**Answer key (unit 2) learner's book:**
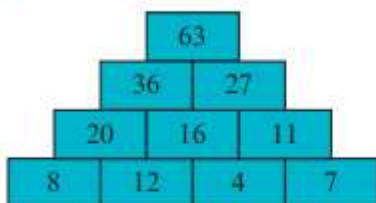
## Unit 2 Getting started

1  a  19    b  14    c  −2    d  −3
   e  32    f  5     g  −16   h  −12
2  a  13    b  84    c  13    d  1
   e  21    f  4     g  −20   h  0
3  a  2     b  6     c  10    d  11
   e  −5    f  3
4  a  $9.14   b  $12.20
5



| | 63 | |
| 36 | | 27 |
| 20 | 16 | 11 |
| 8 | 12 | 4 | 7 |

## Exercise 2.1

1  a  $n+2$    b  $n-3$
2  Learner's own answers.
3  a  $t+2$
   b  $2t$
   c  $\frac{t}{2}$ or $t \div 2$
4  a  $x+6$    b  $m+b$    c  $3g$
5  a  $6x+1$    b  $4x-9$
   c  $\frac{x}{6}-1$    d  $\frac{x}{2}+7$
   e  $25-2x$
6  a  i  $3y$
      ii  $\frac{y}{2}$ or $y \div 2$
      iii  $4y+1$
      iv  $2y-5$
      v  $52-5y$
      vi  $\frac{y}{4}+3$ or $y \div 4 + 3$
   b  Learner's own answers.

## Activity 2.1

Learner's own answers.

7  a  order of operations
   b  Equivalent to $2n+3$ is: A, D, G, K.
      Equivalent to $2n-3$ is: B, I.
      Equivalent to $3n+2$ is: C, H, J, L.
      Equivalent to $3-2n$ is: E, F.
8  a  Pedro multiplied instead of adding.
      Correct answer is $\$t+\$s$.
   b  He has confused two T-shirts and four shirts with four T-shirts and two shirts. Correct answer is $\$4t+\$2s$.
9  a  $2t+4b$, where $t=$ cost of a taco, $b=$ cost of a burrito.
   b  $8x+5y$, where $x=$ cost of a lemon cake, $y=$ cost of a carrot cake.
   c  $12g$, where $g=$ cost of a gold coin.
   d  $15s$, where $s=$ cost of a silver coin.
10  a  $x+y$ or $y+x$    b  $y-x$
    c  $m+2n$ or $2n+m$    d  $3b-a$
    e  $pq$    f  $4gh$
11  $6x-(2y+3)$ or $6x-2y-3$

## Exercise 2.2

1  a  22    b  8    c  7    d  20
   e  35    f  40
2  a  8    b  11    c  11    d  75
   e  15    f  11    g  31
   h  8    i  3    j  15
3  a  For every day, there are 24 hours.
   b  $h=24d$    c  120 hours
4  a  i  number of minutes $= 60 \times$ number of hours
      ii  $m=60h$
   b  300 minutes

**5** **a** **i** Amount each pays = total cost ÷ five

    **ii** $a = \frac{c}{5}$ or $a = c \div 5$

  **b** $17

**6** **a** $T$ = total pay, $h$ = hours worked

  **b** Total pay = 9 × number of hours worked

  **c** $270

**7** **a** $C$ = cost per week, $p$ = cost of petrol, $i$ = cost of insurance

  **b** Cost per week = cost of petrol + cost of insurance

  **c** $32

**8** **a** **i** $153   **ii** $142

  **b** $205, $P = M + E$

**9** **a** 21         **b** 36

  **c** 5         **d** 8

**10 a** If $x$ is the cost of an adult ticket, then $y$ is the cost for a child ticket. But if $x$ was actually the cost of a child ticket, then $y$ would be the cost for an adult ticket.

    $x$ can represent the cost of either the adult ticket or the child ticket, and $y$ represents the other ticket.

