Chapter 1 Whole Numbers, Factors and Multiples

Level 1

Exercise 1

1. (a) Ten thousand, two hundred and ninety-three
   (b) Twenty-seven thousand, six hundred and eleven
   (c) Seventy-nine thousand, one hundred and eight
   (d) Ninety-six thousand and thirty-seven
   (e) Thirty thousand, eight hundred and nineteen
   (f) Fifty-two thousand and nine hundred
   (g) Eighty-four thousand and four
2. (a) 13 591 (b) 21 208
   (c) 66 014 (d) 50 827
   (e) 33 600 (f) 87 040
   (g) 12 009
3. (a) 7 (b) ten thousands
   (c) 8 (d) 90 000
   (e) 2000 (f) 3
4. (a) 20 000 (b) 3000
   (c) 70 000 (d) 400
   (e) 45 927 (f) 13 204
   (g) 39 056 (h) 90 173
5. (a) 19 639, 27 075, 40 918, 85 007
   (b) 70 275, 70 428, 74 024, 74 210
   (c) 9892, 10 426, 19 774, 23 001
6. (a) 90 161, 57 642, 41 053, 29 880
   (b) 32 180, 32 018, 30 218, 30 081
   (c) 71 055, 39 909, 10 630, 8695
7. (a) +5000 +5000 +5000 +5000 +5000
   5600, 10 600, 15 600, **20 600, 25 600**
   (b) +10 000 +10 000 +10 000 +10 000
   41 266, 51 266, **61 266**, 71 266, **81 266**
   (c) +20 000 +20 000 +20 000 +20 000
   7201, **27 201**, 47 201, **67 201**, 87 201
   (d) +1000 +1000 +1000 +1000
   8123, 9123, 10 123, 11 123, 12 123
8. (a) 40 (b) 80
   (c) 150 (d) 450
   (e) 700 (f) 1650
   (g) 2060 (h) 3010
9. (a) 100 (b) 600
   (c) 800 (d) 1400
   (e) 2700 (f) 3200
   (g) 4300 (h) 6100
10. (a) 1000 (b) 6000
    (c) 13 000 (d) 26 000
    (e) 57 000 (f) 80 000
    (g) 84 000 (h) 98 000

Exercise 2

1. (a) $57 + 62 \approx 60 + 60 = 120$
   (b) $219 - 45 \approx 220 - 50 = 170$
   (c) $485 - 94 \approx 490 - 90 = 400$
   (d) $554 - 187 \approx 550 - 190 = 360$
2. (a) $715 + 283 \approx 700 + 300 = 1000$
   (b) $3153 + 948 \approx 3200 + 900 = 4100$
   (c) $861 - 327 \approx 900 - 300 = 600$
   (d) $4203 - 994 \approx 4200 - 1000 = 3200$
3. (a) $3478 + 1469 \approx 3000 + 1000 = 4000$
   (b) $14\,945 + 2578 \approx 15\,000 + 3000 = 18\,000$
   (c) $9412 - 7125 \approx 9000 - 7000 = 2000$
   (d) $58\,500 - 21\,499 \approx 59\,000 - 21\,000 = 38\,000$
4. (a) $291 + 108 + 387 \approx 300 + 100 + 400 = 800$
   (b) $703 - 199 - 213 \approx 700 - 200 - 200 = 300$
   (c) $48 \times 3 \approx 50 \times 3 = 150$
   (d) $215 \times 7 \approx 200 \times 7 = 1400$
5. (a) $81 \div 2 \approx 80 \div 2 = 40$
   (b) $294 \div 3 \approx 300 \div 3 = 100$
   (c) $364 \div 6 \approx 360 \div 6 = 60$
   (d) $557 \div 8 \approx 560 \div 8 = 70$

6. (a) $18 = 1 \times 18$
$= 2 \times 9$
$= 3 \times 6$
Factors: **1, 2, 3, 6, 9, 18**

(b) $24 = 1 \times 24$
$= 2 \times 12$
$= 3 \times 8$
$= 4 \times 6$
Factors: **1, 2, 3, 4, 6, 8, 12, 24**

(c) $25 = 1 \times 25$
$= 5 \times 5$
Factors: **1, 5, 25**

(d) $28 = 1 \times 28$
$= 2 \times 14$
$= 4 \times 7$
Factors: **1, 2, 4, 7, 14, 28**

7. (a) Factors of 16: 1, 2, 4, 8, 16
Factors of 28: 1, 2, 4, 7, 14, 28
Common factors: **1, 2, 4**

(b) Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 18: 1, 2, 3, 6, 9, 18
Common factors: **1, 2, 3, 6**

(c) Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 50: 1, 2, 5, 10, 25, 50
Common factors: **1, 2, 5, 10**

(d) Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Factors of 32: **1, 2, 4, 8, 16, 32**
Common factors: **1, 2, 4, 8**

8. (a) 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36
(b) 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48
(c) 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84
(d) 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96

9. (a) $6 \times 3 =$ **18** (b) $9 \times 5 =$ **45**
(c) $5 \times 7 =$ **35** (d) $7 \times 8 =$ **56**

10. (a) Multiples of 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, ...
Multiples of 9: 9, 18, 27, 36, ...
First two common multiples:
18, 36 (= 18 × 2)

(b) Multiples of 4: 4, 8, 12, 16, 20, 24, ...
Multiples of 6: 6, 12, 18, 24, ...
First two common multiples:
12, 24 (= 12 × 2)

(c) Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, ...
Multiples of 8: 8, 16, 24, 32, 40, ...
First two common multiples:
40, 80 (= 40 × 2)

(d) Multiples of 3: 3, 6, 9, 12, 15, 18, 21, ...
Multiples of 7: 7, 14, 21, ...
First two common multiples:
21, 42 (= 21 × 2)

11. (a) **No**
$18 \div 4 = 4$ R 2

(b) **Yes**
$36 \div 3 = 12$

(c) **Yes**
$26 = 2 \times 13$

(d) **No**
$45 \div 6 = 7$ R 3

Level 2

Exercise 1

1. (a) The digit 7 stands for 70 000 = 7 × **10 00**
(b) The value of the digit 7 is 70 = 7 × **10**.
(c) $8 \times 100 = 800$
The value in the **hundreds** place is 800
(d) $2000 + 20 =$ **2020**
(e) $90\,000 - 90 =$ **89 910**
(f) $600 - 6 =$ **594**

2. (a) $1 + 2 + 3 + 6 =$ **12**
(b) $1 \times 2 \times 5 \times 10 =$ **100**
(c) $5 \times 10 =$ **50**
(d) $8 \times 2 =$ **16**
$5 \times 3 =$ **15**
$16 - 15 = 1$
(e) Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 20: 1, 2, 4, 5, 10, 20
Common factors: 1, 2, 4
$1 + 2 + 4 =$ **7**
(f) Multiples of 4: 4, 8, 12, 16, 20, 24
Multiples of 6: 6, 12, **18**, 24
First two common multiples: 12, 24
$12 + 24 =$ **36**
(g) Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
$24 - 1 =$ **23**
(h) $3 \times 5 = 15$
$2 \times 4 = 8$
$15 \times 8 =$ **120**

3. (a) 20 000 (b) 1550
(c) 3200 (d) 4570

4. (a) $2000 + 600 + 40 + 12 =$ **2652**
(b) $1000 + 300 + 270 + 9 =$ **1579**
(c) $6000 + 3500 + 10 + 8 =$ **9518**
(d) $10\,000 + 19\,000 + 400 + 40 + 6 =$ **29 446**
(e) $40\,000 + 8000 + 500 + 130 + 25 =$ **48 655**

(f) 30 000 + 4000 + 2200 + 80 + 18 = **36 298**
(g) 50 000 + 17 000 + 29 = **67 029**
(h) 20 000 + 1600 + 90 = **21 690**

5. (a) 59 (b) 490
(c) 22 000 (d) 5040
(e) 3401 (f) 49 070
(g) 80 608 (h) 50 023
5. (a) hundred (b) ten
(c) ten (d) thousand
(e) hundred (f) thousand
7. (a) 143 (b) 105
(c) 3685 (d) 1287
3. (a) 352 (b) 790
(c) 1398 (d) 1794
). (a) 625 (b) 407
(c) 8203 (d) 6409
). (a) 738 (b) 956
(c) 9538 (d) 5314

ercise 2

(4)
(3)
42 = 3 × 14
(3)
Multiples of 6: 6, 12, 18, 24, ...
Multiples of 8: 8, 16, 24, ...
Common multiple: 24
(2)
Factors of 8: 1, 2, 4, 8
Factors of 10: 1, 2, 5, 10
Common factors: 1, ②
5. **(4)**
Factors of 16: 1, 2, 4, 8, 16
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Common factors: 1, 2, 4, ⑧
6. **(3)**
30 = 3 × 10
30 is a common multiple of 3 and 10.
(2)
3011 ≈ 3000 (nearest hundred)
3. **(4)**
6815 ≈ 6820 (nearest ten)
9. **(1)**
Factors of 8: 1, 2, 4, 8
Product = 1 × 2 × 4 × 8
= 64
10. **(3)**
9 + 18 = 27

Level 3

Exercise 1

1. **5**
Multiples of 4 between 30 and 50: 32, 36, 40, 44, 48
2. **3**
Multiples of 6: 6, 12, ⑱, 24, 30, ㊱, 42, 48, ㊹, 60, ...
Multiples of 9: 9, ⑱, 27, ㊱, 45, ㊹, 63...
Common multiples between 10 and 60:
18, 36, 54
3. **4**
Multiples of 8 between 35 and 70:
40, 48, 56, 64
4. **5**
Multiples of 2: 2, 4, 6, 8, 10, ⑫, 14, 16, ⑱, 20, 22, ㉔, 26, 28, ㉚, 32, 34, ㊱, 38, 40, ...
Multiples of 3: 3, 6, 9, ⑫, 15, ⑱, 21, ㉔, 27, ㉚, 33, ㊱, 39, 42, ...
Common multiples between 10 and 40:
12, 18, 24, 30, 36
5. **6**
Multiples of 7 between 10 and 90:
14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84
Even multiples of 7 between 10 and 90:
14, 28, 42, 56, 70, 84
6. **4**
Multiples of 3 between 5 and 30:
6, 9, 12, 15, 18, 21, 24, 27
Odd multiples of 3 between 5 and 30:
9, 15, 21, 27
7. Factors of 6: 1, 2, 3, 6
1-digit even number smaller than 5: **2**
8. Multiples of 7 between 10 and 30: 14, 21, 28
2-digit odd number: **21**
9. Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
1-digit odd number other than 1: **3**
10. Multiples of 9 between 20 and 90:
27, 36, 45, 54, 63, 72, 81
2-digit even number: 36, 54, 72
Required number: **36**

Exercise 2

1. Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, ㊺, 50, 55, 60, 65, 70, 75, 80, 85, ㊿, ...
Multiples of 9: 9, 18, 27, 36, ㊺, 54, 63, 72, 81, ㊿, ...
Common multiples of 5 and 9 : 45, 90, ...
Required number: **90**

2. Multiples of 2: 2, 4, 6, 8, 10, 12, 14,...
Multiples of 7: 7, 14, 21, 28, 35, 42, 49, 56, 63, ...
Common multiples of 2 and 7 between 20 and 60: 28, 42, 56
Required number: **42**

3. Factors of 32: 1, 2, 4, 8, 16, 32
Multiples of 8: 8,16, 24, 32, ...
Required number: **16**

4. Factors of 12: (1), (2), (3), 4, (6), 12
Factors of 18: (1), (2), (3), (6), 9, 18
Common factors: 1, 2, 3, 6
Z = **6**

5. Factors of 28: (1), (2), 4, (7), (14), 28
Factors of 42: (1), (2), 3, 6, (7), (14), 21, 42
Common factors: 1, 2, 7, 14
Y = **7**

6. X is a multiple of 3.
Largest possible X : **9**

7. C is a multiple of 8.
Largest possible C: **48**

8. B is a multiple of 7.
Smallest possible B: **14**

9. Multiples of 3 : 3, 6, (9), ...
Multiples of 4 : 4, 8, ...
Multiples of 4 plus 1: 5, (9), ...
D = **9**

10. Multiples of 5: ..., 45, 50, 55, (60), 65, 70, 75, 80, 85, 90, 95 ...
Multiples of 7: ..., 42, 49, 56, 63, 70, 77, 84, 91, 98, ...
Multiples of 7 minus 3: ..., 39, 46, 53, (60), 67, 74, 81, 88, 95, ...
E = **60**

Chapter 2 Multiplication and Division

Level 1

Exercise 1

1. (a) **9783**

$$\begin{array}{r} {}^{3}{}^{1}2\,6\,1 \\ \times \quad 3 \\ \hline 9\,7\,8\,3 \end{array}$$

(b) **13 122**

$$\begin{array}{r} {}^{1}2^{5}1^{4}8\,7 \\ \times \quad 6 \\ \hline 1\,3\,1\,2\,2 \end{array}$$

(c) **29 344**

$$\begin{array}{r} {}^{1}4^{6}1^{1}9\,2 \\ \times \quad 7 \\ \hline 2\,9\,3\,4\,4 \end{array}$$

(d) **72 117**

$$\begin{array}{r} 8^{1}0^{2}1\,3 \\ \times \quad 9 \\ \hline 7\,2\,1\,1\,7 \end{array}$$

2. (a) **1326 R 3**

$$\begin{array}{r} 1\,3\,2\,6 \\ 4\overline{)\,5\,3\,0\,7} \\ \underline{4} \\ 1\,3 \\ \underline{1\,2} \\ 1\,0 \\ \underline{8} \\ 2\,7 \\ \underline{2\,4} \\ 3 \end{array}$$

(b) **658**

$$\begin{array}{r} 6\,5\,8 \\ 5\overline{)\,3\,2\,9\,0} \\ \underline{3\,0} \\ 2\,9 \\ \underline{2\,5} \\ 4\,0 \\ \underline{4\,0} \\ 0 \end{array}$$

(c) **3829 R 1**

$$\begin{array}{r} 3\,8\,2\,9 \\ 2\overline{)\,7\,6\,5\,9} \\ \underline{6} \\ 1\,6 \\ \underline{1\,6} \\ 5 \\ \underline{4} \\ 1\,9 \\ \underline{1\,8} \\ 1 \end{array}$$

(d) **262 R 3**

$$\begin{array}{r} 2\,6\,2 \\ 8\overline{)\,2\,0\,9\,9} \\ \underline{1\,6} \\ 4\,9 \\ \underline{4\,8} \\ 1\,9 \\ \underline{1\,6} \\ 3 \end{array}$$

3. (a) **624**

$$\begin{array}{r} 3\,9 \\ \times \quad 1\,6 \\ \hline 2\,3\,4 \\ 3\,9\,0 \\ \hline 6\,2\,4 \end{array}$$

(b) **5183**

$$\begin{array}{r} 7\,3 \\ \times \quad 7\,1 \\ \hline 7\,3 \\ 5\,1\,1\,0 \\ \hline 5\,1\,8\,3 \end{array}$$

(c) **2898**

$$\begin{array}{r} 6\,3 \\ \times \quad 4\,6 \\ \hline 3\,7\,8 \\ 2\,5\,2\,0 \\ \hline 2\,8\,9\,8 \end{array}$$

(d) **2204**

$$\begin{array}{r} 5\,8 \\ \times \quad 3\,8 \\ \hline 4\,6\,4 \\ 1\,7\,4\,0 \\ \hline 2\,2\,0\,4 \end{array}$$

4. (a) **38 097**

$$\begin{array}{r} 4\,5\,9 \\ \times \quad 8\,3 \\ \hline 1\,3\,7\,7 \\ 3\,6\,7\,2\,0 \\ \hline 3\,8\,0\,9\,7 \end{array}$$

(b) **51 612**

$$\begin{array}{r} 7\,4\,8 \\ \times \quad 6\,9 \\ \hline 6\,7\,3\,2 \\ 4\,4\,8\,8\,0 \\ \hline 5\,1\,6\,1\,2 \end{array}$$

(c) **7672**

$$\begin{array}{r} 1\,3\,7 \\ \times \quad 5\,6 \\ \hline 8\,2\,2 \\ 6\,8\,5\,0 \\ \hline 7\,6\,7\,2 \end{array}$$

(d) **21 924**

$$\begin{array}{r} 4\,0\,6 \\ \times \quad 5\,4 \\ \hline 1\,6\,2\,4 \\ 2\,0\,3\,0\,0 \\ \hline 2\,1\,9\,2\,4 \end{array}$$

5. (a) $1380 \times 3 \approx 1400 \times 3 = 4200$
   (b) $2176 \times 4 \approx 2200 \times 4 = 8800$
   (c) $4493 \times 7 \approx 4500 \times 7 = 31\,500$
   (d) $8851 \times 6 \approx 8900 \times 6 = 53\,400$
   (e) $48 \div 5 \approx 50 \div 5 = 10$
   (f) $611 \div 3 \approx 600 \div 3 = 200$
   (g) $2089 \div 7 \approx 2100 \div 7 = 300$
   (h) $3155 \div 8 \approx 3200 \div 8 = 400$

6. (a)
```
   981
3) 2944
   27
   ---
    24
    24
    --
     4
     3
     -
     1
```
   (b)
```
   687
8) 5501
   48
   ---
    70
    64
    --
     61
     56
     --
      5
```

7. (a) $28 \times 40 = 28 \times 4 \times 10 = 112 \times 10 = 1120$
   (b) $61 \times 50 = 61 \times 5 \times 10 = 305 \times 10 = 3050$
   (c) $405 \times 30 = 405 \times 3 \times 10 = 1215 \times 10 = 12\,150$
   (d) $397 \times 20 = 397 \times 2 \times 10 = 794 \times 10 = 7940$

8. (a) $17 \times 13 \approx 20 \times 10 = 200$
   (b) $54 \times 45 \approx 50 \times 50 = 2500$
   (c) $483 \times 62 \approx 500 \times 60 = 30\,000$
   (d) $295 \times 39 \approx 300 \times 40 = 12\,000$

9. (a) $48 \times 29 = 28 \times 29 + 20 \times 29$
   (b) $290 \times 52 = 250 \times 52 + 40 \times 52$
   (c) $58 \times 34 = 58 \times 20 + 58 \times 14$
   (d) $616 \times 81 = 616 \times 50 + 616 \times 31$

10. $32 \times 19 = 608 \approx 610$ (nearest ten)
    She had **610** sweets altogether.

