	20
chocolate bar	10
chewy sweets	15
fruit	5
yoghurt	25

Treat	Number of children
cake	
chocolate bar	
chewy sweets	
fruit	
yoghurt	

Key: Each represents 5 children.

4. Children’s pictograms will vary. They should draw a pictogram where each symbol, such as a circle, represents one child.

Item	Number of items sold
Coffee	8 symbols
Tea	5 symbols
Sandwich	7 symbols
Cake	3 symbols

Key: Each symbol represents 1 child.

Reflect

Children’s answers will vary. Kate is correct as one symbol represents the same number of items in each pictogram to make the pictograms easier to compare. However if there are a lot of items it is better to use one symbol to represent multiple items.

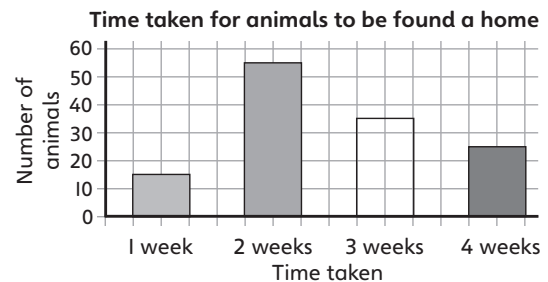
4 Interpret bar charts (1)

→ pages 127–129

- There are **14** cats.
 - There are **11** dogs.
 - There are more rabbits than dogs as the bar chart is higher for rabbits.
 - There are **44** animals altogether.
- Sunday** had the most visitors.
 - 30** people visited on Monday.
 - 55** people visited on Sunday.
 - Emma is incorrect because 55 people visited on Sunday. On Saturday there were less than 55 people but more than 50 people.

3.

1 week	15 animals
2 weeks	55 animals
3 weeks	35 animals
4 weeks	25 animals



Reflect

Max is incorrect. Baxter has 35 sponsors while Megan has 30. So Baxter has 5 more people sponsoring him than Megan.

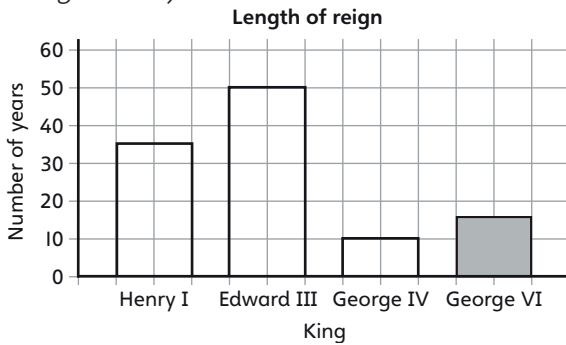
5 Interpret bar charts (2)

→ pages 130–132

- $8 - 4 = 4$
4 more kings have been called Henry than William.
 - $6 - 3 = 3$
3 more kings have been called George than Richard.
 - Edward and Henry (either order)
 - Alex is correct.
Henry was the name of 8 kings; the number of kings named Richard and William totalled 7, which is less.



2. a) From bottom to top: **0, 2, 4, 6, 8, 10**
b) **7**
3. a) **10** more children said yes compared with adults.
b) **35** people in total were not sure.
c) Class 3 asked **105** children in total.
4. Bars should be drawn on to the chart to show the following reigns:
Henry I = 35 years
Edward III = 50 years
George IV = 10 years



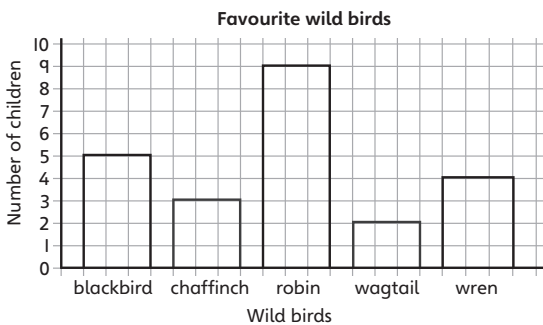
Reflect

Children's answers will vary; for example:
I agree because it is easy to count squares and multiply to work out the value of each bar.

6 Collect and represent data in a bar chart

→ pages 133–135

1. Bar chart completed using table data:



All bars should be separated by a least one square.
All bars should be the same width, ideally drawn with a ruler.

2. Children should draw a bar chart with a bar showing 16 for the number of boys and a bar showing 13 for the number of girls.
All bars should be separated by a least one square.
All bars should be the same width, ideally drawn with a ruler.

3. a)

Car colour	Tally	Number
black	### I	6
grey		4
blue		3
white	###	5
red		2

- b) Children should correctly draw a bar chart representing the number for each colour on the bar chart.
4. Children should correctly draw a bar chart representing the number for each item on the bar chart.

Reflect

Children's answers may vary.

All bars should be separated by a least one square.
All bars should be the same width, ideally drawn with a ruler.

A bar chart must have the number of items going up the vertical scale and the different items along the horizontal scale.

7 Simple two-way tables

→ pages 136–138

1. Becky, Kieron, Louise, Jamal (in order of fewest cups to most cups of tea).
2. a) **Becky** drank the most glasses of water.
b) Becky and Louise drank **93** glasses of water.
c) Jamal drank **5** glasses of water a day.
d) Becky drank **8** more glasses of water than Kieron.
3. a) **Adam** was the tallest child in January.
Noah was the shortest child in January.
b) **Adam** was the tallest child in December.
Rani was the shortest child in December.
c) Noah grew **6** cm between January and July.
d) The difference between the heights of Rani and Adam in December was **8** cm.
4. Children's answers will vary; for example:

	Tennis ball	Squash ball	Golf ball
Wood	120 cm	80 cm	140 cm
Sand	90 cm	100 cm	70 cm



5.

Amount of money spent each week			
Family	Food	Non-food	Total
Morgan	£65	£30	£95
Tan	£90	£30	£120
Agg	£95	£15	£110

Pictogram completed to show Morgan family with **6** circles.

Bar chart completed to show Tan family spent **£30**.

Reflect

Children’s answers will vary; for example: I disagree because it is easy to compare information on bar charts by just looking at the heights of the bars.

End of unit check

→ pages 139–141

My journal

1. Izzy is not correct. She sold 45 caramel ice creams and 35 vanilla ice creams, which is 10 more caramel ice creams.
2. Children’s answers will vary; for example: 145 ice creams were sold altogether. Izzy sold fewer raspberry ice creams than any other flavour. The most popular flavour was caramel.

Power puzzle

1. Numbers missing from vertical axis: 6 and 10
Fruit, from left to right: apple, banana, kiwi, strawberry, raspberry
2. Children should correctly create a pictogram, for example:

Fruit	Number of children
raspberry	7 symbols
strawberry	9 symbols
kiwi	3 symbols
banana	6 symbols
apple	11 symbols

Key: Each symbol represents 1 child.

Children should also complete their own survey and create their own pictogram and bar chart.