> Workbook answers

Exercise 1.1

1 a −7 b 1 c −5 d 5

2 a −2 b −9 c 9 d 1

3
+	4	−5
2	6	−3
−6	−2	−11

4 a 15 b −25 c −15 d 17

5 a 25 b 5 c 11 d −23

6 a −7 b 6 c 4 d −10

7 a 9 b 5 c 2 d −3

8 a 4 b 17 c −20 d 6

9 a −80 b 200 c −800 d −90

10 −6

11 Two possible answers: −2 or 4.
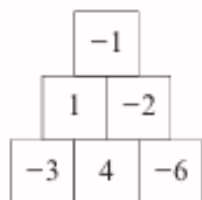
12 a −3+4=1   b −5+3=−2

    c 5+−2=3

13
+	3	−4
2	5	−2
−2	1	−6

14
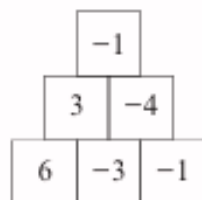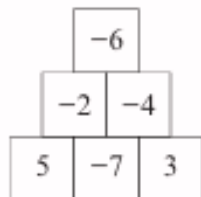| −	−4	6	2
3	7	−3	1
−3	1	−9	−5

15 a

b

16

One method is to try different numbers in
the bottom square. Try to get closer to −6
each time.

Exercise 1.2

1 a −30 b −36 c −55 d −49

2 a −12 b −4 c −5 d −7

3
×	4	7
−2	−8	−14
−6	−24	−42

4 a −12 b −30 c −28 d −30

5 a −3 b −7 c −2 d −6

6 a −8 b −3 c 13 d 5

7 a 9 b −4 c −36 d 32

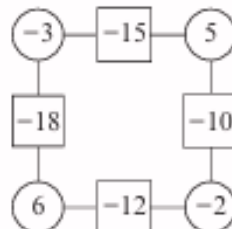8 a −12 b 21 c 8 d −3

9 a −1200 b −900 c −1200 d −200

10 a −2 and 9; 3 and −6; −3 and 6; 1 and −18;
       −1 and 18

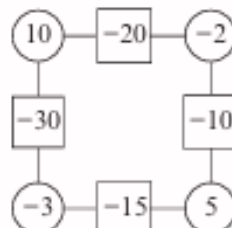   b There are two more, as listed in part a.

11
×	6	4
−5	−30	−20
−8	−48	−32

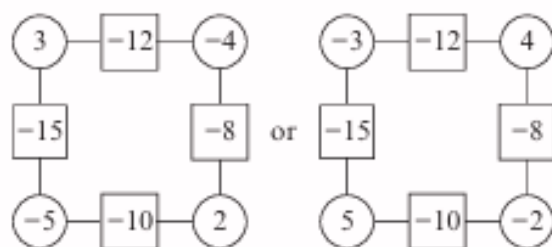12 a i

ii −55

    b i

ii −75

13 a

b There are two solutions.

14 a $(3 + -5) \times 4$ or $(-5 + 3) \times 4$

b $(-4 + 7) \times 2 = 6$. The other possibilities are negative numbers.

15 a -1 and 20 have a sum of 19.

b -1 and 30 have a sum of 29.

c For any negative integer, the largest possible sum is the corresponding positive integer -1. For example: For -15, the largest sum is $15 - 1 = 14$.

Exercise 1.3

1 a 4, 8, 12, 16   **b** 7, 14, 21, 28

    c 12, 24, 36, 48   **d** 30, 60, 90, 120

2 9

3 a 8, 16, 24, 32, 40, 48

    b 5, 10, 15, 20, 25, 30, 35, 40, 45

    c 40

4 a 6, 12, 18, 24, 30   **b** 6   **c** 6

5 a 12, 24, 36   **b** 12   **c** 12

6 a 30   **b** 20   **c** 10

7 The multiples of 3 are 3, 6, 9, 12, 15, . . . The multiples of 5 are 5, 10, 15, . . . So 15 is the lowest common multiple and the multiples of 15 are common multiples.