11. $14 \times 376 = 5264 \approx 5300$ (nearest hundred)
    The factory makes **5300** toys in 2 weeks.

12. $3618 \div 9 = 402$
    The other number is **402**.

13. $23 \times 16 = 368$ km
    The car can travel **368 km** on 23 litres of petrol.

14. $792 \times 8 = 6336$
    $6336 + 5 = 6341$
    The number is **6341**.

15. $12 \times \$850 = \$10\,200$
    She earns **$10 200** in a year.

16. $1000 \div 8 = 125$ pages
    It can print **125** pages in 1 minute.

Exercise 2

1. $80 \times 37 = 2960$ m²
   The area of the field is **2960 m²**.

2. $60 \times 26 = 1560$ g $= 1$ kg 560 g
   The mass of a pack of 60 marbles is **1 kg 560 g**.

3. $1800 \div 5 = 360$
   It can fill **360** 5-litre water bottles.

4. $25 \times 19 = 475$
   $475 + 15 = 490$
   Faizal had **490** marbles at first.

5. $37 + 4 = 41$
   $11 \times 41 = 451$
   There are **451** passengers in 11 buses.

6. $\$629 \times 15 = \$9435 \approx \$9400$ (nearest hundred)
   The school spent **$9400**.

7. $58 \div 2 = 29$ kg
   $3 \times 29 = 87$ kg
   Mark's mass is **87 kg**.

8. $2 \times 806 = 1612$
   There are **1612** red beads.

9. $1740 \div 3 = 580$
   There are **580** girls in the school.

10. $4 \times 7 = 28$
    $276 \times 28 = 7728 \approx 7730$ (nearest ten)
    The factory makes **7730** toys in 4 weeks.

11. $3 \times 1296 = 3888$
    The two boys have **3888** cards altogether.

12. $2384 \div 9 = 264$ R 8
    An additional box is needed for the remaining 8 muffins.
    He needed **265** boxes.

13. $26 \times \$309 = \$8034 \approx \$8000$ (nearest hundred)
    26 train sets cost **$8000**.

14. $5 \times \$3427 = \$17\,135$
    Both of them have **$17 135** in their bank accounts.

15. $\$2344 \div 8 = \$293$
    She earns **$293** each day.

16. $\$3522 - \$750 = \$2772$
    $\$2772 \div 4 = \$693$
    He spends **$693** in 1 week.

Level 2

Exercise 1

1. (a)
$$\begin{array}{r} 69 \\ \times\ \boxed{4}5 \\ \hline \boxed{3}45 \\ 2760 \\ \hline 3105 \end{array}$$

(b)
$$\begin{array}{r} 407 \\ \times\ 3\boxed{9} \\ \hline 3663 \\ 1\boxed{2}210 \\ \hline 1\boxed{5}873 \end{array}$$

(c)
$$\begin{array}{r} \boxed{9}38 \\ \times\ 72 \\ \hline 1876 \\ \boxed{6}5600 \\ \hline \boxed{6}7536 \end{array}$$

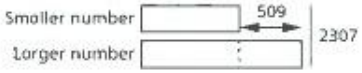
(d)
$$\begin{array}{r} 5\boxed{5}4 \\ \times\ 52 \\ \hline 1108 \\ 27\boxed{7}00 \\ \hline 28\boxed{8}08 \end{array}$$

2. ☺ = 2007 ÷ 3 = 669
♡ = 669 × 13
= 8697
≈ **8700** (nearest hundred)

3. ☼ = 567 × 16 = 9072
◇ = 9072 ÷ 9
= 1008
≈ **1000** (nearest hundred)

4. △ = 4
✚ = 9264 ÷ 4 = **2316**

5.



2 units → 2307 – 509 = 1798
1 unit → 1798 ÷ 2 = 899
899 + 509 = 1408
The two numbers are **899** and **1408**.

6. (a) Total number of units of money both had
= 1 + 3
= 4
4 units → $1300
1 unit → $1300 ÷ 4 = $325
Michael had **$325**.

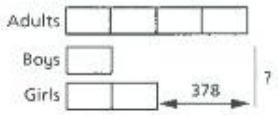
(b) Amount of money Benjamin had
= $1300 – $325
= $975
$975 – $325 = $650
Benjamin had **$650** more than Michael.

7. Amount of money Mabel has
= 4 × $89
= $356
Amount of money Sharon has
= 5 × $89
= $445
$89 + $356 + $445 = $890
The three girls have **$890** altogether.

8. Number of pears
= 258 ÷ 2
= 129
Number of apples
= 129 ÷ 3
= 43
258 + 129 + 43 = 430
There are **430** fruits altogether.

9. Amount of money Jason has
= $820 ÷ 2
= $410
Amount of money Mandy has
= 2 × $820
= $1640
$1640 – $410 = $1230
Mandy has **$1230** more than Jason.

10.



2 units → 378 children
1 unit → 378 ÷ 2 = 189 children
3 units → 3 × 189 = 567 children
There were **567** children.

11. Cost of 1 such glass dining table
= $1316 ÷ 2
= $658
10 × $658 = $6580
Ten glass dining tables cost **$6580**.

12. Cost of a 1-day stay
= $732 ÷ 3
= $244
13 × $244 = $3172
He would have to pay **$3172**.

13. Total number of pencils in the 25 boxes
= 25 × 12
= 300
300 ÷ 5 = 60
He will get **60** bundles of pencils.

14. Total number of oranges in the 19 boxes
= 19 × 48
= 912
Number of groups of 8 oranges the worker sold
= 912 ÷ 8
= 114
114 × $3 = $342
The worker collected **$342** altogether.

15. Number of groups of 6 apples Mrs Fong bought
= $16 ÷ $4
= 4
4 × 6 = 24 apples
She bought **24** apples.

16. Number of groups of 5 apples Mdm Shakila spent
= 35 ÷ 5
= 7
7 × $4 = $28
She spent **$28** on the pears.

xercise 2

1. **(4)**
418 × 2 ≈ 400 × 2 = 800
2. **(3)**
141 × 18 = 2538
3. **(1)**
48 × 75 = 3600 which has 3 in the thousands place
4. **(4)**
2990 ÷ 7 = 427 R 1
5. **(4)**
5551 ÷ 6 = 925 R 1
6. **(2)**
163 × 7 = 1141
1141 + 4 = 1145
1145 ÷ 5 = 229 R 0
7. **(3)**
694 ÷ 9 = 77 R 1
8. **(2)**
71 ÷ 4 = 17 R 3
71 ÷ 3 = 23 R 2
9. **(4)**
◯ = 32 ÷ 8 = 4
□ = 2048 ÷ 4 = 512
□ + □ = 512 + 512 = 1024
10. **(4)**
Sean → 1 unit
Fred → 3 units
Edwin → 2 × 3 = 6 units
Edwin has 6 times as much money as Sean.
11. **(2)**
Zack → 1 unit
Jimmy → 4 units
Arvin → 4 ÷ 2 = 2 units
Arvin has 2 times as many cards as Zack.
12. **(4)**
Nash → 1 unit
Billy → 2 units
Tom → 3 × 3 = 9 units
Tom is 9 times as heavy as Nash.
13. **(3)**
100 ÷ 5 = 20
20 × $3 = $60
14. **(3)**
$60 ÷ $4 = 15
15 × 3 = 45
15. **(1)**
2 units → 540 − 188 = 352
Smaller number: 1 unit → 352 ÷ 2 = 176
16. **(4)**
1 + 3 = 4 units → 744
Smaller number: 1 unit → 744 ÷ 4 = 186

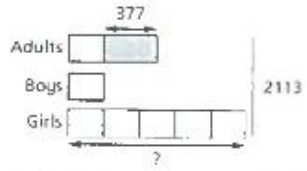
Level 3

Exercise 1

1.

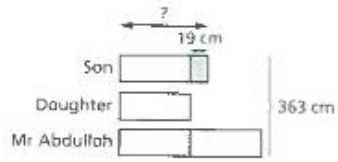
5 units → $1125 − $350 = $775
1 unit → $775 ÷ 5 = $155
2 units → 2 × $155 = $310
Kellyn has **$310**.

2.



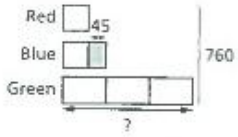
7 units → 2113 − 377 = 1736 people
1 unit → 1736 ÷ 7 = 248 people
5 units → 5 × 248 = 1240 people
There are **1240** girls at the concert.

3.



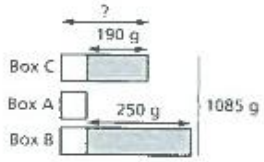
4 units → 363 − 19 = 344 cm
1 unit → 344 ÷ 4 = 86 cm
86 + 19 = 105 cm = 1 m 5 cm
His son is **1 m 5 cm** tall.

4.



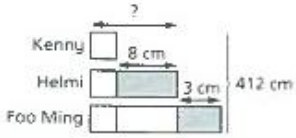
5 units → 760 + 45 = 805 marbles
1 unit → 805 ÷ 5 = 161 marbles
3 units → 3 × 161 = 483 marbles
He has **483** green marbles.

5.



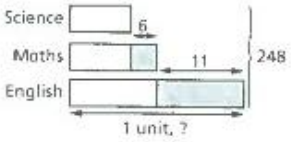
3 units → 1085 − 190 − 250 = 645 g
1 unit → 645 ÷ 3 = 215 g
215 + 190 = 405 g
Box C is **405 g**.

6.



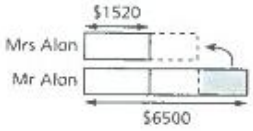
3 units → 412 − 3 − 8 − 8 = 393 cm
1 unit → 393 ÷ 3 = 131 cm
131 + 8 = 139 cm
Helmi's height is **139 cm**.

7.



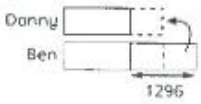
3 units → 248 + 6 + 11 + 11 = 276 marks
1 unit → 276 ÷ 3 = 92 marks
The marks she obtained for her English exam was **92**.

8.



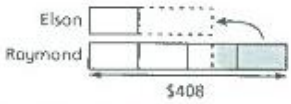
Amount of money Mr Alan had more than Mr Alan
= $6500 − $1520
= $4980
$4980 ÷ 2 = $2490
Mr Alan must give **$2490** to Mrs Alan.

9.



1296 ÷ 2 = 648
Ben must give **648** cards to Danny.

10.

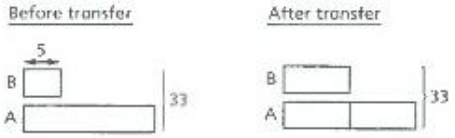


4 units → $408
1 unit → $408 ÷ 4 = $102
3 units → 3 × $102 = $306
$306 ÷ 2 = $153
Raymond must give **$153** to Elson.

11.

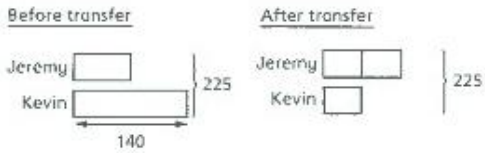
2 units → 340 − 90 − 90 = 160 marbles
1 unit → 160 ÷ 2 = 80 marbles
Raju must give **80** marbles to Silva.

12. Total number of pencils
= 28 + 5
= 33



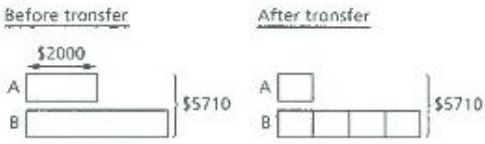
After transfer,
3 units → 33 pencils
1 unit → 33 ÷ 3 = 11 pencils
11 – 5 = 6
She should transfer **6** pencils.

3. Total number of cards
= 140 + 85
= 225



After transfer,
3 units → 225 cards
1 unit → 225 ÷ 3 = 75 cards
140 – 75 = 65
Kevin must give **65** cards to Jeremy.

4. Total amount of money in both accounts
= $2000 + $3710
= $5710



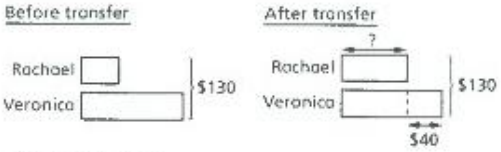
After transfer,
5 units → $5710
1 unit → $5710 ÷ 5 = $1142
$2000 – $1142 = $858
He must transfer **$858** from account A to account B.

15. Total volume of water in both tanks
= 630 + 30
= 660 *l*
After pouring,
4 units → 660 *l*
1 unit → 660 ÷ 4 = 165 *l*
165 – 30 = 135 *l*
He must pour **135** *l* from the first tank into the second tank.

16. Total mass of both bags
= 3 × 1016
= 3048 g
After transfer,
4 units → 3048 g
1 unit → 3048 ÷ 4 = 762 g
1016 – 762 = 254 g
The mass of the items that Alfred transferred is **254 g**.

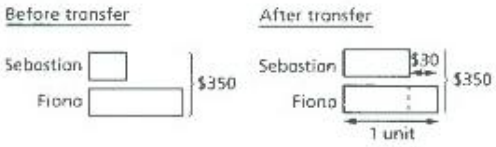
Exercise 2

1. Total amount of money both had
= $100 + $30
= $130



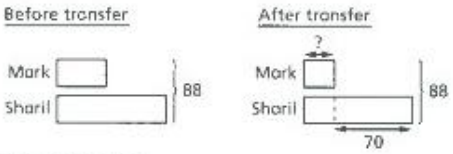
After transfer,
2 units → $130 – $40 = $90
1 unit → $90 ÷ 2 = $45
Rachael had **$45** in the end.

2. Total amount of money both had
= $100 + $250
= $350



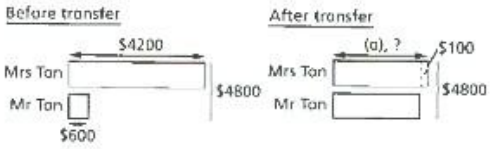
After transfer,
2 units → $350 + $30 = $380
1 unit → $380 ÷ 2 = $190
Fiona has **$190** in the end.

3. Total number of marbles both had
= 25 + 63
= 88



After transfer,
2 units → 88 – 70 = 18 marbles
1 unit → 18 ÷ 2 = 9 marbles
Mark has **9** marbles in the end.

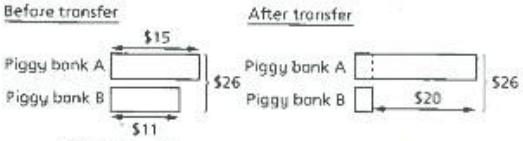
4. Total amount of money both have
= $4200 + $600
= $4800



(a) After transfer,
2 units → $4800 + $100 = $4900
1 unit → $4900 ÷ 2 = $2450
She has **$2450** in the end.

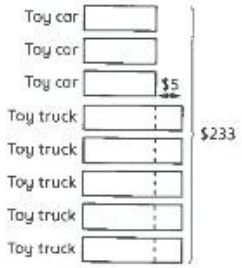
(b) $4200 − $2450 = $1750
She gives **$1750** to Mr Tan.