  **b** $C = a + c$, or still use $x$ and $y$, but write down what each letter represents.

**11 a** No; $p$ has to be the large piece because the small piece is taken (i.e. subtracted) from it.

  **b** $W = l - s$, or still use $p$ and $q$, but write down what each letter represents.

**12** $k = 5$

**Reflection:** Learner's own answers.

## Exercise 2.3

**1** **a** $4a$      **b** $3b$      **c** $2a + b$

  **d** $2a + 2c$ or $2(a + c)$

  **e** $3a + 2b$

  **f** $b + 2c$

**2** a and v; b and iv; c and i; d and vi; e and ii; f and iii

**3** **a** $5x$   **b** $6y$   **c** $8d$   **d** $13t$

  **e** $14g$   **f** $16p$   **g** $3w$   **h** $7n$

  **i** $4b^2$   **j** $5f$   **k** $3j$   **l** $k^3$

**4** **a**



  **b**
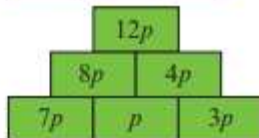


**5** **a** $10x + 15y$   **b** $2d + 2h$   **c** $5g + 3$

  **d** $5p + 13t$   **e** $3a + 2b - 3c$

**6** **a** $5a + 5b$   **b** $8c + 3d$

  **c** $7t + 10$   **d** $4m + 4n$

  **e** $6k + 3f$   **f** $5q + 8$

  **g** $5r + 3s + 5t$   **h** $6 + 3h + 5k$

**7** $xy$ means $x \times y$ and $yx$ means $y \times x$, so $xy = yx$.

  **a** $7xy$ or $7yx$

  **b** $5pq + 4de$ or $5qp + 4ed$
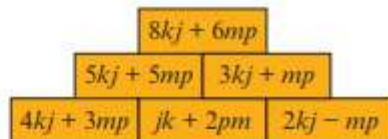
**8** **b** $8st + 16pu$     **c** $6bv + 2ad$

  **d** $9rt + 2gh$     **e** $11xy + 3xz$

  **f** $4a + 8ac$     **g** $mn$

**9** **a** The '$8x + 4$' is correct, but you cannot add $8x$ to 4, so $8x + 4$ is the answer.

  **b** Dai added $2bc$ to the $3bc$, when he should have subtracted. Also, you can simplify $5bd + 3db$ to $8bd$. Correct answer is $bc + 8bd$.
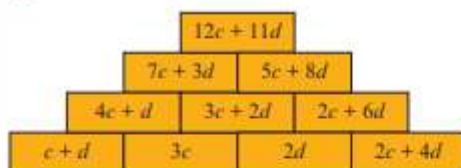
**10**



## Activity 2.2

Learner's own answers.

**11**



| $12c + 11d$ | | |
| $7c + 3d$ | $5c + 8d$ | |
| $4c + d$ | $3c + 2d$ | $2c + 6d$ |
| $c + d$ | $3c$ | $2d$ | $2c + 4d$ |

Marcus is incorrect. Every block can be filled in by working backwards.

**12 a** Learner's own answers.

   **b i** $\frac{9a}{8}$   **ii** $\frac{y}{3}$   **iii** $\frac{x}{4}$

**13 a** $\frac{5a}{4}$   **b** $\frac{16b}{15}$   **c** $\frac{7c}{3}$

## Exercise 2.4

**1 a** $2x + 18$      **b** $3y - 3$

  **c** $28 + 4p$     **d** $5q - 15$

**2 a** Advantages: good if you like multiplication boxes, easy method to follow.

    Disadvantage: takes a long time to draw the grid.

  **b** Advantages: quick way to show workings, easy method to follow.

    Disadvantages: must draw the arcs to show workings and to check all parts have been multiplied.

  **c** Advantages: easy method to follow.

    Disadvantages: takes a long time to show all workings.

