P4 Solutions

Chapter 1 Whole Numbers

Answers to Unit 1.1 – Highest Common Factors

Let's Get Started 1.1

Exercise A

1. Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
Common factors of 12 and 30: 1, 2, 3, 6
Highest common factor (HCF): 6

2. Factors of 18: 1, 2, 3, 6, 9, 18
Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
Common factors of 18 and 36: 1, 2, 3, 6, 9, 18
Highest common factor (HCF): 18

Exercise B

1. 3 | 54, 81
   3 | 18, 27
   3 | 6, 9
   2 | 3

Highest common factor (HCF): $3 \times 3 \times 3 = 27$

2. 2 | 28, 40, 60
   2 | 14, 20, 30
   7 | 10, 15

Highest common factor (HCF): $2 \times 2 = 4$

3. 2 | 32, 64, 96
   2 | 16, 32, 48
   8 | 8, 16, 24
   1 | 2

Highest common factor (HCF): $2 \times 2 \times 8 = 32$

Let's Learn 1.1

Ask Yourself

1. No. The result will not give equal number of each animal in each cage.

Think Further

1. Number of rabbits in each cage = 32 - 8 = 4
Number of hare in each cage = 48 - 8 = 6

Let's Practise 1.1

Question 1

\[
\begin{array}{c|cc}
4 & 72, 84 \\
3 & 18, 21 \\
6, 7 &
\end{array}
\]

Maximum number of necklaces = 4 \times 3 = 12

(a) She can make 12 necklaces.
(b) There are 6 red beads and 7 blue beads in each necklace.

Question 2

\[
\begin{array}{c|cc}
5 & 45, 75 \\
3 & 15, 30 \\
3, 5 &
\end{array}
\]

Maximum number of trays needed = 5 \times 3 = 15

(a) She needs 15 trays.
(b) There are 3 brownies and 5 strawberry cupcakes in each tray.

Question 3

\[
\begin{array}{c|cc}
2 & 84, 126, 210 \\
3 & 14, 21, 35 \\
2, 3, 5 &
\end{array}
\]

Number of staff = 2 \times 3 \times 7 = 42

(a) She has 42 staff.
(b) Each staff received 2 cups, 3 coasters and 5 ball pens.

Question 4

\[
\begin{array}{c|cc}
2 & 48, 80, 96 \\
4 & 24, 40, 48 \\
6, 10, 12 \\
3, 5, 6 &
\end{array}
\]

(a) $2 \times 4 \times 2 = 16$

The greatest possible length of each of the smaller pieces of copper wire is 16 cm.
(b) $3 + 5 + 6 = 14$

He can get 14 smaller pieces of copper wire of equal length.

Page 1

For more review questions, please visit www.onsponge.com
**Question 5**

3. 24, 42
   24, 7

(a) \(3 \times 2 = 6\)

The largest possible length of the side of each square coloured paper is 6 cm.

(b) \(4 \times 7 = 28\)

Peter needs 28 square coloured papers.

**Question 6**

2. 20, 36
   10, 18
   5, 9

(a) \(2 \times 2 = 4\)

The largest possible length of the side of each square cookie is 4 cm.

(b) \(5 \times 9 = 45\)

Chef Lee can make 45 square cookies.

**Answers to Unit 1.2 – First Common Multiple**

**Let’s Get Started 1.2**

**Exercise A**

1. First ten multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30

   First ten multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

   First common multiple of 3 and 5: 15

2. First ten multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

   First ten multiples of 10: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

   First common multiple of 4 and 10: 20

**Exercise B**

1. 3. 9, 24
   3. 3, 8
   8. 1, 8
   1, 1

   FCM of 9 and 24 = \(3 \times 3 \times 8 = 72\)

2. 3. 15, 27
   5. 5, 9
   9. 1, 9
   1, 1

   FCM of 15 and 27 = \(3 \times 5 \times 9 = 135\)

**Let’s Learn 1.2**

**Ask Yourself**

1. You will have to find the first common multiple since you will need to find the day on which both of them would meet (when these numbers should overlap each other).