5. Total amount of money both piggy banks have
= $15 + $11
= $26



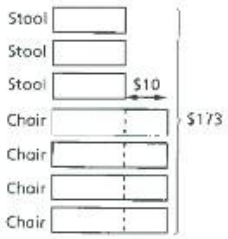
After transfer,
2 units → $26 − $20 = $6
1 unit → $6 ÷ 2 = $3
$11 − $3 = $8
She should transfer **$8**.

6.



Total cost of the toy trucks more than the toy cars
= 5 × $5
= $25
8 units → $208
1 unit → $208 ÷ 8 = $26
A toy car cost **$26**.

7.



Total cost of the stools less than the chairs
= 3 × $10
= $30
7 units → $173 + $30 = $203
1 unit → $203 ÷ 7 = $29
The cost of a chair was **$29**.

8. Multiples of 3: 3, 6, 9, 12, 15, ...
Multiples of 3 add 1: 4, 7, 10, (13), 16, ...

Multiples of 9: 9, 18, 27, 36, ...
Multiples of 9 add 4: (13), 22, 31, 40, ...

Comparing the two lists, the smallest possibl number is **13**.

9. Multiples of 6: ..., 96, 102, 108, 114, 120, ...
Multiples of 6 add 3: ..., 99, 105, 111, 11 (123), ...

Multiples of 7: ..., 98, 105, 112, 119, 126, ...
Multiples of 7 add 4: ..., 102, 109, 116, (123 130, ...

Comparing the two lists, the smallest possibl number is **123**.

10. List the possible numbers:
32, 33, 34, 35, 36, 37, 38, 39
Largest possible number = **39**

11. List the possible numbers:
252, 253, 254, 255, 256, 257, 258.
Largest possible number = **258**

12. List the possible numbers:
7992, 7993, 7994, 7995, 7996, 7997, 7998, 799
Largest possible number = **7999**

13. The least common multiple of 2, 3 and 4 = 12
12 + 1 = 13
The smallest possible number is **13**.

14. The least common multiple of 3, 4 and 9 = 36
36 + 1 = 37
There are **37** pupils in the class.

15. By guess and check,

1st number	2nd number	Product	Check
50	51	2550	✗
60	61	3660	✗
61	62	3782	✓

The two numbers are **61** and **62** respectively.

16. By guess and check,

1st number	2nd number	Product	Check
80	81	6480	✗
90	91	8190	✗
85	86	7310	✗
86	87	7482	✓

He is reading page **86**.

7. By guess and check,

1st number	2nd number	3rd number	Product	Check
20	21	22	9240	✗
15	16	17	4080	✗
18	19	20	6840	✗
19	20	21	7980	✓

The three numbers are **19**, **20** and **21**.

Chapter 3 Tables and Line Graphs

Level 1

Exercise 1

1.

Class	Number of boys
4A	**25**
4B	**22**
4C	**16**
4D	**28**
4E	**22**

2. (a) $28 - 22 = 6$
   (b) $16 + 9 = 25 \rightarrow$ **4A**
3. (a) **4B** and **4E**
   (b) $25 + 22 + 16 + 28 + 22 = 113$
4. $40 - 25 = 15$
5. $36 - 22 = 14$
6.

Day	Number of cakes sold
Monday	**11**
Tuesday	**7**
Wednesday	**22**
Thursday	**19**
Friday	**14**
Saturday	**28**

7. (a) Tuesday
   (b) $14 - 11 = 3$
8. (a) $14 \div 2 = 7 \rightarrow$ **Tuesday**
   (b) $14 \times 2 = 28 \rightarrow$ **Saturday**
9. $28 \times \$19 = \$532$
10. $11 + 7 + 22 + 19 + 14 + 28 = 101$
    ≈ 100 (nearest ten)

Exercise 2

1. (a) 32
   (b) 52
2. (a) $40 - 32 = 8$
   (b) $54 - 50 = 4$
3. Friday
4. (a) **Tuesday** and **Wednesday**
   (b) **Wednesday** and **Thursday**
5. **Friday** and **Sunday**
6. (a) 75
   (b) 15
7. (a) $75 - 70 = 5$
   (b) $30 - 15 = 15$
8. Day **3** and Day **4**
9. Day **0** and Day **1**, Day **1** and Day **2**
10. $75 - 15 = 60$

Level 2

Exercise 1

1.

CCA	Boys	Girls	Total number of P4 pupils in the CCA
Environmental Club	7	21	28
Basketball	24	17	41
Athletic Club	11	9	20
Choir	5	26	31
IT Club	9	9	18
Robotics Club	27	3	30

2. (a) 24 – 11 = **13**
   (b) 17 – 9 = **8**
3. (a) 28 + 3 = 31 → **Choir**
   (b) 27 – 18 = 9 → **IT Club**
4. (a) Choir
   (b) Robotics Club
5. (a) IT Club
   (b) 28 + 41 + 20 + 31 + 18 + 30 = **168**
6. (a) 32
   (b) 2014
7. (a) 44 – 42 = **2**
   (b) 46 – 41 = **5**
8. (a) **2010** and **2011**
   (b) **2008** and **2009**
9. 2013, 2015
10. Total mass: 3 units → 141 kg
    Lina's mass (2015): 1 unit → 141 ÷ 3 = 47 kg
    Lina's father's mass: 2 units → 2 × 47 = **94 kg**

Exercise 2

1.

Class	Number of pupils with no computer at home	Number of pupils with only 1 computer at home	Number of pupils with 2 computers at home	Number of pupils with more than 2 computers at home	Total enrolment in the class
4A	3	11	20	4	38
4B	8	19	9	1	37
4C	10	23	5	2	40
4D	8	21	7	1	36
4E	9	27	3	0	39

2. (a) 3 + 8 + 10 + 8 + 9 = **38**
   (b) 19 + 9 + 1 = **29**
3. (a) 23 – 19 = **4**
   (b) 9 – 3 = 6
4. (a) **4E**
   (b) 4A
5. $350 × 38 = **$13 300**
6. (a) $8000
   (b) November
7. (a) $10 000 – $8000 = **$2000**
   (b) $14 000 – $8000 = **$6000**
8. **November** and **December**
9. $10 000 + $8000 + $5000 + $7000 + $8000 + $9000 + $14 000 = **$61 000**
10. September

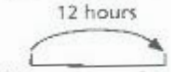
Level 3

Exercise 1

1.

Name of boy	20¢ coins		50¢ coins		Total amount ($)
	Number of coins collected	Value of 20¢ coins ($)	Number of coins collected	Value of 50¢ coins ($)	
Fatimah	31	6.20	15	7.50	13.70
Kim	19	3.80	8	4.00	7.80
Muthu	25	5.00	6	3.00	8.00
Alfian	16	3.20	21	10.50	13.70
Shi Rong	9	1.80	7	3.50	5.30
Linus	5	1.00	28	14.00	15.00

2. (a) Linus
   (b) Muthu
   (c) Shi Rong
3. (a) Linus
   (b) **Fatimah** and **Alfian**
4. (a) 25 – 5 = **20**
   (b) 15 – 8 = **7**
5. $15 – $8 = $7
   $7 → **14** more 50¢ coins
6. (a) 5 (b) 20
7. (a) 4 (b) 7
8. 2.50
9. 5 hours → $12.50
   $20 – $12.50 = **$7.50**
10. 12 hours



8 p.m. 8 a.m.

9 hours → $22.50
10 hours → $25
11 hours → $27.50
12 hours → **$30**

Exercise 2

1. (a) $80 + $105 + $190 + $175 = **$550**
   (b) $74 + $100 + $169 + $155 = **$498**
2. (a) $80 – $74 = **$6**
   (b) 550 – 498 = **52**
3. (a) **Friday** and **Saturday**
   (b) Wednesday
4. $190 – $169 = $21
5. $410 – $20 = $390
   Mr Tan's earnings on Sunday night = $390 ÷ 2 = **$195**
   Mr Lim's earning on Sunday night = $195 + 20 = **$215**
6. 250

7. (a) 300 (b) 500
8. 150
9. (a) 300 − 250 = **50**
   (b) 550 − 250 = **300**
10. 450 + 250 = **700**

Chapter 4 Fractions

Level 1

Exercise 1

1. (a) $1\frac{2}{3}$ (b) $3\frac{1}{2}$
   (c) $2\frac{3}{4}$ (d) $2\frac{5}{6}$
   (e) $4\frac{2}{9}$
2. (a) $\frac{7}{5}$ (b) $\frac{11}{4}$
   (c) $\frac{17}{3}$ (d) $\frac{24}{8}$
   (e) $\frac{15}{9}$
3. (a) $1\frac{5\div5}{10\div5} = 1\frac{1}{2}$ (b) $2\frac{2\div2}{6\div2} = 2\frac{1}{3}$
   (c) $3\frac{9\div3}{12\div3} = 3\frac{3}{4}$ (d) $5\frac{6\div3}{9\div3} = 5\frac{2}{3}$
4. (a) $\frac{1}{5}$; $1\frac{3}{5}$ (b) $1\frac{1}{6}$; $2\frac{1}{3}$
   (c) $4\frac{1}{3}$; 6
5. (a) $\frac{10}{4} = \frac{5}{2} = 2\frac{1}{2}$ (b) $\frac{8}{6} = \frac{4}{3} = 1\frac{1}{3}$
   (c) $\frac{15}{8} = 1\frac{7}{8}$ (d) $\frac{21}{9} = \frac{7}{3} = 2\frac{1}{3}$
6. (a) $\frac{5}{7}$; $\frac{10}{7}$ (b) $\frac{2}{4} = \frac{1}{2}$; $\frac{10}{4} = \frac{5}{2}$
   (c) $\frac{15}{9} = \frac{5}{3}$; $\frac{19}{9}$
7. (a) $\frac{7}{2} = \frac{6+1}{2} = 3\frac{1}{2}$ (b) $\frac{13}{3} = \frac{12+1}{3} = 4\frac{1}{3}$
   (c) $\frac{12}{5} = \frac{10+2}{5} = 2\frac{2}{5}$ (d) 3
   (e) $\frac{24}{9} = \frac{8}{3} = 2\frac{2}{3}$ (f) $\frac{10}{8} = \frac{5}{4} = 1\frac{1}{4}$
8. (a) $2\frac{1}{7} = \frac{2\times7+1}{7} = \frac{15}{7}$
   (b) $1\frac{3}{10} = \frac{10+3}{10} = \frac{13}{10}$
   (c) $2\frac{2}{8} = 2\frac{1}{4} = \frac{2\times4+1}{4} = \frac{9}{4}$
   (d) $3\frac{4}{12} = 3\frac{1}{3} = \frac{3\times3+1}{3} = \frac{10}{3}$
   (e) $4\frac{5}{6} = \frac{4\times6+5}{6} = \frac{29}{6}$
   (f) $5\frac{6}{10} = 5\frac{3}{5} = \frac{5\times5+3}{5} = \frac{28}{5}$
9. (a) $\frac{5}{6} + \frac{2}{3} = \frac{5}{6} + \frac{4}{6} = \frac{9}{6} = \frac{3}{2} = 1\frac{1}{2}$
   (b) $\frac{5}{10} + \frac{3}{5} = \frac{5}{10} + \frac{6}{10} = \frac{11}{10} = 1\frac{1}{10}$
   (c) $\frac{1}{2} + \frac{3}{8} + \frac{7}{8} = \frac{4}{8} + \frac{3}{8} + \frac{7}{8} = \frac{14}{8} = \frac{7}{4} = 1\frac{3}{4}$
   (d) $2 - \frac{3}{7} = \frac{14}{7} - \frac{3}{7} = \frac{11}{7} = 1\frac{4}{7}$
   (e) $\frac{1}{2} - \frac{1}{10} = \frac{5}{10} - \frac{1}{10} = \frac{4}{10} = \frac{2}{5}$
   (f) $4 - \frac{8}{12} = \frac{48}{12} - \frac{8}{12} = \frac{40}{12} = 3\frac{1}{3}$
10. $2 - \frac{1}{3} = \frac{6}{3} - \frac{1}{3} = \frac{5}{3} = 1\frac{2}{3}$
    $1\frac{2}{3}$ of the cakes were left.
11. $\frac{5}{6} + \frac{11}{12} = \frac{10}{12} + \frac{11}{12} = \frac{21}{12} = 1\frac{3}{4}$ kg
    They have $1\frac{3}{4}$ kg of sugar altogether.
12. Peter jogged for a longer distance.
    $3 - \frac{7}{10} = \frac{30}{10} - \frac{7}{10} = \frac{23}{10} = 2\frac{3}{10}$ km
    It was $2\frac{3}{10}$ km longer.
13. $\frac{8}{9} + \frac{1}{3} = \frac{8}{9} + \frac{3}{9} = \frac{11}{9} = 1\frac{2}{9}$ kg
    The bag is $1\frac{2}{9}$ kg heavy.
14. $\frac{9}{10} + \frac{4}{5} = \frac{9}{10} + \frac{8}{10} = \frac{17}{10} = 1\frac{7}{10}$ km
    He had travelled $1\frac{7}{10}$ km.
15. Total mass of the 2 bags of flour
    = 2 × 2
    = 4 kg
    $4 - \frac{9}{10} = \frac{40}{10} - \frac{9}{10} = \frac{31}{10} = 3\frac{1}{10}$ kg
    The baker had $3\frac{1}{10}$ kg of flour left.

Exercise 2

1. (a) 8 units → 24
   1 unit → 24 ÷ 8 = 3
   (b) 4 units → 16
   1 unit → 16 ÷ 4 = 4
   3 units → 3 × 4 = 12
   (c) 7 units → 14
   1 unit → 14 ÷ 7 = 2
   5 units → 5 × 2 = 10
   (d) 5 units → 20
   1 unit → 20 ÷ 5 = 4
   4 units → 4 × 4 = 16
2. (a) $\frac{3}{10}$ of the fruits are apples.
   (b) 10 − 3 = 7
   $\frac{7}{10}$ of the fruits are oranges.
3. (a) 1 kg = 1000 g
   $\frac{100}{1000} = \frac{1}{10}$
   $\frac{1}{10}$ of the meat is cut off.
   (b) 1000 − 100 = 900 g
   $\frac{900}{1000} = \frac{9}{10}$
   $\frac{9}{10}$ of the meat is left.

4. $20 - 12 = 8$
$\frac{8}{20} = \frac{2}{5}$
$\frac{2}{5}$ of the passengers were adults.

5. $35 - 5 = 30$
$\frac{30}{35} = \frac{6}{7}$
$\frac{6}{7}$ of the pupils passed the test.

6. (a) $\frac{2}{12} = \frac{1}{6}$
$\frac{1}{6}$ of the roses are pink.
(b) $\frac{3}{12} = \frac{1}{4}$
$\frac{1}{4}$ of the roses are yellow.
(c) $12 - 2 - 3 = 7$
$\frac{7}{12}$ of the roses are red.

7. $24 - 10 - 11 = 3$
$\frac{3}{24} = \frac{1}{8}$
$\frac{1}{8}$ of the fish are catfish.

8. $\$40 - \$14 - \$10 = \$16$
$\frac{16}{40} = \frac{2}{5}$
He had $\frac{2}{5}$ of the money left.

9. (a) 3 units → 15 pies
1 unit → 15 ÷ 3 = 5 pies
2 units → 2 × 5 = 10 pies
He sold **10** pies.
(b) 15 – 10 = 5
He had **5** pies left.

10. 4 units → 1 m = 100 cm
1 unit → 100 ÷ 4 = 25 cm
100 – 25 = 75 cm
She has **75 cm** of the rope left.

11. 7 units → 28 pupils
1 unit → 28 ÷ 7 = 4 pupils
6 units → 6 × 4 = 24 pupils
28 – 24 = 4 pupils
There are **4 boys**.