  **d** Learner's own answer.

**3 a** $3y + 18$   **b** $4w + 8$

  **c** $5z + 25$   **d** $3b - 3$

  **e** $6d - 54$   **f** $2e - 16$

  **g** $12 + 6f$   **h** $2 + 2g$

  **i** $27 + 9i$   **j** $12 - 6x$

  **k** $2 - 2y$   **l** $35 - 5p$

**4 a** $4x + 2$      **b** $15y - 10$

  **c** $14g + 63p$   **d** $16q - 44 + 4r$

**5 a** $6x + 3$      **b** $12y + 20$

  **c** $10w + 15$   **d** $24z + 42v + 54$

**e** $6b - 8$      **f** $8c - 12$

**g** $30d - 6$    **h** $24e - 48 + 16f$

**i** $3a + 6f$      **j** $15b + 20g$

**k** $42c - 49h$   **l** $45 + 27h - 36i$

**6 a** Bethan did $4 + 4$ when it should be $4 \times 4$. Correct answer is $4x + 16$.

  **b** Bethan forgot to multiply the $-3$ by 2. Correct answer is $12x - 6$.

  **c** Changed the $-$ to a $+$. Correct answer is $6 - 15x$.

  **d** You can't subtract $6x$ from 12. Correct answer is $12 - 6x$.

**Reflection:** Learner's own answer.

**7** No; three of the expanded expressions give $30 + 24x$, but $4(6x + 26)$ expands to give $104 + 24x$.

**8 a** $3(4b + 5)$ and $3(5 + 4b)$ are the same as $12b + 15 = 15 + 12b$.

  **b** $2(5c - 1)$ and $2(1 - 5c)$ are not the same as $10c - 2 \neq 2 - 10c$.

**9 a** $24y + 32 \, \text{cm}^2$   **b** $6y + 24 \, \text{cm}$

**10** $(8k - 14m)°$

**11 a** $4x + 27$  **b** $12x + 21$  **c** $3 + 6x$

## Exercise 2.5

**1 a** $x = 4, 4 + 6 = 10$

  **b** $x = 16, 16 - 6 = 10$

  **c** $x = 5, 2 \times 5 = 10$

**2 a** $x = 7$  **b** $x = 3$  **c** $x = 13$

  **d** $x = 12$  **e** $x = 13$  **f** $x = 10$

  **g** $x = 26$  **h** $x = 48$  **i** $x = 4$

  **j** $x = 6$  **k** $x = 10$  **l** $x = 6$

**3 a** $y = 12$  **b** $y = 7$  **c** $y = 18$

  **d** $y = 28$  **e** $y = 3$  **f** $y = 7$

**4 a** $n + 3 = 18, n = 15$

  **b** $n - 4 = 10, n = 14$

  **c** $4n = 24, n = 6$

**5 a i** I think of a number and subtract 8. The answer is 3.

**ii** I think of a number and add 5. The answer is 12.

**iii** I think of a number and multiply my number by 8. The answer is 96.

**b i** $n=11$  **ii** $n=7$  **iii** $n=12$

**6 a** $2-7=-5$, but $-2-7=-9$; $x=-9$

**b** Should have added 6, not subtracted; $x=4$

**c** $35\div5=7$, but $-35\div5=-7$; $x=-7$

**7 a** $a=5$  **b** $a=4$  **c** $a=5$

**d** $c=6$  **e** $c=4$  **f** $c=8$

**8 a i** $2a+8=20$  **ii** $3b+3=24$

**b i** $a=6$  **ii** $b=7$

**c** Learner's own answer.

**9 a i** $2p+1=14$  **ii** $p=6.5$

**b i** $4p-5=37$  **ii** $p=10.5$

**c i** $6p-10=26$  **ii** $p=6$

**10 a i** $n-3=26$  **ii** $n+5=18$

**iii** $2n=48$  **iv** $2a+3=35$

**b i** 29  **ii** 13

**iii** 24 km  **iv** 16 years old

## Activity 2.3

Learner's own answers.

**11 a** $2m-6$ and 44 to give $m=25$.
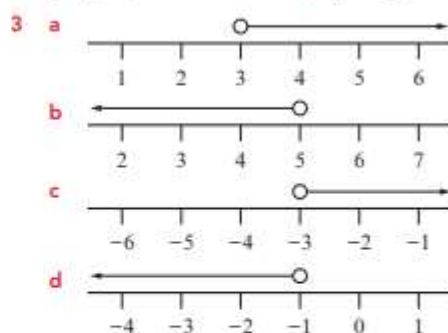
**b** $6m+2$ and 20 to give $m=3$.

All solutions are in this table.

|        | 32     | 44      | 20     |
|--------|--------|---------|--------|
| $4m+4$ | $m=7$  | $m=10$  | $m=4$  |
| $2m-6$ | $m=19$ | $m=25$  | $m=13$ |
| $6m+2$ | $m=5$  | $m=7$   | $m=3$  |