**Think Further**

2. 4, 6, 7
   2. 2, 3, 7
   3. 1, 3, 7
   7. 1, 1, 7
   1, 1, 1

   FCM of 4, 6 and 7 = \(2 \times 3 \times 7 = 42\)

They will cycle again 84 days later.

**Let’s Practise 1.2**

**Question 1**

5. 5, 10
   1, 1

   FCM of 5 and 10 = \(5 \times 2 = 10\)

7.35pm 7.45pm

Both lamps would flicker at 7.45 p.m.

**Question 2**

4. 4, 8, 10
   2. 2, 4, 5
   5. 1, 1, 5
   1, 1, 1

   FCM of 4, 8 and 10 = \(2 \times 2 \times 5 = 20\)

   The position of the first customer who will receive all 3 free items is the 40th customer.
Question 3

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FCM of 2, 6, and 15 = 2 x 3 x 5 = 30
The shortest length is 30 cm.

Question 4

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LCM of 5, 8, and 12 = 4 x 5 x 2 x 3 = 120
Olivia has a minimum of 120 paper clips.

Question 5

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Add 3 sweets

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<td>33</td>
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<td>43</td>
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Actual sweets

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<th>19</th>
<th>25</th>
<th>31</th>
<th>37</th>
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<td>37</td>
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Multiples of 6

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<td>18</td>
<td>24</td>
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<td>36</td>
<td>42</td>
<td>48</td>
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</table>

Add 13 sweets

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<tr>
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<td>39</td>
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</table>

Actual sweets

Julie has 43 sweets

Question 6

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<th>12</th>
<th>16</th>
<th>20</th>
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Add 15 pens

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<td>39</td>
<td>43</td>
<td>47</td>
<td>51</td>
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Actual pens

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<th>14</th>
<th>21</th>
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<th>35</th>
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Subtract 17 pens

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Actual pens

Minimum number of pens Kristine has is 39.

Answers to Unit 1.3 – More than / Less than

Let’s Get Started 1.3

<table>
<thead>
<tr>
<th></th>
<th>1u</th>
<th>1u</th>
<th>15</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1u</td>
<td></td>
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3.

<table>
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<tr>
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<th>1u</th>
<th>1u</th>
<th>1u</th>
<th>45</th>
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<tbody>
<tr>
<td>S</td>
<td>1u</td>
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Ask Yourself

1. White chips are more than black chips.
2. The bar representing white chips should be longer than that representing the black chips.

Think Further

1. There would be more black chips.

Let’s Practise 1.3

Question 1

K \[ \boxed{9500} \]
I \[ \boxed{9500} \]
I \[ \boxed{500} \]

9500 + 500 = 10 000
Irene picked 10 000 tea leaves.
9500 + 10 000 = 19 500
They picked 19 500 tea leaves in all.

Question 2

B \[ \boxed{15700} \]
S \[ \boxed{15700} \]

21 750 - 6050 = 15 700
The smaller number is 15 700.
15 700 + 21 750 = 37 450
Sum of the two numbers is 37 450.

For more review questions, please visit www.onsponge.com
Question 3

At first

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<tbody>
<tr>
<td>S</td>
<td>M</td>
<td>380</td>
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</table>

In the end

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<tbody>
<tr>
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<td>1u</td>
<td>180</td>
</tr>
<tr>
<td>M</td>
<td>1u</td>
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1u = 180
2u = 180 + 180 = 360
Sheila had 380 seashells in the end.
360 + 200 = 560
Sheila had **560 seashells** at first.