Level 2

Exercise 1

1. $4\frac{1}{3} = \frac{13}{3}$ = **13** thirds
2. $6 = \frac{42}{7}$ = **42** sevenths
3. $2\frac{1}{2} = \frac{5}{2} = \frac{10}{4}$ = **10** quarters
4. 3 units → $12
1 unit → $12 ÷ 3 = $4
4 units → 4 × $4 = **$16**
She had **$16** at first.
5. Number of units of money Nicole had left
= 6 – 1
= 5
5 units → $10
1 unit → $10 ÷ 5 = $2
6 units → 6 × $2 = $12
She had **$12** at first.
6. 3 units → 15 fruits
1 unit → 15 ÷ 3 = 5 fruits
5 units → 5 × 5 = 25 fruits
There are **25** fruits in the basket.
7. 7 units → 21 animals
1 unit → 21 ÷ 7 = 3 animals
9 units → 9 × 3 = 27 animals
There are **27** animals in the pet shop.
8. Number of units of male guppies
= 7 – 3
= 4
4 units → 12 guppies
1 unit → 12 ÷ 4 = 3 guppies
7 units → 7 × 3 = 21 guppies
He bought **21** guppies.
9. Number of units of pupils who passed
= 9 – 2
= 7
7 units → 28 pupils
1 unit → 28 ÷ 7 = 4 pupils
2 units → 2 × 4 = 8 pupils
8 pupils failed the Maths test.
10. Number of units of cars in the car park
= 8 – 3
= 5
5 units → 30 vehicles
1 unit → 30 ÷ 5 = 6 vehicles
8 units → 8 × 6 = 48 vehicles
There are **48** vehicles in the car park.

Exercise 2

1. **(4)**
$\frac{24}{7} = \frac{21+3}{7} = 3\frac{3}{7}$
2. **(2)**
$4\frac{3}{8} = \frac{4 \times 8 + 3}{8} = \frac{35}{8}$
3. **(3)**
$2\frac{3}{5} = \frac{13}{5} = \frac{26}{10}$ = 26 tenths

4. (3)
$2 + \frac{2}{3} = 2\frac{2}{3}$
$3 - \frac{1}{3} = \frac{9}{3} - \frac{1}{3}$
$= \frac{8}{3}$
$= 2\frac{2}{3}$

5. (1)
$40 - 12 = 28$
$\frac{28}{40} = \frac{7}{10}$

6. (4)
6 units → 18
1 unit → 18 ÷ 6 = 3
5 units → 5 × 3 = 15

7. (2)
7 units → 56
1 unit → 56 ÷ 7 = 8
8 units → 8 × 8 = 64

8. (1)
$\frac{3}{12+6+8+3+7} = \frac{3}{36} = \frac{1}{12}$

9. (4)
$\frac{12+8}{36} = \frac{20}{36} = \frac{5}{9}$

0. (3)
6 ÷ 2 = 3

1. (1)
$\frac{9+6}{9+6+3} = \frac{15}{18} = \frac{5}{6}$

2. (2)
Cars → 4 units
Buses → 5 − 4 = 1 unit
5 units → 45 vehicles
1 unit → 45 ÷ 5 = 9 vehicles

3. (3)
1 unit → 12 cards
3 units → 12 × 3 = 36 cards

4. (2)
Apples → 1 unit
Oranges → 3 units
(3 − 1 =) 2 units → 6 fruits
1 unit → 6 ÷ 2 = 3 fruits
(3 + 1 =) 4 units → 3 × 4 = 12 fruits

5. (2)
9 units → 36 pupils
1 unit → 36 ÷ 9 = 4 pupils
Boys: 2 units → 4 × 2 = 8 pupils
Girls: 7 units → 4 × 7 = 28 pupils
Difference: 28 − 8 = 20 pupils

Level 3

Exercise 1

1. 3 units → 21 pupils
1 unit → 21 ÷ 3 = 7 pupils
2 units → 2 × 7 = 14 pupils
There are **14** boys.

2. Total number of units of passengers in the bus
= 3 + 5
= 8
3 units → 15 passengers
1 unit → 15 ÷ 3 = 5 passengers
8 units → 8 × 5 = 40 passengers
There are **40** passengers on the bus.

3. Total number of units of both masses of the apple and the mango
= 1 + 2
= 3
3 units → 870 g
1 unit → 870 ÷ 3 = 290 g
2 units → 2 × 290 = 580 g
The mass of the mango is **580 g**.

4. 3 units → $42
1 unit → $42 ÷ 3 = $14
4 units → 4 × $14 = $56
The toy car cost **$56**.

5. 9 units → 171 cm
1 unit → 171 ÷ 9 = 19 cm
7 units → 7 × 19 = 133 cm
Mei Ling's height is **133 cm**.

6. 2 units → 12 years
1 unit → 12 ÷ 2 = 6 years
11 units → 11 × 6 = 66 years
His grandfather is **66** years old.

7. 7 units → 63 marks
1 unit → 63 ÷ 7 = 9 marks
10 units → 10 × 9 = 90 marks
Her score for the Maths test was **90** marks.

8. Number of units of rambutan trees more than durian trees
= 4 − 1
= 3
3 units → 165 trees
1 unit → 165 ÷ 3 = 55 trees
4 units → 4 × 55 = 220 trees
There are **220** rambutan trees.

9. Total number of units of hazy days and non-hazy days
= 3 + 7
= 10
Number of units of non-hazy days more than hazy days
= 7 – 3
= 4
10 units → 30 days
1 unit → 30 ÷ 10 = 3 days
4 units → 4 × 3 = 12 days
There were **12** more non-hazy days than hazy days last month.

10. Number of units of goats more than cows
= 10 – 3
= 7
3 units → 87 animals
1 unit → 87 ÷ 3 = 29 animals
7 units → 7 × 29 = 203 animals
There are **203** more goats than cows.

11. Total number of units of children and adults at the concert
= 1 + 12
= 13
1 unit → 69 people
13 units → 13 × 69 = 897 people
There were **897** children and adults at the concert.

12. Number of units of money Natasha's brother have more than her
= 5 – 3
= 2
2 units → $14
1 unit → $14 ÷ 2 = $7
3 units → 3 × $7 = $21
Natasha has **$21**.

13. 5 units → 45 years
1 unit → 45 ÷ 5 = 9 years
9 – 1 = 8 years
Hannah was **8 years** old last year.

14. Number of units of Fiona's age less than her brother's age
= 3 – 2
= 1
1 unit → 6 years
2 units → 2 × 6 = 12 years
12 + 1 = 13 years
Fiona will be **13 years** old next year.

15. Number of years later for Paul to be 12 years old
= 12 – 8
= 4
1 unit → 8 years
7 units → 7 × 8 = 56 years
56 + 4 = 60 years
His grandfather will be **60 years** old.

Exercise 2

1. 4 units → 16
1 unit → 16 ÷ 4 = 4
3 units → 3 × 4 = 12
12 = 2 × 6

2. 12 units → 48
1 unit → 48 ÷ 12 = 4
5 units → 5 × 4 = 20
20 = 10 × 2

3. $\frac{7}{6} = \frac{14}{12}$
$1\frac{1}{12} = \frac{13}{12}$
$1 = \frac{12}{12}$
$\frac{11}{6} = \frac{22}{12}$
The required order: $1, 1\frac{1}{12}, \frac{7}{6}, \frac{11}{6}$

4. $3\frac{3}{4} = 3.75$
$\frac{33}{8} = 4.125$
$\frac{17}{4} = 4.25$
The required order: $\frac{17}{4}, \frac{33}{8}, 4, 3\frac{3}{4}$

5. +4 +4 +4 +4
$\frac{1}{5}, \frac{5}{5}, \frac{9}{5}, \frac{13}{5}, \frac{17}{5}$
$\frac{17}{5} = 3\frac{2}{5}$

6. +5 +5 +5 +5
$\frac{11}{7}, \frac{16}{7}, \frac{21}{7}, \frac{26}{7}, \frac{31}{7}$
$\frac{26}{7} = 3\frac{5}{7}$

7. 2 units → 32
1 unit → 32 ÷ 2 = 16
7 units → 7 × 16 = 112
8 parts → 112
1 part → 112 ÷ 8 = 14
$\frac{1}{8}$ of the number is **14**.

8. 3 units → 27
1 unit → 27 ÷ 3 = 9
11 units → 11 × 9 = 99
9 parts → 99
1 part → 99 ÷ 9 = 11
2 parts → 2 × 11 = 22
$\frac{2}{9}$ of the number is **22**.

9. Number of units of water to make the water tank half full
= 10 ÷ 2
= 5
3 units → 27 *l*
1 unit → 27 ÷ 3 = 9 *l*
5 units → 5 × 9 = 45 *l*
There are **45** *l* of water in the water tank when it is half full.

10. 1 unit → $28
4 units → 4 × $28 = $112
Amount of money Khairul has = $112
Amount of money Timothy has = 2 × $112
= $224
$28 + $112 + $224 = $364
The three of them have **$364** altogether.

1. Number of girls at the party
= 4 × 8
= 32
4 units → 32 people
1 unit → 32 ÷ 4 = 8 people
3 units → 3 × 8 = 24 people
8 + 32 + 24 = 64 people
There were **64** people at the party.

12. Age of Rita's father
= 5 × 7
= 35 years
Age of Rita's sister
= 2 × 7
= 14 years
35 − 14 = 21 years
The difference between her father's age and her sister's age is **21 years**.

13. 8 units → 24 kg
1 unit → 24 ÷ 8 = 3 kg
9 units → 9 × 3 = 27 kg
Mass of Alfian = 27 kg
3 × 27 = 81 kg
Ryan's mass is **81 kg**.

14. Number of units of the green marbles = 1
Number of units of the blue marbles = 2
Number of units of the red marbles
= 3 × 1
= 3
Number of units of red marbles more than blue marbles
= 3 − 2
= 1
Total number of units of the marbles
= 1 + 2 + 3
= 6
1 unit → 18 marbles
6 units → 6 × 18 = 108 marbles
There are **108** marbles in the container.

15. 8 units → 40 years
1 unit → 40 ÷ 8 = 5 years
3 units → 3 × 5 = 15 years
Age of Mr Lim's son this year = 15 years
Age of Mr Lim this year = 3 × 15
= 45 years
45 + 1 = 46 years
Mr Lim will be **46 years** old next year.

Chapter 5 Angles

Level 1

Exercise 1

1. smaller; 40°
2. greater; 110°
3. greater; 155°
4. smaller; 75°
5. smaller; 20°
6. greater; 120°
7. smaller; 85°
8. smaller; 10°

Exercise 2

1. (a) $\frac{90°}{360°} = \frac{1}{4}$ (b) 360° ÷ 2 = **180°**
(c) 4 units → 360°
1 unit → 360° ÷ 4 = 90°
3 units → 3 × 90° = **270°**
(d) 1 × 360° = **360°**
(e) $1\frac{1}{2} = \frac{3}{2}$
2 units → 360°
1 unit → 360° ÷ 2 = 180°
3 units → 3 × 180° = **540°**
(f) 2 × 360° = **720°**

2. (a) 270° ÷ 90° = 3 (b) 5 × 90° = **450°**
(c) 3 × 90° = 270° (d) 8 × 90° = 720°
$\frac{270°}{360°} = \frac{3}{4}$ $\frac{720°}{360°} = 2$

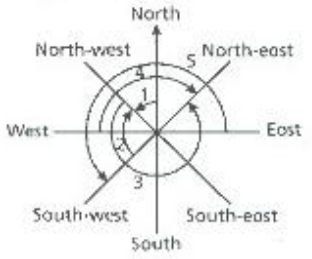
(e) $\frac{135°}{360°} = \frac{3}{8}$ (f) $\frac{330°}{360°} = \frac{11}{12}$

3. north-west
4. office
5. south-west
6. sickbay
7. classroom
8. south
9. canteen
10. south-east

Level 2

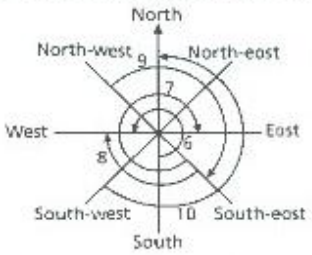
Exercise 1

Refer to this diagram for questions 1 to 5.



1. north-west
2. north-west
3. north-east
4. 135
5. 225

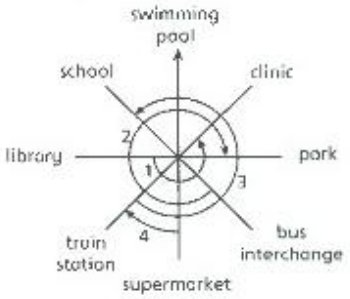
Refer to this diagram for questions 6 to 10.



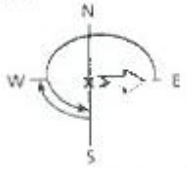
6. anti-clockwise
7. clockwise
8. west
9. south-east
10. north

Exercise 2

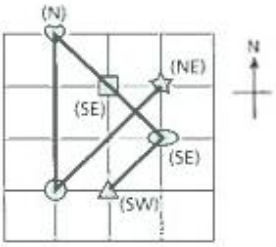
Refer to this diagram for questions 1 to 4.



1. **(2)**
2. **(4)**
3. **(1)**
4. **(4)**
5. **(4)**



Refer to this diagram for questions 6 to 9.

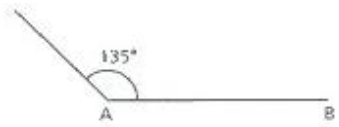


6. **(2)**
7. **(3)**
8. **(1)**
9. **(1)**

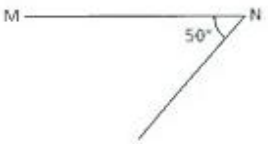
Level 3

Exercise 1

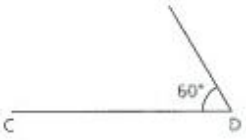
1.



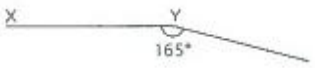
2.



3.



4.

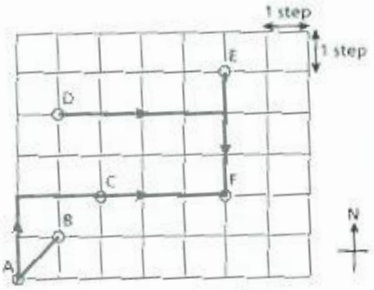


5. The minute hand moves 90° in 15 minutes.
   It moves (3 × 90° =) 270° in 45 minutes.
6. The hour hand moves 90° in 3 hours.
   It moves (90° ÷ 3 =) 30° in 1 hour.

7. The angle at which two hands pointing at two consecutive numbers on the clock is 30°.
   Angle formed = 2 × 30° = **60°**
8. At 4.30 p.m. the hour hand is halfway between 3 and 6. Angle formed = 90° ÷ 2 = **45°**

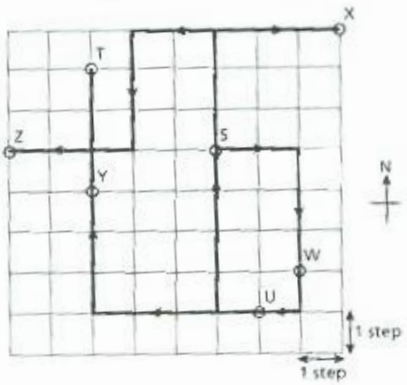
Exercise 2

Refer to this diagram for questions 1 to 4.



1. A
2. south
3. 4, south
4. 2, 5

Refer to this diagram for questions 5 to 8.



5. Z
6. S
7. Walk **4** steps to the **west**, then walk **6** steps to the **north**.
8. Walk **1** step to the **west**, then walk **7** steps to the **north**, then walk **3** steps to the **east**.
9. (a) Move **4** steps forward.
   Make a $\frac{1}{4}$-turn in the **anti-clockwise** direction.
   Move **1** step forward.
   Make a $\frac{1}{4}$-turn in the anti-clockwise direction.
   Move **2** steps forward.
   (b) Make a $\frac{1}{4}$-turn in the anti-clockwise direction.
   Move **3** steps forward.
   Make a $\frac{1}{4}$-turn in the **clockwise** direction.
   Move **1** step forward.
   Make a $\frac{1}{4}$-turn in the **clockwise** direction.
   Move **1** step forward.
10. Make a $\frac{1}{4}$-turn in the anti-clockwise direction.
    Move **4** steps forward.
    Make a $\frac{1}{4}$-turn in the clockwise direction.
    Move **3** steps forward.
    Make a $\frac{1}{4}$-turn in the clockwise direction.
    Move **1** step forward.
    Make a $\frac{1}{4}$-turn in the anti-clockwise direction.
    Move **1** step forward.

Chapter 6 Squares and Rectangles

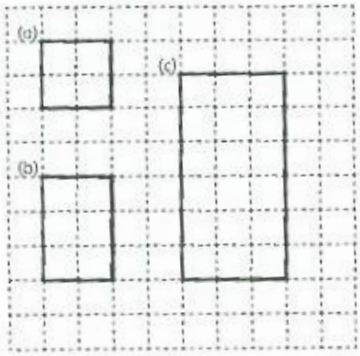
Level 4

Exercise 1

1.