## Exercise 2.6

**1 a** $x$ is less than 10.

**b** $x$ is greater than 10.

**c** $x$ is less than $-4$.

**d** $x$ is greater than $-4$.

**2 a** $y>8$  **b** $n>-1$

**c** $p<0$  **d** $q<-2$

**3 a**


**b**


**c**


**d**


**4 a** $x>2$  **b** $x<9$

**c** $x>-1$  **d** $x<-4$

**5 a** In part i, the smallest integer must be greater than 7, which is 8.

In part ii, $x$ could be any integer greater than 7, which is 8, 9, 10, 11, …

**b** Learner's own answer.

**6 a i** 5  **ii** 5, 6, 7, …

**b i** $-6$  **ii** $-6, -5, -4, …$

**c i** 3  **ii** 3, 4, 5, …

**7 a i** $-7$  **ii** $-7, -8, -9, …$

**b i** 11  **ii** 11, 10, 9, …

**c i** 4  **ii** 4, 3, 2, …

**8 a** There is not a greatest integer because as long as $y$ is greater than the values shown, it can be any integer.

**b** There is not a smallest integer because as long as $n$ is less than the values shown, it can be any integer.

**9 g** a and C and ii; b and E and i; c and A and iv; d and D and vi; e and F and iii; f and B and v

**h** Advantage: easy to see the answer; disadvantage: takes a long time.

**i** Learner's own answer.

## Check your progress

**1**  **a**  $4n$                **b**  $n-6$

     **c**  $n+12$           **d**  $3n+5$

**2**  **a**  19   **b**  6     **c**  4

**3**  **a**  **i**  The cost each is the total electricity bill divided by four.

          **ii**  $C=\frac{b}{4}$

    **b**  $24

**4**  **a**  $3n$              **b**  $8c$

     **c**  $8x^2$           **d**  $xy+8yz$

**5**  **a**  $3x+6$        **b**  $18-6w$

     **c**  $12x+8$      **d**  $21-12v+18w$

**6**  **a**  $n=5$         **b**  $m=16$

     **c**  $p=8$         **d**  $h=9$

**7**  **a**  $n+3=22, n=19$

    **b**  $2n+4=28, n=12$

**8**  $x>6$

**Answer key (unit 2) workbook:**

## Exercise 2.1

1 a 1
  b 3
  c $c$ (or any other letter)
  d 6
  e $a$ (or any other letter)

2 a 3
  b $3, 3+2=5$
  c $b, b+2$ (or any other letter)

3 A and iv, B and iii, C and ii, D and v, E and i

4 a $t+4$  b $t-2$
  c $t+5$  d $t \div 2$ or $\frac{t}{2}$

5 a $s+2$  b $3s$
  c $s-6$  d $\frac{s}{2}$

6 a $x+2$  b $t-15$
  c $i+t$  d $2v$

7 a $6n$  b $\frac{n}{5}$  c $5n+1$
  d $7n-2$  e $\frac{n}{10}+3$  f $25-3n$

8 a $a+c$  b $a+3c$
  c $4a+c$  d $4a+5c$

9 a and vii; b and i; c and v; d and iii; e and ii; f and iv. Marcus is not correct, it should be 'Multiply $x$ by 5, then subtract from 5.'

10 a $7d+6c$, where $d$ is the number of drinks, $c$ is the number of bags of potato chips.
  b $6r$, where $r$ is the value of a ring.

11 a $g+k$  b $t-h$
  c $8x+y$  d $3ab$

12 a $v$ added to 7 times $u$
  b $d$ subtracted from 8 times $w$
  c 5 times $x$ added to 3 times $y$
  d $7p$ times $q$ or 7 times $p$ times $q$ or $7q$ times $p$

13 a $8a+15+2b-3c$
  b $8a+15-(2b-3c)$ or $8a+15-2b+3c$

14 a When $p=-12$ and $q=10$, $p+q=-12+10=-2$, but $pq=-12\times10=-120$. This is not equal to $-8$.
  b $p=2$ and $q=-4$

## Exercise 2.2

1 a E  b F  c E
  d F  e F  f E

2 a 7  b 8  c 9  d 10

3 a 4  b 5  c 6  d 7

4 A and iii; B and i; C and ii; D and v; E and iv

5 b true
  c false when $p=2, 9p=18$.
  d true
  e false when $x=12, \frac{x}{3}=4$.