Question 4

At first

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<tr>
<td>G</td>
<td>B</td>
<td>18</td>
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In the end

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<tbody>
<tr>
<td>G</td>
<td>1u</td>
<td>12</td>
</tr>
<tr>
<td>B</td>
<td>1u</td>
<td>12</td>
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</table>

2u = 12
1u = 12 / 2 = 6
There were 6 girls at the library in the end.
6u + 18 = 6 x 6 + 18
= 54
There were **54 children** at the library first.

Question 5

At first

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<tbody>
<tr>
<td>A</td>
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In the end

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<tbody>
<tr>
<td>A</td>
<td>1u</td>
<td>900</td>
</tr>
<tr>
<td>B</td>
<td>1u</td>
<td>900</td>
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</table>

2u = 900 + 2880
= 3780
1u = 3780 / 2
= 1890

Question 5 (Cont.)

There were 1890 mini fruit tarts in Warehouse B in the end.
1u + 900 = 1890 + 900
= 2790
There were **2790 mini fruit tarts** in Warehouse B at first.

Question 6

At first

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<tr>
<td>Mr</td>
<td>265</td>
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<td>Mrs</td>
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In the end

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<tr>
<td>Mr</td>
<td>1u</td>
<td>199</td>
<td>215</td>
</tr>
<tr>
<td>Mrs</td>
<td>1u</td>
<td>199</td>
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3u = 199 + 215
= 414
1u = 414 / 3
= 138
Mrs Lim had 138 button pins in the end.
5u + 199 + 50 = 5 x 138 + 249
= 939
They had **939 button pins** at first.

Answers to Unit 1.4 – Equal Stage

Let’s Get Started 1.4

2.

In the end

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At first

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3.

At first

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In the end

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<td>1350</td>
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<tr>
<td>P</td>
<td>1u</td>
<td>7510</td>
<td>12500</td>
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4.  
In the end
C  
E  
At first
C  31
E  31 280
1201
5.  
In the end
P  
S  
At first
P  3u
1u  8
8  32
S  3u
1u  8
2u

Let’s Learn 1.4

Ask Yourself
1. From ‘At first’ since it is given in the question that Sandy and Ella has the same amount of money at first.
2. It would be easier to work on the ‘in the end’ model as the changes occurred after spending on the necklace. This also helps to make the comparison easier and to clearly see the “At First” model.

Think Further
1. Sandy has four times as much money as Ella. After Ella received $12, they both have the same amount of money.

Let’s Practise 1.4

Question 1

At first
H  
D  
In the end
H  2u
1u  6
1u  6
3u

2u = 6
1u = 6 + 2
= 3
3u = 3 x 3
= 9
Helen had 9 soft toys at first.

Question 2

At first
A  
B  
In the end
A  5u
1u  24
1u  24 + 4
= 6
Ben took 6 photos.

Question 3

At first
X  
Y  
In the end
X  4u
120  1470
1u  120
3u = 1590
120 = 1470
1u = 1470 + 3
= 490
1u - 120 = 490 - 120
= 370
There were 370 trees in Orchard X at first.

Question 4

At first
C  
D  
In the end
C  6u
1000  6200
5u
1u
5u = 7200 - 1000
= 6200
1u = 6200 + 5
= 1240
6u = 6 x 1240
= 7440
Constance had $7440 at first.

For more review questions, please visit www.onsponge.com
Question 5

In the end

Fred had 32 eggs at first.

\[ 2u = 96 \quad 24 \quad 8 \]
\[ 1u = 64 + 3 \]
\[ 1u = 64 \]

\[ 96 \div 3 = 32 \]

Genevieve has 56 eggs at first.

\[ 2u = 56 \quad 32 \quad 24 \]

\[ 1u = 28 \quad 24 \quad 8 \]

\[ 32 + 24 = 56 \]

\[ 1u = 56 \div 3 \]

Question 6

In the end

There were 15 women at the park at first.

\[ 2u = 30 \]
\[ 1u = 30 \div 2 \]
\[ 1u = 15 \]

There were 21 men and 21 women in the park in the end.

\[ 1u + 6 = 15 + 6 \]
\[ 1u = 21 \]

Answers to Unit 1.5 – Internal Transfer

Let’s Get Started 1.5

1.