Property	Shape	
	Square	Rectangle
It has four sides.	✓	✓
All sides are equal in length.	✓	
Only the opposite sides are equal in length.		✓
It has 2 pairs of parallel sides.	✓	✓
All angles are right angles.	✓	✓

2. BC = **6 cm**, CD = **6 cm**, AD = **6 cm**, ∠ABC = **90°**
3. LM = **8 cm**, JM = **4 cm**, ∠KLM = **90°**
4. YZ = **10 m**, WZ = **6 m**, ∠WZY = **90°**
5. EF = **3 m**, FG = **3 m**, GH = **3 m**, ∠HEF = **90°**
6.



Exercise 2

1. WX // ZY, WZ // XY
2. CD // FE, CF // DE
3. PR = 10 cm, TU = 10 + 3 = 13 cm
4. PQ = 3 cm, PT = 7 – 3 = 4 cm, UV = 4 cm
5. JN = 20 – 6 = 14 cm, ML = 14 cm
6. MN = 14 cm, JL = 14 cm,
   IL = 14 + 9 = 23 cm
7. RU = 4 cm, UX = 7 – 4 = 3 cm
8. UV = 3 cm, TV = 9 – 3 = 6 cm
9. CD = 5 cm, DG = 8 – 5 = 3 cm
10. CE = 8 cm, BE = 8 + 5 = 13 cm

Level 2

Exercise 1

1. LM = NK = 19 – 6 – 3 = 10 cm
2. RU = ST = 8 cm
   PW = 7 + 8 + 5 = 20 cm
3. ST = RS = 10 – 6 = 4 cm
4. BC = 15 + 17 = 32 cm
5. DE = GF = 11 cm
   CD = 25 – 11 = 14 cm
6. AG = JH = 14 – 2 = 12 cm
7. EF = 14 + 12 = 26 cm
8. (a) BC = 12 cm (b) FG = 3 cm
9. DE = 22 – 12 – 3 = 7 cm
10. (a) EF = 7 – 3 = 4 cm
    (b) CD = 12 – 7 = 5 cm

Exercise 2

1. **(3)**
   There are exactly two right angles in the figure.
2. **(2)**
   A square has all its sides being equal.
3. **(4)**
   A parallelogram has equal opposite sides.
4. **(2)**
   A trapezium has exactly one pair of parallel sides.
5. **(1)**
   A square and a rectangle both have all angles being right angles.
6. **(4)**
   A square, a rhombus and an equilateral triangle have all sides being equal.
7. **(3)**
   QM = 2 × 4 = 8 cm
   SR = 11 – 8 = 3 cm
8. **(3)**
   KN = 4 cm + 8 cm + 11 cm = 23 cm
9. **(1)**
   5 units → 15 cm
   1 unit → 15 ÷ 5 = 3 cm
   3 units → 3 × 3 = 9 cm
   Breadth = 9 cm
10. **(1)**
    10 units → 30 cm
    1 unit → 30 ÷ 10 = 3 cm
    3 units → 3 × 3 = 9 cm
    Breadth = 9 cm

Level 3

Exercise 1

1. CD = AB = 4 cm
   GH = 4 + 4 + 13 = 21 cm
2. 20 – 12 = 8 cm
   FG = 8 ÷ 2 = 4 cm
3. SR = 24 – 6 – 7 = 11 cm
4. UT = 15 ÷ 3 = 5 cm
5. VX = 5 + 15 = 20 cm
6. LK = MJ = 19 – 3 – 7 = 9 cm
7. FK = 9 + 5 = 14 cm
8. 3 units → 24 cm
   1 unit → 24 ÷ 3 = 8 cm
   2 units → 2 × 8 = 16 cm
   PV = 16 cm
9. VU = 24 – 16 = 8 cm
10. SU = 16 + 24 = 40 cm

Exercise 2

1. 17 – 3 = 14 cm
   AB = 14 ÷ 2 = 7 cm
2. AK = 7 + 5 = 12 cm
3. 28 – 16 = 12 cm
   UT = 12 ÷ 2 = 6 cm
4. 31 – 7 = 24 cm
   SR = 24 ÷ 2 = 12 cm
5. MN = 16 – 10 = 6 cm
6. JN = 2 × 6 = 12 cm
7. 2 units → 6 cm
   1 unit → 6 ÷ 2 = 3 cm
   9 units → 9 × 3 = 27 cm
   AP = 27 cm

8. BI = 27 – 6 – 6 = 15 cm
   3 units → 15 cm
   1 unit → 15 ÷ 3 = 5 cm
   2 units → 2 × 5 = 10 cm
   CG = **10 cm**
9. 4 units → 28 cm
   1 unit → 28 ÷ 4 = 7 cm
   3 units → 3 × 7 = 21 cm
   JM = **21 cm**
10. DE = 2 × 8 = 16 cm
    DK = 33 – 16 – 2 = **15 cm**

Semestral Assessment 1

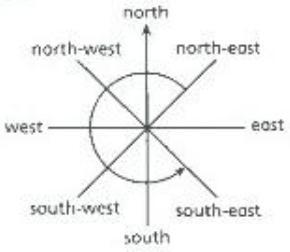
Specimen Paper 1

Section A

1. **(4)**
   The digit in the tens place is bigger than 5. Hence, it should be rounded up.
   7183 ≈ 7200 (nearest hundred)
2. **(4)**
   30 000 + 900 + 18 = 30 918
3. **(3)**
   9 = 3 × 3
4. **(2)**
5. **(3)**
   −150 −150 −150 −150
   10 253, 10 103, 9953, 9803, 9653
6. **(2)**
   $\frac{31}{8} = \frac{24+7}{8} = 3 + \frac{7}{8} = 3\frac{7}{8}$
7. **(4)**
   $6\frac{1}{2} = \frac{6\times2+1}{2} = \frac{13}{2}$ = 13 halves
8. **(1)**

$$\begin{array}{r} 678 \\ \times\quad 37 \\ \hline 4746 \\ 20340 \\ \hline 25086 \end{array}$$

9. **(2)**
   48 ÷ 7 = 6 R 6
10. **(4)**
    3 units → 120
    1 unit → 120 ÷ 3 = 40
    5 units → 5 × 40 = 200
    The number is 200.
11. **(2)**
    In rectangle ABCD, AD // BC.
12. **(4)**
    Larger number → 4 units
    Smaller number → 1 unit
    5 units → 5180
    1 unit → 5180 ÷ 5 = 1036
    4 units → 4 × 1036 = 4144
13. **(3)**



14. **(1)**
    10 units → 90 children
    1 unit → 90 ÷ 10 = 9 children
    4 units → 4 × 9 = 36 children
    Number of girls = 36

Section B

15. **3578**
16. Factors of 15: 1, 3, 5, 15
    1 + 3 + 5 + 15 = **24**
17. 5063 – 2817
    ≈ 5100 – 2800
    = **2300**
18. 95 m × 95 m = **9025** m^2
19. $\frac{5}{9} + \frac{2}{3} + \frac{2}{9} = \frac{5}{9} + \frac{6}{9} + \frac{2}{9} = \frac{13}{9} = 1\frac{4}{9}$
20. 40 × 330 = **13 200** ml
21. \$801 ÷ 9 = **\$89**
22. **BA**
23. $\frac{1}{10}$ = 0.1 $\frac{1}{12}$ = 0.08
    The required order : 1, $\frac{1}{10}$, $\frac{1}{12}$
24. $1 - \frac{7}{12} = \frac{12}{12} - \frac{7}{12} = \frac{5}{12}$
25. 4 km 80 m = 4000 m + 80 m = **4080** m
26.

27. 24 – 10 – 8 = 6
    $\frac{6}{24} = \frac{1}{4}$
28. \$1.20 + \$2.80 = \$4 → one cup of Milo and one plate of mee goreng
    OR
    \$1.25 + \$ 2.75 = \$4 → one cup of hot milk and one chicken burger

29. Multiples of 7 between 0 and 45:
7, 14, 21, 28, 35, 42
Number of even multiples of 7 between 0 and 45 = **3**

30. 10 units → 360°
1 unit → 360 ÷ 10 = **36°**

31. 30°

32. 9 units → 45 cm
1 unit → 45 ÷ 9 = 5 cm
5 units → 5 × 5 = 25 cm
Breadth = **25 cm**

33. 8 × 77 = 616
616 + 7 = **623**

34. EF = 9 − 4 = **5 cm**

Section C

35. Book → 1 unit
Book + pen + $17 → 2 units
2 units → $21 + $17 = $38
1 unit → $38 ÷ 2 = $19
The cost of the book was **$19**.

36. (a) $1 - \frac{3}{5} - \frac{3}{10} = \frac{10}{10} - \frac{6}{10} - \frac{3}{10} = \frac{1}{10}$
He had $\frac{1}{10}$ of his money left.
(b) 10 units → $70
1 unit → $70 ÷ 10 = $7
He had **$7** left.

37. Number of soldiers on the battle tanks
= 1405 − 75
= 1330
1330 ÷ 7 = 190
There were **190** battle tanks.

38. 4 units → 480 g
1 unit → 480 ÷ 4 = 120 g
7 units → 7 × 120 = 840 g
She had **840 g** of flour at first.

39. Number of chairs in the first 15 rows
= 15 × 45
= 675
Number of chairs in the remaining rows
= 25 × 30
= 750
675 + 750 = 1425
The total number of chairs in the hall was **1425**.

40. (a) $800 + $40 = $840
$840 ÷ 4 = $210
His son has **$210** in the end.
(b) $210 − $40 = $170
Mr Chen gives **$170** to his son.

41. (a) Ann received **$36**.
(b) $52 − $18 = $34
Bryan received **$34** more than Eng Heng.
(c) $30 ÷ $5 = 6
She received **6** $5 notes.

42. By guess and check,

Number of $2 notes	Value of $2 notes	Number of $5 notes	Value of $5 notes	Total value	Check
6	$12	1	$5	$17	✗
10	$20	5	$25	$45	✗
(11)	$22	(6)	$30	$52	✓

6 + 11 = 17
He received **17** notes in total.

Specimen Paper 2

Section A

1. **(4)**
The digit 0 in 13 098 is in the hundreds place.

2. **(3)**
17 thousands 9 tens = 17 000 + 90 = 17 090

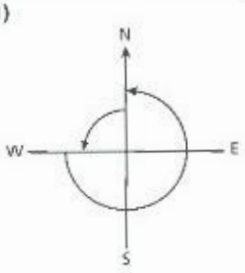
3. **(1)**
8 = 2 × 4

4. **(4)**
$5\frac{1}{2} = \frac{11}{2} = \frac{22}{4}$ = 22 quarters

5. **(3)**
$\frac{7}{10} - \frac{3}{5} = \frac{7}{10} - \frac{6}{10} = \frac{1}{10}$

6. **(2)**
$2\frac{1}{2} = 2\frac{4}{8}$, $2\frac{1}{4} = 2\frac{2}{8}$
The masses of bags from the heaviest to th lightest are $2\frac{1}{2}$, $2\frac{3}{8}$, $2\frac{1}{4}$, $1\frac{7}{8}$.
Kavi has the heaviest bag.

7. **(1)**



8. **(2)**
65 × 23 = 1495 (smaller than 1500.)

9. **(3)**

10. **(4)**
5559 ÷ 6 = 926 R 3

11. **(3)**
Phillip's age → 1 unit
Wayne's age → 6 units
Ryan's age → 6 ÷ 2 = 3 units
Ryan is 3 times as old as Phillip.

12. **(2)**
$\frac{19}{6} - 2 = \frac{19}{6} - \frac{12}{6} = \frac{7}{6} = 1\frac{1}{6}$

13. **(2)**
10 + 10 + 4 + 4 = 28 cm

14. **(1)**
Amount of money Belinda has
= $100 ÷ 2
= $50
Total amount of money both of them have
= $100 + $50
= $150
Amount of money each have equally
= $150 ÷ 2
= $75
$100 – $75 = $25
She must give $25 to Belinda.

Section B

15. Forty thousand, eight hundred and twelve
16. 70 850
17. The digit 6 stands for 6000 = 6 × **1000**.
18. $5\frac{1}{2}$, 9
19. 72 – 9 = **63**
20. 9 in the tens place is bigger than 5. Hence, it is rounded up.
$3994 ≈ **$4000** (nearest hundred dollars)
21. $4\frac{2}{3} = \frac{4 \times 3 + 2}{3} = \frac{14}{3}$
22. 6 units → 24
1 unit → 24 ÷ 6 = 4
5 units → 5 × 4 = **20**
23. 1 m 9 cm = 100 cm + 9 cm = **109** cm
24. 40 – 32 = 8
$\frac{8}{40} = \frac{1}{5}$
25. Fraction of the money he has left
$= 1 - \frac{2}{5}$
$= \frac{3}{5}$
5 units → $20
1 unit → $20 ÷ 5 = $4
3 units → 3 × $4 = $12
He has **$12** left.
26. 32 – 9 – 4 – 12 – 1 = **6**
27. $\frac{12}{32} = \frac{3}{8}$
28. (4 + 1 =) 5 units → 120 pupils
1 unit → 120 ÷ 5 = 24 pupils
Difference: (4 – 1 =) 3 units → 24 × 3 = 72 pupils
There are **72** more girls than boys.
29. 8 boxes → 1000 books
1 box → 1000 ÷ 8 = 125 books
3 boxes → 3 × 125 = **375** books
30. $18 ÷ $3 = 6 groups of 8 oranges
Number of oranges that can be bought
= 6 × 8
= **48**
31. 90° – 37° – 28° = **25°**
32. 232 ÷ 8 = **29** cm
33. (a) 65 marks
(b) 85 – 45 = **40** marks
34.

Section C

35. ☆ = 900 – 809 = 91
△ = 343 ÷ 7 = 49
☆ + △ = 91 + 49 = **140**
36. 7 units → $140 – $14 = $126
1 unit → $126 ÷ 7 = $18
$18 + $14 = $32
Veronica has **$32**.
37. 2 units → 70 adults
1 unit → 70 ÷ 2 = 35 adults
12 units → 12 × 35 = 420 adults
The number of adults on the train is **420**.
38. (a) The **bakery** is south-west of Pauline.
(b) Shis is facing the **bookshop**.
(c) She turns **270°**.
39. (a) $1 - \frac{1}{4} - \frac{2}{3} = \frac{1}{12}$
1 unit → 9 sweets
12 units → 12 × 9 = 108 sweets
She had **108** sweets at first.
(b) Joey → 3 units
Sebastian → 8 units
Difference :
(8 – 3 =) 5 units → 5 × 9 = 45 sweets
She gave **45** more sweets to Sebastian than to Joey.

40. (a) $3 + 2 = 5$
Selvi got **5** more stickers than Samantha.
(b) 3 units → $19 + 2 - 3 = 18$ stickers
1 unit → $18 \div 3 = 6$ stickers
Sarah got **6** stickers.

41. (a) 3 units → 60 *l*
1 unit → $60 \div 3 = 20$ *l*
10 units → $10 \times 20 = 200$ *l*
The capacity of the water tank is **200** *l*.
(b) 4 units → 200 *l*
1 unit → $200 \div 4 = 50$ *l*
3 units → $3 \times 50 = 150$ *l*
There is **150** *l* of water in the tank.

42. (a) $16 - 11 = 5$ cm
The length of DE is **5 cm**.
(b) $20 - 11 - 7 = 2$ cm
The length of HI is **2 cm**.
(c) $20 \times 5 = 100$ cm²
The area of the rectangle BCDE is **100 cm²**.