6 a 16  b 117  c 20  d 25
  e 60  f 7  g 13  h 9
  i 12  j 18  k 0  l 11

7 a $80  b $144

8 a i Number of hours = number of days $\times$ 24
     ii $h=24d$
  b 96 hours

9 a i 20  ii 36
  b 13

10 a i Hours $= \frac{\text{Minutes}}{60}$  ii $H=\frac{M}{60}$
   b 6

11 a 3 hours  b 3.5 hours

12 a i 750 newtons  ii 103 440 newtons
   b i 150 newtons  ii 20 688 newtons

13 $x=4$

14 $a=3$ because $25\times3=75$ (or $75\div3=25$).

15 a $M=P\div h$ or $M=\frac{P}{h}$  b $M=14$

16 a 84 minutes or 1 hour 24 minutes
   b 280 minutes or 4 hours 40 minutes

## Exercise 2.3

1 A and iii; B and v; C and vi; D and ii; E and i; F and iv

**2 a** true    **b** false, $6d$

   **c** false, $10f$    **d** true

   **e** false, $9h$    **f** true

**3** A and ii; B and i; C and i; D and ii; E and ii

**4 a** false, $5b$    **b** true    **c** false, $5f$

   **d** true    **e** true    **f** false, $3v$

**5 a** ✓ $6p$      **b** ✗

   **c** ✗      **d** ✓ $7u$

**6 a** $3x$    **b** $2z$

   **c** $2x+y$    **d** $2z+x$

   **e** $3x+2y$    **f** $2x+2y+z$

**7 a** $4a$    **b** $7b$    **c** $11c$

   **d** $9d$    **e** $13e$    **f** $15f$

   **g** $6g$    **h** $h^2$    **i** $8i$

   **j** $6j$    **k** $4k$    **l** $y^3$

**8 a** top row $18x$, middle row $8x$

   **b** middle row $8x$, bottom row (middle) $3x$ and (right) $5x$

**9 a** $7x+5y$    **b** $10z+6a$    **c** $7a+9b$

   **d** $7x+7$    **e** $2d+2$    **f** $2f+9g$

   **g** $30+11w$    **h** $4x+6y$    **i** $4a+b$

   **j** $2w+20y$    **k** $200a+5g+30$

**10 a** $6ab+8xy$

   **b** $6rd+11th$

   **c** $11tv+4jk$

   **d** $5ej+3hy$

   **e** $3v+16rv$

   **f** $3un$

**11 a** Maddi has collected unlike terms. She should have done $2x+7x=9x$ and $8-4=4$, so answer is $9x+4$.

   **b** Maddi hasn't collected together the letters $rg$, and she has incorrectly simplified $4t-t$. She should have done $5rg+2gr=7gr$ and $4t-t=3t$, so answer is $7gr+3t$.

**12** Second row: $9a+5b$

Third row: left $3a+4b$, right $4a+3b$

Fourth row from the left: $3b$, $3a+b$, $2a+2b$

**13 a** $\frac{a}{4}$    **b** $\frac{b}{2}$    **c** $\frac{22c}{7}$

**14 a** There are many different ways to complete this diagram. Two examples are:
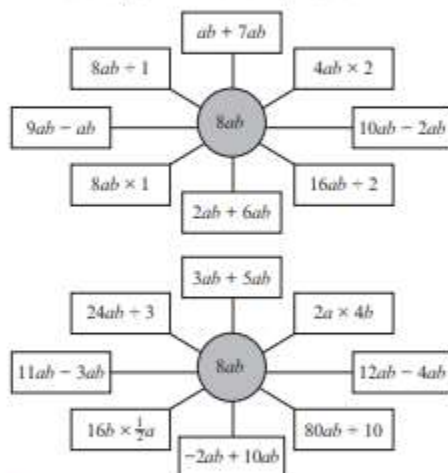