Think Further

1. The above solution would change. Sean decreases by 29 and Jovan increases by 58 toy cars.
Let’s Practise 1.5

Question 1

At first

\[
\begin{array}{c|c|c}
S & 1u & 14 \\
T & 1u & 14 \\
\end{array}
\]

In the end

\[
\begin{array}{c|c|c|c}
S & 2u & 14 & 2u \\
T & 1u & 14 \\
\end{array}
\]

\[2u = 14 \times 2 = 28\]
\[1u = 28 + 2 = 14\]

Seraphine had 14 vanilla wafers in the end.

\[3u = 3 \times 14 = 42\]

Tanya had 42 vanilla wafers in the end.

Question 2

At first

\[
\begin{array}{c|c|c}
J & 1u & 4640 \\
Y & 1u & 4640 \\
\end{array}
\]

In the end

\[
\begin{array}{c|c|c|c|c}
J & 9u & 520 & 4640 & 520 \\
Y & 1u & 520 \\
\end{array}
\]

\[8u = 550 + 4640 + 520 = 5680\]
\[1u = 5680 + 8 = 710\]

Yvette has 710 bookmarks in the end.

Question 3

In the end

\[
\begin{array}{c|c|c}
J & 1u & 3700 \\
K & 1u & 3700 & 3700 \\
\end{array}
\]

At first

\[
\begin{array}{c|c|c|c}
J & 1u & 3700 \\
K & 1u & 3700 & 3700 \\
\end{array}
\]

\[2u = 15 000 - 3700 - 3700 = 7600\]
\[1u = 7600 + 2 = 3800\]

Question 3 (Cont.)

\[1u + 7400 = 3800 + 7400 = 11 200\]

Kaitlin had $11 200 at first.

Question 4

Morning

\[
\begin{array}{c|c|c|c|c|c|c}
A & 1u & 1800 \\
B & 1u & 1800 \\
\end{array}
\]

\[Towels transferred from A to B = 2500 \div 700 = 1800\]
\[2u = 3600\]
\[1u = 3600 \div 2 = 1800\]

There were 1800 towels in Factory A in the evening.

\[1800 + 1800 = 3600\]

Each factory had 3600 towels in the morning.

Question 5

At first

\[
\begin{array}{c|c|c}
M & 1u & 25 \\
J & 1u & 25 \\
\end{array}
\]

In the end

\[
\begin{array}{c|c|c|c|c|c|c}
M & 1u & 5 & 25 \\
J & 1u & 5 & 25 & 5 \\
\end{array}
\]

\[M gave to J = 47 \div 17 = 30\]
\[1u = 35\]

Melvin had 35 cookies in the end.
\[1u + 5 = 35 + 5 = 40\]

Johnny had 40 cookies at first.

Page 7 For more review questions, please visit www.onsponge.com
Question 6

What remained in F

\[ \text{Diff} = \text{Di} - \text{u} \]

\[ \text{Di} = u \]

\[ \text{u} = 210 \]

\[ 3u = 3 \times 210 = 630 \]

630 cards must be moved from B to A.

Answers to Unit 1.6 – One Item Unchanged

Let’s Get Started 1.6

2.

<table>
<thead>
<tr>
<th>What had changed?</th>
<th>What remained unchanged?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Damien’s money</td>
<td>• Gillian’s money</td>
</tr>
<tr>
<td>• Total amount of money both had</td>
<td></td>
</tr>
<tr>
<td>• Difference between the amount of money both had</td>
<td></td>
</tr>
</tbody>
</table>

3.