Chapter 7 Decimals 1

Level 1

Exercise 1

1. (a) 0.3 (b) 0.7
(c) 0.8
2. (a) 0.5 (b) 3.9
(c) 2.7 (d) $\frac{10}{10} = 1$
(e) $\frac{21}{10} = 2.1$ (f) $4 + \frac{1}{10} = 4.1$
3. (a) 4 (b) tens
(c) 3 (d) 0.5
(e) 0.9 (f) 6
4. (a) 3 (b) 10
(c) 0.7 (d) 25.1
(e) 57.4 (f) 90.6
5. (a) 0.4; 1.7 (b) 9.8; 10.2
(c) 45.5; 47.1
6. (a) 0.04 (b) 0.23
(c) 0.75
7. (a) 0.01 (b) 0.25
(c) $\frac{41}{100} = 0.41$ (d) 2.83
(e) 1.06 (f) $\frac{735}{100} = 7.35$
(g) $1 + \frac{4}{10} + \frac{2}{100} = 1.42$
(h) $5 + \frac{5}{100} = 5.05$
(i) $20 + 7 + \frac{9}{10} + \frac{3}{100} = 27.93$
8. (a) 9 (b) 0.08
(c) 8 (d) 0
(e) tenths (f) 7
9. (a) $\frac{3}{100}$ (b) $\frac{1}{10}$
(c) $\frac{1}{100}$ (d) $\frac{2}{100}$
(e) $\frac{5}{10}$ (f) $\frac{8}{10}$
10. (a) 7.94 (b) 20.4
(c) 53.98 (d) 1.01
(e) 69.08 (f) 80.02

Exercise 2

1. (a) 0.04 (b) 0.6
(c) 0.9 (d) 0.02
(e) 0.08 (f) 0.9
2. (a) 2.51; 2.64 (b) 5.19; 5.32
(c) 23.98; 24.05
3. (a) 0.007 (b) 0.302
(c) 0.013 (d) 0.385
(e) 1.005 (f) 1.999
(g) 1.251 (h) 2.018
(i) 80.008
4. (a) 1 (b) 0.007
(c) 0.03 (d) thousandths
(e) tenths (f) 0
5. (a) $0.03 = \frac{3}{100}$ (b) $0.9 = \frac{9}{10}$
(c) $0.034 = \frac{34}{1000}$ (d) $0.006 = \frac{6}{1000}$
(e) $0.005 = \frac{5}{1000}$ (f) $0.103 = \frac{103}{1000}$
6. (a) 0.008 (b) 0.2
(c) 0.038 (d) 0.06
(e) 0.083 (f) 0.17
7. (a) 3.012; 3.021 (b) 4.201; 4.216
(c) 8.991; 9.001
8. (a) 0.7 (b) 0.4
(c) 0.92 (d) 3.07
(e) 8 (f) 6.058
9. (a) 8.9 (b) 5.2
(c) 6.11 (d) 4
(e) 3.1 (f) 3.511
10. (a) +0.2 +0.2 +0.2 +0.2 +0.2
1.2, 1.4, 1.6, **1.8**, **2**, 2.2
(b) +0.5 +0.5 +0.5 +0.5 +0.5
3.5, **4**, 4.5, 5, 5.5, 6
(c) +0.05 +0.05 +0.05 +0.05 +0.05
0.1, 0.15, 0.2, 0.25, **0.3**, **0.35**
(d) +0.02 +0.02 +0.02 +0.02 +0.02
2.07, 2.09, **2.11**, **2.13**, 2.15, 2.17
(e) −0.05 −0.05 −0.05 −0.05 −0.05
2.05, **2**, 1.95, 1.9, 1.85, 1.8
(f) +0.01 +0.01 +0.01 +0.01 +0.01
0.134, 0.144, 0.154, 0.164, **0.174**, **0.184**

Level 2

Exercise 1

1. (a) 0.156, 0.51, 0.6
   (b) 1.07, 1.117, 1.7
   (c) 10.29, 12.009, 19.2
2. (a) 2.83, 2.803, 2.083
   (b) 9.9, 9.099, 0.99
   (c) 45.06, 40.6, 6.564
3. Consider the digit in the tenths place only.
   (a) 1 (b) 1
   (c) 3 (d) 5
   (e) 17 (f) 37
4. Consider the digit in the hundredths place only.
   (a) 0.3 (b) 2.9
   (c) 3.0 (d) 21.8
   (e) 57.4 (f) 90.1
5. Consider the digit in the thousandths place only.
   (a) 0.12 (b) 0.92
   (c) 1.08 (d) 7.66
   (e) 11.05 (f) 34.01
6.

Number	Round the number to		
	the nearest whole number	1 decimal place	2 decimal places
(a) 1.464	1	1.5	1.46
(b) 7.082	7	7.1	7.08
(c) 29.537	30	29.5	29.54
(d) 80.156	80	80.2	80.16

7. (a) 33 (b) 4
   (c) 11 (d) 1.3
   (e) 4.06 (f) 1.50
8. (a) $\frac{1}{2} = \frac{5}{10} = 0.5$
   (b) $\frac{4}{5} = \frac{8}{10} = 0.8$
   (c) $\frac{3}{4} = \frac{75}{100} = 0.75$
   (d) $\frac{6}{25} = \frac{24}{100} = 0.24$
9. (a) 1.5 (b) 1.75
   (c) 2.8 (d) 1.05
   (e) 1.2 (f) 6.18
10. (a) $0.6 = \frac{6}{10} = \frac{3}{5}$ (b) $0.54 = \frac{54}{100} = \frac{27}{50}$
    (c) $1.8 = 1\frac{8}{10} = 1\frac{4}{5}$
    (d) $2.75 = 2\frac{75}{100} = 2\frac{3}{4}$
    (e) $4.85 = 4\frac{85}{100} = 4\frac{17}{20}$
    (f) $7.36 = 7\frac{36}{100} = 7\frac{9}{25}$

Exercise 2

1. **(3)**
   The digit 9 in 30.794 stands for 0.09, i.e. 9 hundredths.
2. **(1)**
   $6 \times 0.001 = 0.006$
3. **(4)**
   $90 + 0.4 + 0.007 = 90.407$
4. **(3)**
5. **(2)**
   +0.04 +0.04 +0.04
   0.26, 0.30, 0.34, 0.38
6. **(1)**
7. **(2)**
   $8.099 \approx 8$ (nearest whole number)
8. **(4)**
   $14.862 \approx 14.9$ (nearest 1 decimal place)
9. **(3)**
   $0.04 = \frac{4}{100} = \frac{1}{25}$
10. **(3)**
    Each small division stands for 0.001. So the missing number is 5.909.

Level 3

Exercise 1

1. (a) $0.32 - 0.3 = 0.02 = \frac{2}{100} = \frac{1}{50}$
   (b) $1.4 - 1 = 0.4 = \frac{2}{5}$
   (c) $2.508 - 2 - 0.008 = 0.5 = \frac{1}{2}$
   (d) $3.56 - 0.06 = 3.5 = 3\frac{1}{2}$
   (e) $5.207 - 0.007 = 5.2 = 5\frac{1}{5}$
   (f) $6.059 - 0.009 = 6.05 = 6\frac{1}{20}$
2. (a) $0.9 + 0.02 = \mathbf{0.92}$
   (b) $1 + 0.8 = \mathbf{1.8}$
   (c) $2 + 0.25 = \mathbf{2.25}$
   (d) $5 + 0.08 = \mathbf{5.08}$
   (e) $3 + 0.1 + 0.05 = \mathbf{3.15}$
   (f) $9 + 0.06 + 0.008 = \mathbf{9.068}$
3. Since X is 3 when rounded to the nearest whole number, X should be smaller than 3.5. Therefore, the greatest possible value of X is **3.49**.

9. (a) $0.74 \times 6 \approx 1 \times 6$
$= 6$
(b) $7.4 \times 4 \approx 7 \times 4$
$= 28$
(c) $8.53 \times 7 \approx 9 \times 7$
$= 63$
10. (a) $17.5 \div 3 \approx 18 \div 3$
$= 6$
(b) $33.61 \div 7 \approx 35 \div 7$
$= 5$
(c) $65.22 \div 8 \approx 64 \div 8$
$= 8$

Exercise 2

1. **(2)**
$31.15 - 7.56 \approx 31.2 - 7.6 = 23.6$
2. **(3)**
$\$7.95 + \$4.38 \approx \$8 + \$4 = \$12$
3. **(2)**
$18 \div 8 = 2.25 \approx 2.3$
4. **(2)**
$2.05 \times 9 = 18.45$
5. **(3)**
$6 \div 7 \approx 0.857 \approx 0.86$
6. **(4)**
$5.2 = 2 + 3.2 = 2$ ones 32 tenths
7. **(1)**
$0.79 = 0.3 + 0.49 = 3$ tenths 49 hundredths
8. **(4)**
$0.58 \times 7 = 4.06$ which is greater than 4
9. **(2)**
$3.67 \times 2 = 7.34$
$23 \div 3 \approx 7.67$
$0.72 \times 9 = 6.48$
$54 \div 8 = 6.75$
$23 \div 3$ gives the greatest value.
10. **(3)**
$1.58 \times 6 = 9.48$
$85 \div 9 \approx 9.44$
$15.72 - 6.3 = 9.42$
$38 \div 4 = 9.5$
$15.72 - 6.3$ gives the smallest value.

Level 3

Exercise 1

1. $1.38 \div 3 = 0.46\ m = 46$ cm
The length of each piece of string is **46 cm**.
2. $\$5.40 \div 4 = \$1.35$
The cost of 1 notebook is **$1.35**.
3. $1.29 - 0.12 = 1.17$ m
Lynn is **1.17 m** tall.
4. $36.2 - 33.8 = 2.4$ kg
She is **2.4 kg** lighter now.
5. $7 \times 1.5 = 10.5\ l$
Her family drinks **10.5 *l*** of milk in a week.
6. $9 \times \$4.15 = \$37.35$
He collected **$37.35** altogether.
7. $\$46 \div 8 = \$5.75$
The doll is **$5.75**.
8. $\$9.80 \div 4 = \$2.45$
Each girl pays **$2.45** for her share.
9. 2 packs → $7.30
1 pack → $\$7.30 \div 2 = \$3.65$
5 packs → $5 \times \$3.65 = \$18.25$
The cost of 5 packs of fruit juice is **$18.25**.
10. $3 \times \$18.75 = \$56.25$
The two girls saved **$56.25** altogether.

Exercise 2

1. Total cost of the small cake and the packet of milk
$= \$3.40 + \$8.70$
$= \$12.10$
$\$12.10 \div 2 = \$6.05$
Each girl paid **$6.05**.
2. Length of remaining piece of ribbon
$= 50 - 12$
$= 38$ cm
$38 \div 8 = 4.75$ cm ≈ 4.8 cm (1 decimal place)
The length of each piece is **4.8 cm**.
3. Amount of money his daughter spent
$= \$17.50 \div 2$
$= \$8.75$
$\$17.50 + \$8.75 = \$26.25$
They spent **$26.25** altogether.
4. Mass of 7 pieces of butter
$= 7 \times 0.35$
$= 2.45$ kg
$3.2 - 2.45 = 0.75$ kg
The mass of the packet of flour is **0.75 kg**.

5. Cost of 4 tins of paint
= 4 × $23.99
= $95.96
$100 − $95.96 = $4.04
He received a change of **$4.04**.

6. Magazien → 1 unit
Comic book → 3 units
Cost of the magazine
= $42.60 ÷ 4
= $10.65
3 × $10.65 = $31.95
The cost of the comic book was **$31.95**.

7. Priscilla → 1 unit
Serene → 2 units
Lee lee → 8 units
8 units → $5.20
1 unit → $5.20 ÷ 8 = $0.65
Priscilla has **$0.65**.

8. By guess and check,

Number of 20¢ coins	Vaue of 20¢ coins	Number of 50¢ coins	Value of 50¢ coins	Total	Check
11	11 × $0.20 = $2.20	11	11 × $0.50 = $5.50	$2.20 + $5.50 = $7.70	✗
10	10 × $0.20 = $2.00	12	12 × $0.50 = $6.00	$2.00 + $6.00 = $8.00	✗
(9)	9 × $0.20 = $1.80	13	13 × $0.50 = $6.50	$1.80 + $6.50 = $8.30	✓

She has 9 20¢ coins.

9. 8 × $19.45 = $155.60
Value of 15 $10 notes = $150 → not enough to buy 8 pizzas
Least number of $10 notes = 15 + 1 = 16
The least number of $10 notes that he needs to buy the pizzas is **16**.

10. By guess and check,

Number of 10¢ coins	Vaue of 10¢ coins	Number of 5¢ coins	Value of 5¢ coins	Total	Check
10	10 × $0.10 = $1.00	2	2 × $0.05 = $0.10	$1.00 + $0.10 = $1.10	✗
13	13 × $0.10 = $1.30	5	5 × $0.05 = $0.25	$1.30 + $0.25 = $1.55	✗
(14)	14 × $0.10 = $1.40	(6)	6 × $0.05 = $0.30	$1.40 + $0.30 = $1.70	✓

14 + 6 = 20
He has **20** coins altogether.

Chapter 9 Time

Level 1

Exercise 1

1. (a) 1 min = **60** s
(b) 2 min = (2 × 60) s = **120** s
(c) 5 min = (5 × 60) s = **300** s
(d) 10 min = (10 × 60) s = **600** s
(e) 1 h = 60 min = (60 × 60) s = **3600** s
(f) $\frac{1}{2}$ h = **30** min = (30 × 60) s = **1800** s

2. (a) 60 s = 1 min
(b) 120 s = **2** min
(c) 180 s = **3** min
(d) 240 s = **4** min

3. 60 s = 1 min
1 min after 12.15 is **12.16**.

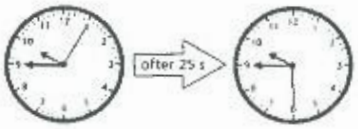
4. 120 s = 2 min
2 min after 4.55 is **4.57**.

5. Each division that the second hand passes represents **1** s.
Therefore, the time shown on the second clock is **35** s later.

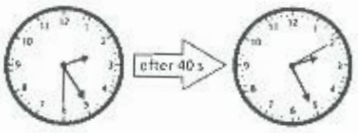
6. 10 − 5 = 5 s
The time shown on the second clock is **5** s later.

7. 50 − 10 = 40 s
The time shown on the second clock is **40** s later.

8. 5 + 25 = 30 s
i.e. the second hand is pointing at 6.



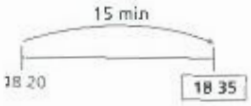
9. 30 + 40 = 70 s = 1 min 10 s
i.e. the minute hand moves forward by 1 and the second hand is pointing at 2.

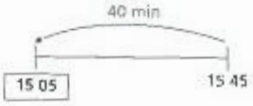


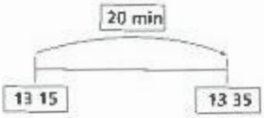
10. 15 + 45 = 60 s = 1 min
i.e. the minute hand moves forward by 1 and the second hand is pointing at 12.

Exercise 2

1. (a) 05 15 (b) 14 40
(c) 23 05 (d) 07 55
(e) 15 30 (f) 00 20
2. (a) 7.25 p.m. (b) 3.10 a.m.
(c) 10.45 p.m. (d) 1.50 p.m.
(e) 9.35 a.m. (f) 6.05 p.m.
3. noon : **12 00**
13 00 : **1.00 p.m.**
10.00 p.m. : **22 00**
23 00 : **11 p.m.**
4. 

His remedial class lasted **45** minutes.
5. 

She stopped jogging at **18 35**.
6. 

The show began at **15 05**.
7. 

The bus trip lasted **20** minutes.
8. 

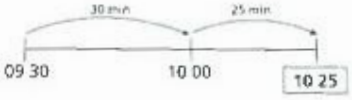
He put the cake into the oven at **11 05**.
9. 

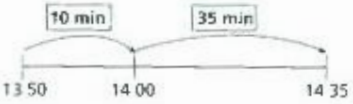
He reached Woodlands station at **20 50**.
10. 

He took **35** minutes to complete his drawing.

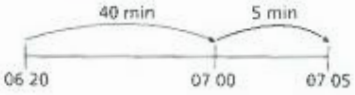
Level 2

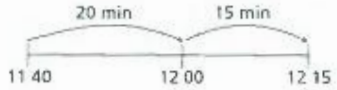
Exercise 1

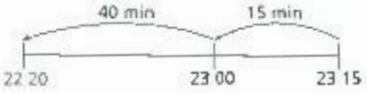
1. 

He finished watching TV at **10 25**.
2. 

10 min + 35 min = 45 min
Bryan waited for **45** minutes.
3. 

Her gymnastic lesson started at **17 15**.
4. 

40 min + 5 min = 45 min
The rain lasted for **45** minutes.
5. 

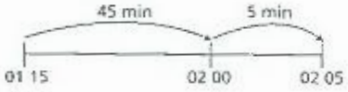
It reached Bugis station at **12 15**.
6. 

They started digging at **22 20**.

7.

He started talking on the phone at **14 40**.

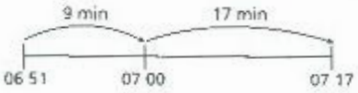
8.



45 min + 5 min = 50 min

The alarm was switched on for **50** minutes.

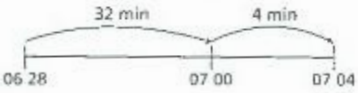
9.



9 min + 17 min = 26 min

The missile's journey lasted for **26** minutes.

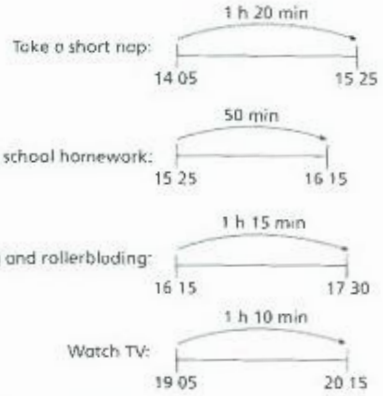
10.



The enemy planes reached our city at **07 04**.