   **b** No, there are many different ways to fill in the diagram.

**15 a**

| 8 | 1 | 6 |
|---|---|---|
| 3 | 5 | 7 |
| 4 | 9 | 2 |

   **b**

| $a+b$ | $b-a-c$ | $b+c$ |
|---|---|---|
| $b+c-a$ | $b$ | $a+b-c$ |
| $b-c$ | $a+b+c$ | $b-a$ |

## Exercise 2.4

**1 a**

| × | 10 | 3 |
|---|---|---|
| 5 | 50 | 15 |

$5 \times 13 = 50 + 15 = 65$

   **b**

| × | 30 | 8 |
|---|---|---|
| 2 | 60 | 16 |

$2 \times 38 = 60 + 16 = 76$

**c**

| × | 20 | 1 |
|---|---|---|
| 7 | 140 | 7 |

$7 \times 21 = 140 + 7 = 147$

**d**

| × | 10 | 7 |
|---|---|---|
| 4 | 40 | 28 |

$4 \times 17 = 40 + 28 = 68$

**2 a** $3x$  **b** $4p$  **c** $9f$  **d** $5m$

**3 b**

| × | x | 4 |
|---|---|---|
| 3 | 3x | 12 |

$3(x+4) = 3x+12$

**c**

| × | m | 1 |
|---|---|---|
| 5 | 5m | 5 |

$5(m+1) = 5m+5$

**d**

| × | n | 2 |
|---|---|---|
| 4 | 4n | 8 |

$4(n+2) = 4n+8$

**4 b**

| × | x | -6 |
|---|---|---|
| 5 | 5x | -30 |

$5(x-6) = 5x-30$

**c**

| × | y | -4 |
|---|---|---|
| 2 | 2y | -8 |

$2(y-4) = 2y-8$

**d**

| × | k | -3 |
|---|---|---|
| 6 | 6k | -18 |

$6(k-3) = 6k-18$

**5 a** $3a+6$  **b** $5b+15$

**c** $3c+6$  **d** $5d-5$

**e** $4e-36$  **f** $3f-24$

**g** $8+4f$  **h** $56+8z$

**i** $27+9y$  **j** $16-4x$

**k** $7-7w$  **l** $14-7v$

**6 a** $10p+5$  **b** $21q+14$

**c** $18r+27$  **d** $33s-44a+77$

**e** $4t-10$  **f** $20u-4$

**g** $6+12v$  **h** $48+32w-24g$

**i** $60+70x$  **j** $15-25x$

**k** $20-15x$  **l** $25k-40x-30h$

**7 a** Paul didn't multiply the 3 by 5. Correct answer is $5a+15$.

**b** Paul added the 3 and 5 instead of multiplying. Correct answer is $12b-15$.

**c** Paul expanded the brackets correctly but then combined unlike terms. Correct answer is $12-4c$.

**8** Odd one out is $2(10x+8)$, as this expands to $20x+16$. All the others expand to give $18x+24$.

**9 a** $24x-36y$  **b** $24+4x-6y$

**10 a** $7x+6$  **b** $12+4x$

**c** $11x+7$  **d** $10x-20$

**e** $11x+23$  **f** $19x+22$

**11** Left-hand side expanded:
$8x+28+18x-15 = 26x+13$

Right-hand side expanded: $26x+13$

**12 a** $9(3x+2) = 3(9x+6)$

**b** $5(8-6z) = 10(4-3z)$

**13 a** $4(2x+9) = 8x+36$

**b** $5(3x-7) = 15x-35$

**c** $8(6y-10) = 48y-80$

**d** $7(2y+6) = 14y+42$

## Exercise 2.5

**1 a** $2$  **b** $5$  **c** $8$

**d** $3$  **e** $7$  **f** $7$

**2 a** $x=4$  **b** $x=8$  **c** $x=5$

**d** $x=11$  **e** $x=8$  **f** $x=6$

**3 a** $x=6$  **b** $x=11$  **c** $x=11$

**d** $x=17$  **e** $x=18$  **f** $x=9$

**4 a** $y=3$  **b** $y=2$

**5 a** $x=4$  **b** $x=3$  **c** $x=7$