8 42

9 a i 14   **ii** 28   **iii** 42

    b Multiply the two numbers.

    c It works unless the other number is a multiple of 7. For example: it works for 7 and 8, or 7 and 9, or 7 and 10, but not for 7 and 14, or 7 and 21.

10 a i 90   **ii** Yes

b i 98   **ii** No; the LCM is 14.

c i 96   **ii** No; the LCM is 24.

11 30

12 72

13 a Because $96 \div 4 = 24$ and $96 \div 24 = 4$.

    b No; the LCM is 24 because $24 = 6 \times 4$.

14 5 and 9

15 1 and 63; 7 and 9

Exercise 1.4

1 a 1, 3, 7, 21   **b** 1, 2, 4, 8, 16, 32

    c 1, 2, 5, 10, 25, 50

    d 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

    e 1, 43

2 a 1, 3, 17, 51   **b** 1, 2, 4, 13, 26, 52

    c 1, 53   **d** 1, 2, 3, 6, 9, 18, 27, 54

    e 1, 5, 11, 55

3 a 1, 2, 4   **b** 4

4 a 1, 3, 5, 15   **b** 15

5 a 3   **b** 9   **c** 18

6 a 9   **b** 25   **c** 8   **d** 1

7 a 7   **b** 5   **c** 14

8 a 8   **b** $\frac{4}{5}$

9 a 13   **b** $\frac{4}{7}$

10 5 and 30; 10 and 25; 15 and 20

11 a $8 = 4 \times 2$ and $12 = 4 \times 3$

    b 8 is the HCF because $16 = 2 \times 8$.

    c 8 and 20; 8 and 28; 12 and 16; 12 and 20; 12 and 28; 16 and 20; 16 and 28; 24 and 28

12 3 or 6 or 12 or 15 or 21 or 24 . . . Any multiple of 3 that is not a multiple of 9.

13 a i 1   **ii** 1   **iii** 1

    b The HCF of two consecutive numbers is 1.

    c The LCM of two consecutive numbers is the product of the numbers. For example: the LCM of 4 and 5 is 20.

⟩ Learner's Book answers

Unit 1 Getting started

1 −7, −5, 0, 3, 6, 9

2 9, 18, 27, 36, 45

3 1, 3, 5, 15

4 5^2

Exercise 1.1

1 a 1   b −4   c −8   d 4

2 a −6   b 8   c −10   d 2

3 a −2   b 10   c 2   d −10

4 a 4   b −2   c −10   d −6

5 −9

6 a For example: 1 and 0; 2 and −1; 3 and −2; 4 and −3; 5 and −4

   b One integer will be positive and the other integer will be zero or negative. If you ignore the − sign, the difference between them is 1 and the − sign is on the smaller integer.

7 a Learners could check this with some particular values for the two integers. They could use one positive integer and one negative integer or they could make them both negative integers.

   b Only if the answer is zero, otherwise they have different signs.

8

+	−4	6	−2
3	−1	9	1
−5	−9	1	−7

9 Missing numbers from top to bottom.

   a −6, −4   b −3, −5, 2

   c −12, −2, −10   d 1, 5, −4

   e −1, 7, −8

Reflection: You have to work backwards from the answer or do a subtraction.

10 a 5   b −12   c 10   d −19

11 a −40   b −130   c 1200   d −700

12 a i   −4   ii   −4

       iii −4   iv   −4

   b Three numbers can be added in any order. It is true for any three integers.

13 a

+	−5	7
4	−1	11
−3	−8	4

   b −1 + 11 + −8 + 4 = 6

   c 4 + −3 + −5 + 7 = 3

   d **b** = 2 × **c** (6 = 2 × 3)

Reflection: Learner's own answer.

14 a There are three possible answers. They are 2, −13 and 17.

   b Learner's own check.