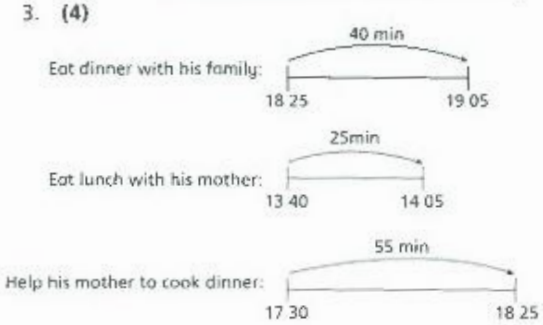
Exercise 2

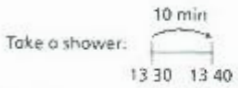
1. **(4)**
2. **(1)**



He took the longest time to take a short nap.

3. **(4)**





It took the shortest time to take a shower.

4. **(3)**

3 activities, i.e. take a short nap, go cycling and rollerblading and watch TV, took longer than one hour.

5. **(3)**

70 min + 1 h = 1 h 10 min + 1 h = 2 h 10 min

6. **(3)**

50 min ÷ 10 = 5 min

7. **(4)**

60 s → 360°

1 s → 6°

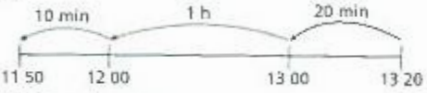
20 s → 20 × 6° = 120°

8. **(1)**

10 s + 20 s = 30 s i.e. the second hand is pointing at 6 after 20 s while the minute hand is still pointing at 12.

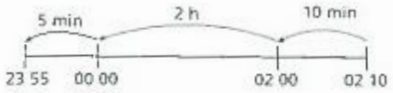
Therefore, the angle between the second hand and the minute hand is 180°.

9. **(3)**



11 50 → 11 50 a.m.

10. **(4)**

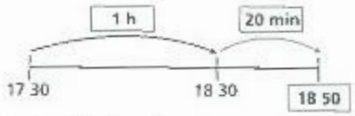


23 55 → 11 55 p.m.

Level 3

Exercise 1

1.



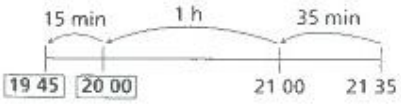
She finished cycling at **18 50**.

2.

From	To	Time taken
07 05	08 00	55 min
08 00	08 15	15 min
Total time taken		1 h 10 min

His train trip lasted for **1 h 10** min.

3.



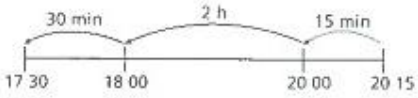
The movie started at **19 45**.

4.

From	To	Time taken
17 55	18 00	**5 min**
18 00	19 00	**1 h**
19 00	19 05	**5 min**
Total time taken		**1 h 10 min**

The performance by the orchestra was **1 h 10** min long.

5.



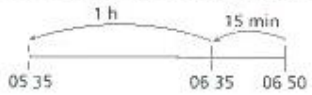
The celebration started at **17 30**.

6.

From	To	Time taken
22 40	**23 00**	**20 min**
23 00	**00 00**	**1 h**
00 00	**00 45**	**45 min**
Total time taken		**2 h 5 min**

She took **2** h **5** min to reach home.

7.

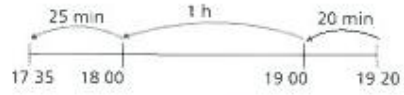


He should leave his home by **05 35**.

8.

His flight arrived at Hong Kong at **14 55**.

9.



He should leave his office by **17 35**.

10.

From	To	Time taken
21 45	22 00	15 min
22 00	03 00	5 h
03 00	03 10	10 min
Total time taken		**5 h 25 min**

His journey lasted **5** h **25** min.

Exercise 2

1.

From	To	Time taken
07 30	08 15	**45 min**
08 15	**09 45**	1 h 30 min
09 45	10 30	45 min
10 30	**13 05**	2 h 35 min

2.

From	To	Time taken
12 10	14 00	1 h 50 min
14 00	**15 25**	1 h 25 min
15 25	16 10	45 min
16 10	18 55	**2 h 45 min**
18 55	**21 00**	2 h 5 min

3.

From	To	Time taken
06 50	07 00	10 min
07 00	09 00	2 h
09 00	09 30	30 min
Total time taken		**2 h 40 min**

She was away from home for **2 h 40 min**.

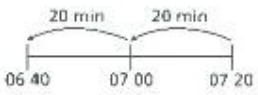
4. (a)

From	To	Time taken
06 05	07 00	55 min
07 00	07 20	20 min
Total time taken		1 h 15 min

He takes **1 h 15 min** to reach school by bus.

(b) **1** h 15 min – 35 min = 40 min
The new journey takes **40 min**.

(c)



He should leave home by **06 40** if he wants to reach school at the same time by travelling on the new MRT line.

5.

From	To	Time taken
15 35	16 00	25 min
16 00	19 00	3 h
19 00	19 10	10 min
Total time taken		**3 h 35 min**

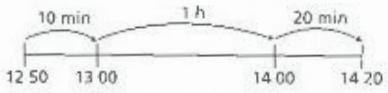
The journey from the bus terminal to town D is **3 h 35 min**.

6.

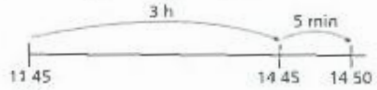
Bus number	Destination	Duration
12	Town A	2 h 20 min
37	Town B	1 h 55 min
26	Resort C	1 h 35 min
88	Town D	3 h 35 min
54	Resort E	3 h 5 min

Bus number 88's journey is the longest.

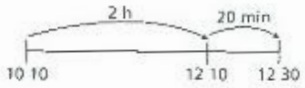
7. **Bus number 26's** journey is the shortest.

8. 

His family finally reached resort C at **14 20**.

9. 

Bus number 54 will reach the bus terminal at **14 50**.

10. 

The second bus will reach town A with the passengers at **12 30**.

Chapter 10 Area and Perimeter

Level 1

Exercise 1

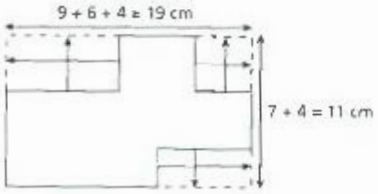
1. Length = 28 ÷ 4 = **7 cm**
2. Length = 100 ÷ 4 = **25 m**
3. 48 – 15 – 15 = 18 cm
   Breadth = 18 ÷ 2 = **9 cm**
4. 50 – 8 – 8 = 34 cm
   Length = 34 ÷ 2 = **17 cm**
5. Since 7 × 7 = 49, length = **7 cm**
6. Breadth = 24 ÷ 6 = **4 cm**
7. Length = 65 ÷ 5 = **13 cm**
8. Since 10 × 10 = 100, length = **10 cm**
9. (a) Length = 36 ÷ 4 = **9 cm**
   (b) Area = 9 × 9 = **81 cm²**
10. (a) Since 6 × 6 = 36, length = **6 cm**
    (b) Perimeter = 4 × 6 = **24 cm**

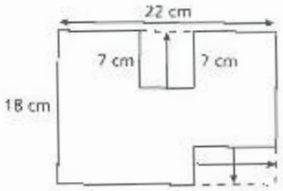
Exercise 2

1. (a) 40 – 15 – 15 = 10 cm
   Breadth = 10 ÷ 2 = **5 cm**
   (b) Area = 15 × 5 = **75 cm²**
2. (a) Length = 40 ÷ 5 = **8 cm**
   (b) Perimeter = 8 + 8 + 5 + 5 = **26 cm**
3. Since 8 × 8 = 64,
   length = 8 cm
   Perimeter = 4 × 8 = **32 cm**
4. Length = 64 ÷ 4 = 16 cm
   Area = 16 × 16 = **256 cm²**
5. 24 – 8 – 8 = 8 m
   Breadth = 8 ÷ 2 = 4 m
   Area = 8 × 4 = **32 m²**
6. Breadth = 24 ÷ 8 = 3 cm
   Perimeter = 8 + 8 + 3 + 3 = **22 cm**
7. Breadth = 50 ÷ 10 = 5 cm
   Perimeter = 10 + 10 + 5 + 5 = **30 cm**
8. 50 – 10 – 10 = 30 cm
   Length = 30 ÷ 2 = 15 cm
   Area = 15 × 10 = **150 cm²**
9. (a) 2 + 2 + 1 + 1 = 6 units → 48 cm
   Breadth : 1 unit → 48 ÷ 6 = **8 cm**
   Length : 2 units → 2 × 8 = **16 cm**
   (b) Area = 16 × 8 = **128 cm²**
10. (a) 3 + 3 + 1 + 1 = 8 units → 48 cm
    Breadth : 1 unit → 48 ÷ 8 = **6 cm**
    Length : 3 units → 3 × 6 = **18 cm**
    (b) Area = 18 × 6 = **108 cm²**

Level 2

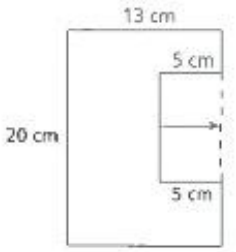
Exercise 1

1. Perimeter = 11 + 7 + (11 – 6) + (7 – 4) + 6 + 4
   = **36 cm**
2. 

   Perimeter = 11 + 19 + 11 + 19 = **60 cm**
3. 

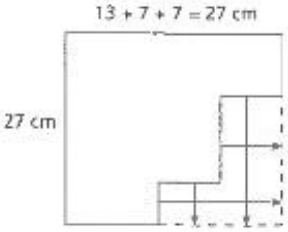
   Perimeter = 18 + 22 + 18 + 22 + 7 + 7 = **94 cm**

4.



Perimeter = 20 + 13 + 20 + 13 + 5 + 5 = **76 cm**

5.

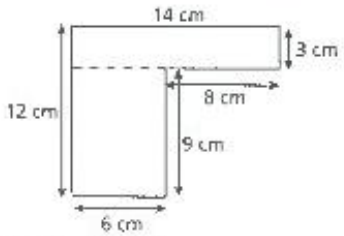


Perimeter = 27 + 27 + 27 + 27 = **108 cm**

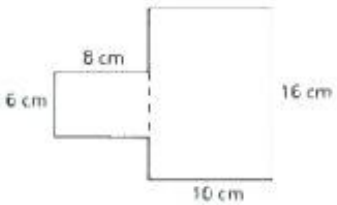
6. 18 × 8 = 144 cm²
11 × 9 = 99 cm²
Area of the figure = 144 + 99
= **243 cm²**

7. 7 − 3 = 4 m
7 × 4 = 28 m²
12 × 3 = 36 m²
Area of the figure = 28 + 36
= **64 m²**

8. 14 × 3 = 42 cm²
9 × 6 = 54 cm²
Area of the figure = 42 + 54
= **96 cm²**



9. 8 × 6 = 48 cm²
16 × 10 = 160 cm²
Area of the figure = 160 + 48
= **208 cm²**



10. 15 × 6 = 90 cm²

10 − 6 = 4 cm
10 + 13 = 23 cm
23 × 4 = 92 cm²

10 − 4 = 6 cm
13 × 6 = 78 cm²

Area of the figure = 90 + 92 + 78
= **260 cm²**

Exercise 2

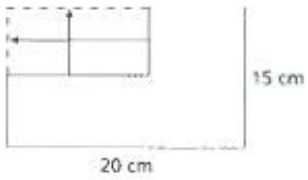
1. **(1)**
Length = 4 ÷ 4 = 1 cm
Area = 1 × 1 = 1 cm²

2. **(3)**
Since 2 × 2 = 4,
length = 2 cm
Perimeter = 4 × 2 = 8 cm

3. **(3)**
Breadth = 16 ÷ 8 = 2 cm
Perimeter = 8 + 8 + 2 + 2
= 20 cm

4. **(4)**
100 − 10 − 10 = 80 cm
Length = 80 ÷ 2 = 40 cm
Area = 40 × 10 = 400 cm²

5. **(4)**



Perimeter = 20 + 20 + 15 + 15
= 70 cm

6. **(1)**
7 × 8 = 56 cm²
20 × (15 − 7) = 20 × 8 = 160 cm²
Area of the figure = 56 + 160
= 216 cm²

7. **(2)**
(2 + 2 + 1 + 1 =) 6 units → 72 cm
Breadth: 1 unit → 72 ÷ 6 = 12 cm

8. **(3)**
(4 + 4 + 1 + 1 =) 10 units → 80 cm
1 unit → 80 ÷ 10 = 8 cm
Length: 4 units → 4 × 8 = 32 cm

9. **(3)**
   4 units → 40 + 4 + 4 = 48 cm
   Length: 1 unit → 48 ÷ 4 = 12 cm
10. **(1)**
    4 units → 48 – 10 – 10 = 28 cm
    Breadth: 1 unit → 28 ÷ 4 = 7 cm

Level 3

Exercise 1

1. 10 + 2 + 2 = 14 m
   10 × 10 = 100 m²
   14 × 14 = 196 m²
   196 – 100 = 96 m²
   The area of the path is **96 m²**.
2. 30 + 1.5 + 1.5 = 33 m
   8 + 1.5 + 1.5 = 11 m
   30 × 8 = 240 m²
   33 × 11 = 363 m²
   363 – 240 = 123 m²
   The area of the path is **123 cm²**.
3. 25 – 4 – 4 = 17 cm
   25 × 25 = 625 cm²
   17 × 17 = 289 m²
   625 – 289 = 336 cm²
   The area of the remaining cardboard is **336 cm²**.
4. 100 – 6 – 6 = 88 cm
   70 – 6 – 6 = 58 cm
   100 × 70 = 7000 cm²
   88 × 58 = 5104 cm²
   7000 – 5104 = 1896 cm²
   The area of the boarder is **1896 cm²**.
5. 50 × 25 = 1250 m²
   25 × 22 = 550 m²
   1250 – 550 = 700 m²
   The area of the remaining pool is **700 m²**.
6. 19 × 12 = 228 cm²
   7 × 7 = 49 cm²
   228 – 49 = 179 cm²
   The area of the remaining paper is **179 cm²**.
7. 30 × 30 = 900 cm²
   18 × 11 = 198 cm²
   900 – 198 = 702 cm²
   The area of the remaining paper is **702 cm²**.
8. 80 × 65 = 5200 m²
   40 × 32 = 1280 m²
   5200 – 1280 = 3920 m²
   The area of the remaining field is **3920 m²**.
9. The perimeter of the remaining field is the same as that of the original field.
   80 + 65 + 80 + 65 = 290 m
   The perimeter of the remaining field is **290 m**.
10. 8 × 6 = 48 cm²
    4 × 5 = 20 cm²
    $\frac{20}{48} = \frac{5}{12}$
    $\frac{5}{12}$ of the paper was cut away.

Exercise 2

1. 7 + 4 = 11 cm
   11 × 11 = 121 cm²
   The unfolded paper is **121 cm²**.
2. 5 + 4 = 9 cm
   10 + 4 = 14 cm
   14 × 9 = 126 cm²
   The area of the unfolded paper is **126 cm²**.
3. 18 + 2 = 20 cm
   16 × 20 = 320 cm²
   The area of the sheet of paper is **320 cm²**.
4. 2 × 9 = 18 cm
   18 × 18 = 324 cm²
   The area of the sheet of paper is **324 cm²**.
5. 12 – 2 = 10 cm
   Length of square B = 10 ÷ 2
   = 5 cm
   Length of square A = 5 + 2 = 7 cm
   Area of square B = 5 × 5
   = 25 cm²
   Area of square A = 7 × 7 = 49 cm²
   Total area = 25 + 49 = 74 cm²
   The total area of the two squares is **74 cm²**.
6. Listed areas of squares

Length (cm)	1	2	3	4	5	6	7	8	9	10
Area (cm²)	1	4	9	16	25	36	49	64	81	100

By guess and check,

Length of X (cm)	Length of Y (cm)	Total area (cm²)	Check
3	5	9 + 25 = 34	✗
5	6	25 + 36 = 61	✗
6	7	36 + 49 = 85	✗
4	8	16 + 64 = 80	✓

The length of square X is **4 cm** and the length of square Y is **8 cm**.

7. Length → Only two 3-cm squares can be cut out
Breadth → Only two 3-cm squares can be cut out
$2 \times 2 = 4$
At most **4 squares** can be cut from the paper.
8. Length → Only five 4-cm squares can be drawn
Breadth → Only three 4-cm squares can be drawn
$5 \times 3 = 15$
She can draw at most **15** squares on the paper.
9. Length → Exactly four squares can be drawn
Breadth → Exactly four squares can be drawn
$4 \times 4 = 16$
She can draw at most **16** squares on the paper.
10. (a) Length → Only six blocks can be made
Breadth → Only four blocks can be made
$6 \times 4 = 24$
She can get at most **24** blocks.
(b) $15 \times 15 = 225\ m^2$
$225 \times 24 = 5400\ m^2$
$95 \times 64 = 6080\ m^2$
$6080 - 5400 = 680\ m^2$
The area of the unused field is **680 m²**.