**d** $x=6$  **e** $x=15$  **f** $x=10$

**g** $x=27$  **h** $x=4$  **i** $x=10$

**j** $x=7$

**6 a** $x=11$  **b** $x=4$  **c** $x=18$

**d** $x=25$  **e** $x=7$  **f** $x=5$

**7 a** $x+5=21, x=16$

**b** $x-5=21, x=26$

**8 a** $x+14=20, x=6$

**b** $x-17=20, x=37$

**c** $5x=20, x=4$

**9 a** $a=7$

**b** $a=4$

**c** $b=3$

**d** $b=5$

**10 a i** $5x+4x=90°$

**ii** $9x=90°$

**iii** $x=\dfrac{90}{9}=10°$

**iv** Angles are 50° and 40°.

**v** $50+40=90°$

**b i** $6x+4x=180°$

**ii** $10x=180°$

**iii** $x=\dfrac{180}{10}=18°$

**iv** Angles are 108° and 72°.

**v** $108+72=180°$

**c i** $3x+4x+2x=180°$

**ii** $9x=180°$

**iii** $x=\dfrac{180}{9}=20°$

**iv** Angles are 60°, 80° and 40°.

**v** $60+80+40=180°$

**d i** $5x+4x+3x=180°$

**ii** $12x=180°$

**iii** $x=\dfrac{180}{12}=15°$.

**iv** Angles are 75°, 60° and 45°.

**v** $75+60+45=180°$

**11 a** $x=-18$    **b** $y=5$

**c** $z=-12$    **d** $w=-6$

**12** $a=2, b=-12, c=3, d=-7$

$a\times b=-24, c+d=-4$

Zara is correct because $-24$ is less than $-4$.

**13 a** $w=-8$    **b** $x=-3$

**c** $y=-16$    **d** $z=6$

## Exercise 2.6

**1 a** true   **b** false

**c** false   **d** true

**2** A and ii; B and iii; C and iv; D and i

**3 a** $x>2$      **b** $y>5$

**c** $m<15$      **d** $b<7$

**4** A and iv; B and i; C and ii; D and iii

**5 a**


**b**


**c** $x>-2$

**d** $x<-2$

**6 a**


**b**


**c**


**d**
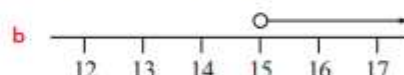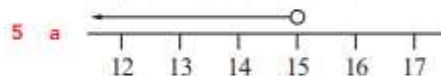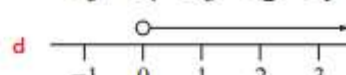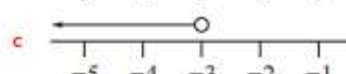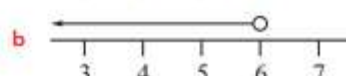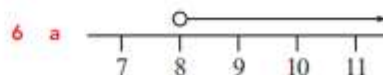

**7 a** $x<14$

**b** $x>32$

**c** $x>-8$

**d** $x<-1$

**8 a** C6

**b** C −6

**c** A 11

**d** B −2

**9** No; Zara's list should be −6, −7, −8, −9, . . .

**10 a i** 9      **ii** 9, 10, 11, 12, . . .

**b i** −2      **ii** −2, −1, 0, 1, 2, . . .

**c i** 5      **ii** 5, 6, 7, 8, 9, . . .

**11 a i** $-2$  **ii** $-2, -3, -4, -5, \ldots$

   **b i** $15$  **ii** $15, 14, 13, 12, \ldots$

   **c i** $3$  **ii** $3, 2, 1, 0, -1, \ldots$

**12 a**



   **b**



   **c**



   **d**
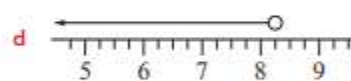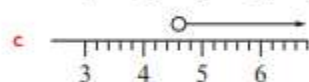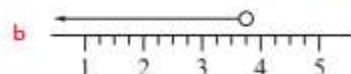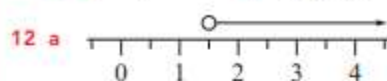


**13 a** $y > 0.5$  **b** $y < 11.2$

   **c** $y < 3.8$  **d** $y > 26.25$

**14** It should be $x > -3.5$. Arun has misread the number line.

**15 a** $w > -7.25$  **b** $w < -11.8$

**16 a**



   **b**