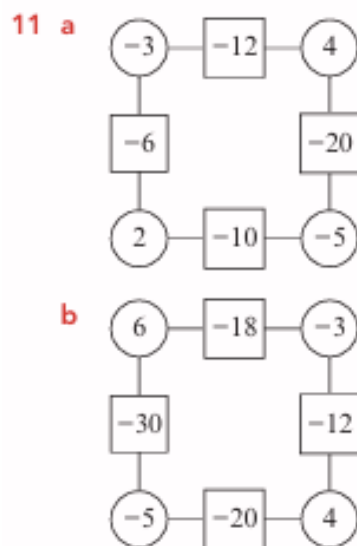## Exercise 1.2

1 a −6   b −35

   c −40   d −36

2 a −5   b −5   c −6   d −3

3 a −2   b −6   c 7   d 5

4 a 4   b −2

   c −16   d −20

5 There are four possible pairs: 2 and −5; −2 and 5; 1 and −10; −1 and 10.

Reflection: First, find all the pairs of numbers with a product of 10. Then think about if the sign is positive or negative.

6

×	−3	−5
5	−15	−25
7	−21	−35

7 **a** −21 **b** −50 **c** −8 **d** −4

8 **a** −200 **b** −1800 **c** −360 **d** −100

9 **a** −12 **b** −24

c −30 **d** −20

10 **a** The missing numbers are: −5, −4, −2.

b Add −20 ÷ 1 = −20 and −20 ÷ 20 = −1.

c The lines can be in any arrangement. Learner's own diagram.

d Learner's own check.

11 **a**

b

12 There are four possible answers. Going clockwise from the top left-hand circle, the possible answers are: 1, −10, 3, −8; −1, 10, −3, 8; 2, −5, 6, −4; −2, 5, −6, 4.

Exercise 1.3

1 **a** 5, 10, 15, 20, 25

b 10, 20, 30, 40, 50

c 7, 14, 21, 28, 35

d 12, 24, 36, 48, 60

2 **a** 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39

b 5, 10, 15, 20, 25, 30, 35

c 15, 30

3 **a** 12, 24, 36, 48 **b** 12

4 24

5 30

6 56

7 **a** 4 × 7 = 28 is a multiple of 4 and 7.

b 6 × 5 = 30 is a multiple of 6 and 5.

c It is always true. A × B is a multiple of A (B times) and of B (A times).

d It is sometimes true but not always true. It is true when A = 4 and B = 7, then A × B is 28 and this is the LCM.

A counterexample is when A = 6 and B = 4, then A × B = 24 but the LCM is 12.

8 12

9 36

10 There are two possible answers: 1 and 21; 3 and 7.

11 There are four possible answers: 1 and 30; 2 and 15; 3 and 10; 5 and 6.

Reflection: Learner's own answer.

Exercise 1.4

1 **a** 1, 2, 3, 4, 6, 8, 12, 24

b 1, 2, 5, 10, 25, 50

c 1, 3, 5, 9, 15, 45

d 1, 19

2 **a** 1, 3, 11, 33 **b** 1, 2, 17, 34

c 1, 5, 7, 35 **d** 1, 2, 3, 4, 6, 9, 12, 18, 36

e 1, 37

3 **a** 1, 2, 3, 6 **b** 6

4 **a** 4 **b** 6 **c** 12

5 **a** 6 **b** 1 **c** 2 **d** 7

6 **a** 10 **b** 20 **c** 30

7 **a** 7 **b** $\frac{5}{8}$

Reflection: For example: If you divide the numerator and the denominator by the highest common factor, you have the fraction in its simplest form.

8 a 1

b You simplify $\frac{25}{36}$ by dividing 25 and 36 by a common factor. Since 1 is the only common factor, the fraction cannot be simplified.

9 9

10 a There are four possible pairs: 12 and 28, 12 and 32, 16 and 28, 16 and 36.

b Learner's own answer.

11 a 4   **b** 24   **c** $8 \times 12 = 96$

d $HCF \times LCM = 96$

e The answers are equal. This is always true.

f Learner's own answer.

12 a 3 is a factor of both numbers, so each number is a multiple of 3.

b 45 is a multiple of both numbers, so each number is a factor of 45.

c 9 and 15

d Learner's own answer.