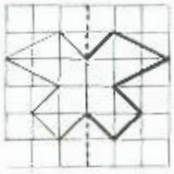
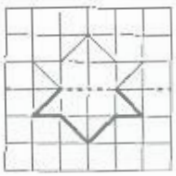
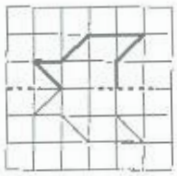
Chapter 11 Symmetry

Level 1

Exercise 1

1. (a) symmetry
(b) equal
(c) symmetric
2. (a) It is a symmetric figure. (Tick the box.)
(b) It is a symmetric figure. (Tick the box.)
(c) It is not a symmetric figure.
(d) It is a symmetric figure. (Tick the box.)
3. Only X, H and M are symmetric. (Circle them.)
4. ♥, → and © are symmetric. (Circle them.)
5.  , and are not symmetric. (Circle them.)
6. (a) The two halves **fit** exactly.
Line AB **is** a line of symmetry.
(b) The two halves **do not fit** exactly.
Line CD **is not** a line of symmetry.
(c) The two halves fit exactly.
Line XY **is** a line of symmetry.
(d) The two halves **do not fit** exactly.
Line ST **is not** a line of symmetry.
7. Only D, Y and U are symmetric. Tick them.
8. 
9. 
10. 

Exercise 2

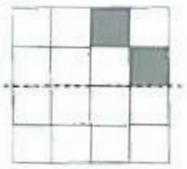
1. 
2. 
3. 
4. 
5. 

Level 2

Exercise 1

1. (2)
Only figure in option (2) is symmetric as it can be divided in two halves that fit exactly.
2. (4)
Only the figure in option (4) is symmetric about the dotted line as it can be divided in two halves that fit exactly.

3. (2)



4. (2)

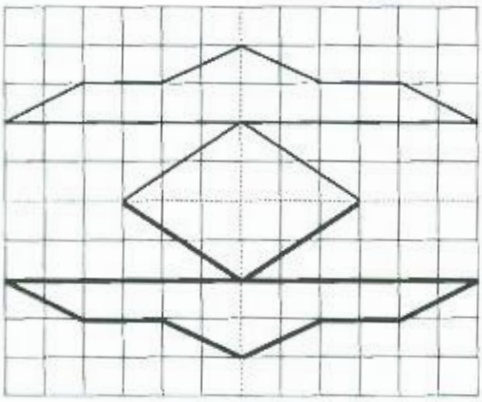
5. (4)
Only letter W has a vertical line of symmetry.

6. (3)
Only letter X has a horizontal line of symmetry.

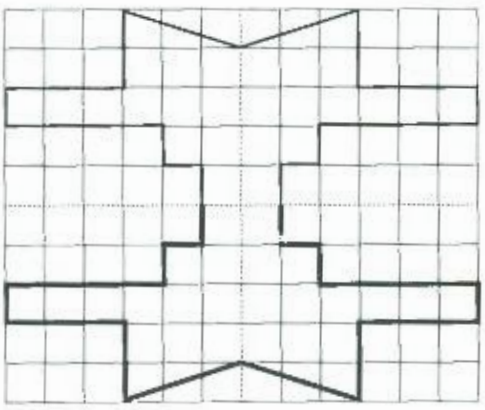
7. (1)
Only the word 'BOX' has a horizontal line of symmetry.

Exercise 2

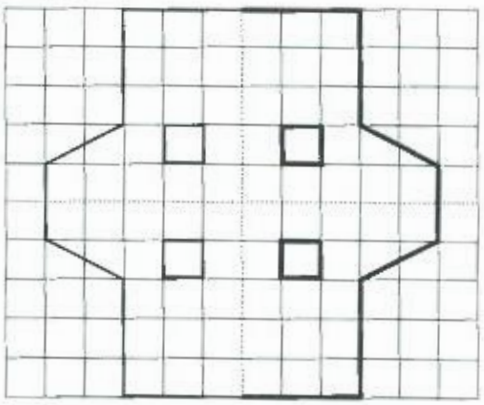
1.



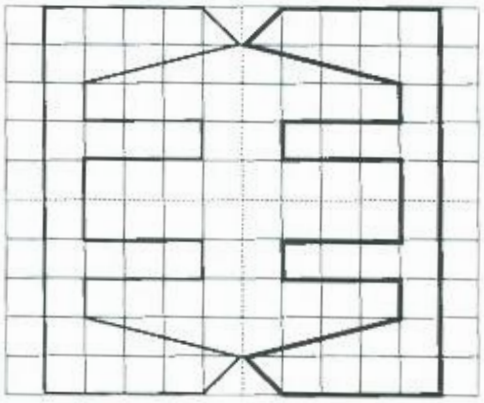
2.



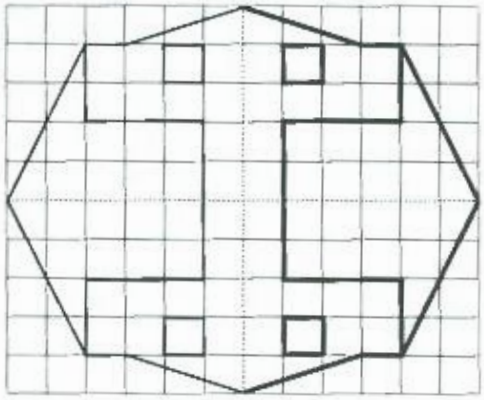
3.



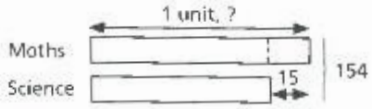
4.



5.

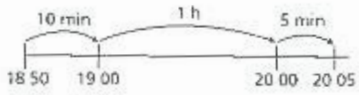


26.



2 units → 154 + 15 = 169 marks
1 unit → 169 ÷ 2 = 84.5 marks
His Maths results was **84.5** marks.

27.



He stopped jogging at **20 05**.

28. His brother's height = 1.5 m – 27 cm
= 1.5 m – 0.27 m
= **1.23 m**

29. Amount of money each boy paid = $36.80 ÷ 4
= **$9.20**

30. 2 years = 24 months
Total amount earned in 2 years = 24 × $750
= **$18 000**

31. Girls → 2 units
Boys → 9 – 2 = 7 units
9 units → 36 pupils
1 unit → 36 ÷ 9 = 4 pupils
Difference: (7 – 2 =) 5 units → 5 × 4 = **20** pupils

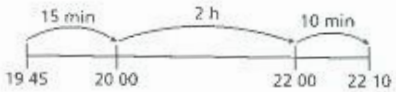
32. (4 – 1 =) 3 units → $13.20
1 unit → $13.20 ÷ 3 = $4.40
Joel: 4 units → 4 × $4.40 = **$17.60**

33. 5 units → 60
1 unit → 60 ÷ 5 = 12
2 units → 2 × 12 = 24 = 3 × **8**

34.

Section C

35.



15 min + 2 h + 10 min = 2 h 25 min
The performance lasted for **2 h 25 min**.

36. Cost of 4 packets of milk
= 4 × $1.65
= $6.60
$50 – $6.60 = $43.40
He would get a change of **$43.40**.

37. Amount of money Kim has
= $6.50 – $2.90
= $3.60
Amount of money Patricia has
= 3 × $6.50
= $19.50
$19.50 + $6.50 + $3.60 = $29.60
The three children have **$29.60** altogether.

38. By guess and check,

Number of 10¢ coins	Value of these 10¢ coins	Number of 50¢ coins	Value of these 50¢ coins	Total value	Check
23	$2.30	23	$11.50	$13.80	✗
30	$3	16	$8	$11	✗
33	$3.30	13	$6.50	$9.80	✗
34	$3.40	12	$6	$9.40	✓

34 – 12 = 22
She has **22** more 10¢ coins than 50¢ coins.

39. (a) AG = 17 – 9 = 8 cm
AB = 40 – 15 = 25 cm
17 + 40 + 9 + 15 + 8 + 25 = 114 cm
The perimeter of the figure is **114 cm**.

(b) Area of DEFG = 15 × 9 = 135 cm²
Area of ABCD = 25 × 17 = 425 cm²
135 + 425 = 560 cm²
The area of the figure is **560 cm²**.

40. (a) (7 – 3 =) 4 units → $15.40
1 unit → $15.40 ÷ 4 = $3.85
3 units → 3 × $3.85 = $11.55
The cost of the book is **$11.55**.

(b) 7 units → 7 × $3.85 = $26.95
The cost of the bag is **$26.95**.

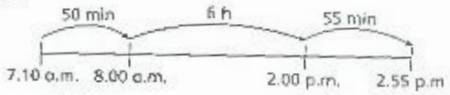
41. Total amount of money in both accounts
= $225 + $1575
= $1800
1 unit → $1800 ÷ 5 = $360
(4 + 1 =) 5 units → $1800
$360 – $225 = $135
She must transfer **$135** from account Y to account X.

42. Harris → 5 units
Susan → 6 units
Mary → 3 units
(a) 5 units → 15 years
1 unit → 15 ÷ 5 = 3 years
3 units → 3 × 3 = 9 years
Mary is **9 years old** this year.
(b) 6 units → 6 × 3 = 18 years
18 + 1 = 19
Susan will be **19 years old** next year.

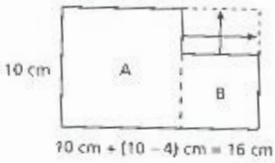
Specimen Paper 2

Section A

1. **(2)**
The height of a table in a classroom is about 1 m. 10 cm is too short while 10 m and 1 km are too high to be the height of a table.
2. **(3)**
1010¢ = $(1010 ÷ 100) = $10.10
3. **(4)**
Multiples of 2: 2, 4, 6, 8, ...
2 + 4 + 6 + 8 = 20
4. **(1)**
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Therefore, the set of numbers in option (1) are all factors of 24.
5. **(3)**
6000 ÷ 8 = 750
750 + 256 = 1006
6. **(4)**
$2\frac{9}{12} = 2\frac{3}{4} = \frac{11}{4}$ = 11 quarters
7. **(3)**
309 × 16 = 4944
8. **(1)**
4.86 × 5 = 24.3 ≈ 24 (nearest whole number)
9. **(2)**
$1\frac{5}{8} = 1.625$ $1\frac{8}{9} \approx 1.889$
$1\frac{6}{11} \approx 1.545$ $1\frac{7}{10} = 1.7$
Hence, $1\frac{8}{9}$ has the greatest value.
10. **(2)**
21.15 − 6.56 ≈ 21.2 − 6.6 = 14.6
11. **(4)**
Her sister's age this year → 5 + 2 = 7 years old
Kim's age this year → 2 × 7 = 14 years old
Kim's age next year → 14 + 1 = 15 years old
12. **(2)**
546 ÷ 8 = 68.25
The digit in the tenths place of 68.25 is 2.
13. **(2)**



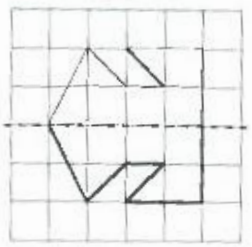
50 min + 6 h + 55 min
= 105 min + 6 h
= 1 h + 45 min + 6 h
= 7 h 45 min
14. **(3)**



Perimeter = 16 cm + 16 cm + 10 cm + 10 cm
= 52 cm

Section B

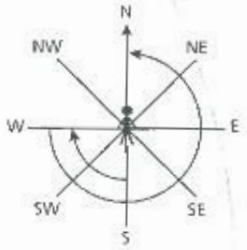
15. $0.08 = \frac{8}{100} = \frac{2}{25}$
16. 1.95 kg + 0.1 kg = 2.05 kg = 2 kg **50** g
17. Since 9 × 9 = 81,
length = 9 cm
18. $\frac{9}{10}$ km − $\frac{7}{8}$ km = $\frac{36}{40}$ km − $\frac{35}{40}$ km = $\frac{1}{40}$ **km**
19. 22 45
20. 13 m ÷ 7 ≈ 1.857 ≈ **1.9 m** (1 decimal place)
21. $\frac{2}{5}$ kg + $\frac{7}{10}$ kg + $\frac{1}{10}$ kg
= $\frac{4}{10}$ kg + $\frac{7}{10}$ kg + $\frac{1}{10}$ kg
= $\frac{12}{10}$ kg
= $1\frac{2}{10}$ kg
= $1\frac{1}{5}$ kg
22. 12 hundreds − 21 tens = 1200 − 210 = **990**
23. 100 ÷ 8 = 12.5 ≈ 13 (nearest whole number)
24. 7 *l* 5 m*l* = 7000 m*l* + 5 m*l* = **7005** m*l*
25. 12 − 5 − 3 = 4
4 parts out of 12 parts were left.
$\frac{4}{12} = \frac{1}{3}$
26.



27. 2 units → 200 − 38 = 162
Smaller number: 1 unit → 162 ÷ 2 = **81**

28. 9 units → 18
1 unit → 18 ÷ 9 = 2
7 units → 7 × 2 = 14
$14 - \frac{2}{3} = \frac{42}{3} - \frac{2}{3} = \frac{40}{3} = 13\frac{1}{3}$

29. 8 apples + 12 oranges → $20
2 apples + 3 oranges → $20 ÷ 4 = $5
6 apples + 9 oranges → 3 × $5 = **$15**

30. 

She was facing **north** in the end.

31. (10 − 3) = 7 units → 28 pupils
1 unit → 28 ÷ 7 = 4 pupils
Difference: (7 − 3 =) 4 units → 4 × 4 = **16** pupils

32. 4.8 m = 480 cm
(4 + 1 =) 5 units → 480 cm
1 unit → 480 ÷ 5 = 96 cm
Difference: 3 units → 3 × 96 = **288** cm

33. 130°

34. Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
Multiples of 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, ...
The possible values of the number: 2, 6, 10, 30
2 ÷ 3 = 0 R 2
6 ÷ 3 = 2 R 0
10 ÷ 3 = 3 R 1
30 ÷ 3 = 10 R 0
Therefore, the number is **10**.

Section C

35. 9 × 9 = 81 cm²
21 × 15 = 315 cm²
315 − 81 = 234 cm²
The area of the remaining paper was **234 cm²**.

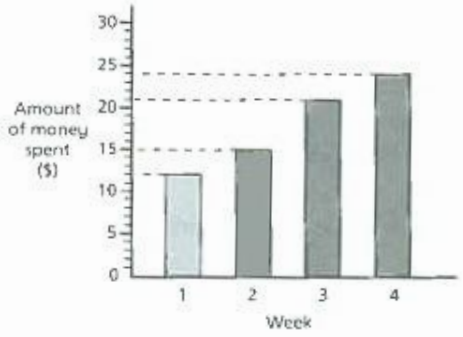
36. $1 - \frac{3}{4} - \frac{1}{6} = \frac{1}{12}$
12 units → 3 kg
1 unit → 3 ÷ 12 = $\frac{3}{12} = \frac{1}{4}$ kg
He had $\frac{1}{4}$ **kg** of flour left.

37. (a) 7 units → 84 passengers
1 unit → 84 ÷ 7 = 12 passengers
6 units → 12 × 6 = 72 passengers
There were **72** women.
(b) (6 − 1 =) 5 units → 5 × 12 = 60 passengers
There were **60** more women than men.

38. 9 + 3 = 12 cm
9 + 21 = 30 cm
30 × 12 = 360 cm²
The area of the unfolded paper is **360** cm².

39. (a) 4 units → $800 + $40 = $840
1 unit → $840 ÷ 4 = $210
His son has **$210** in the end.
(b) $210 − $40 = $170
Mr Chen gives **$170** to his son.

40. (a) 10 − 4 = 6
Mass of 6 pencils = 360 − 270 = 90 g
90 ÷ 6 = 15 g
The mass of 1 pencil is **15 g**.
(b) Mass of 10 pencils = 10 × 15 = 150 g
360 − 150 = 210 g
The mass of the box is **210 g**.

41. (a)


(b) 4 × $25 = $100
$12 + $15 + $21 + $24 = $72
$100 − $72 = $28
He had saved **$28** over the four weeks.

42. 2 × 600 = 1200 m*l*
2 units → 2500 + 1200 = 3700 m*l*
1 unit → 3700 ÷ 2 = 1850 m*l* = 1 *l* 850 m*l*
There is 1 ***l*** **850 m*l*** of water in beaker A at first.