<table>
<thead>
<tr>
<th>What had changed?</th>
<th>What remained unchanged?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Volume of water in Tank B</td>
<td></td>
</tr>
<tr>
<td>• Total volume in Tank A and Tank B</td>
<td></td>
</tr>
<tr>
<td>• Difference in the volume of water in Tank A and Tank B</td>
<td>• Volume of water in Tank A</td>
</tr>
</tbody>
</table>

Think Further

1. In the revised question, Michelle’s number of cookies is no longer the same. Now the number of cookies Jordan has remained constant. Because of this, the 1 unit now represents the amount Michelle has left rather than the amount Jordan has left.

Let’s Practise 1.6

Question 1

At first

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>16</td>
</tr>
<tr>
<td>W</td>
<td></td>
</tr>
</tbody>
</table>

In the end

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>16</td>
</tr>
<tr>
<td>W</td>
<td>4</td>
</tr>
</tbody>
</table>

\[ 4u = 16 + 4 = 20 \]

\[ 1u = 20 + 4 = 5 \]

Wayne had 5 shirts in the end.

\[ 5u = 5 \times 5 = 25 \]

Paul had 25 shirts in the end.

Question 2

At first

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19 200</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

In the end

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1u 4200 19 200</td>
</tr>
<tr>
<td>B</td>
<td>1u 4200</td>
</tr>
</tbody>
</table>

\[ 5u = 23 400 - 19 200 = 4200 \]

\[ 1u = 4200 \times 5 = 840 \]

\[ 1u + 23 400 = 840 + 23 400 = 24 240 \]

There were 24 240 ants in Farm A at first.

Ask Yourself

1. The number of cookies Jordan had changed as he ate some.
2. Michelle still had the same number of cookies.
Question 3
At first

C
D

In the end

\[ \begin{align*}
2u &= 12 + 12 \\
&= 24 \\
1u &= 24 + 2 \\
&= 12 \\
\text{Denise had 12 hair clips in the end.} \\
12 \times 12 &= 24 \\
\text{Denise had 24 hair clips at first.}
\end{align*} \]

Question 4
At first

L
G

In the end

\[ \begin{align*}
1u &= 15 + 15 + 15 \\
&= 45 \text{ pens} \\
\text{Gillian had 45 pens in the end.} \\
45 + 15 &= 60 \\
\text{Gillian had 60 pens at first.}
\end{align*} \]

Question 5
At first

B
G

In the end

\[ 5u = 750 \]
\[ 1u = 750 + 5 \\
&= 150 \\
\text{There were 150 boys at the science fair in the end.} \\
9u = 9 \times 150 \\
&= 1350 \\
\text{There were 1350 children at the Science fair at first.} \]

Question 6
At first

M
W

In the end

\[ \begin{align*}
8u &= 3200 \\
1u &= \frac{3200}{8} \\
&= 400 \\
\text{There were 400 men at the convention centre in the end.} \\
2u &= 2 \times 400 \\
&= 400 \\
\text{There were 800 more women than men at the convention in the end.}
\end{align*} \]
4. 
At first
\[ \begin{array}{c|c|c}
M & & \\
\hline
G & & \text{Difference} \\
\end{array} \]

After
\[ \begin{array}{c|c|c}
M & & \\
\hline
G & & \text{Difference} \\
\end{array} \]

5. 
At first

1 yr old
\[ \begin{array}{c|c|c|c|c}
\text{15-day} & & & & \\
\hline
& & & & \text{Difference} \\
\end{array} \]

Six months later
\[ \begin{array}{c|c|c|c|c}
\text{1 yr old} & & & & \\
\hline
\text{30} & & & & \text{30} \\
\text{15-day} & & & & \text{Difference} \\
\end{array} \]

Ask Yourself
1. It is a Difference Unchanged problem because the difference in their age never changes.
2. The age of Aunt Lisa and the age of her nephew change as time passes.

Think further
1. Aunt Lisa is 51 years old and her nephew is 15 years old. How old will Aunt Lisa be when she is twice as old as her nephew?

Now
\[ \begin{array}{c|c|c}
L & 15 & 36 \\
\hline
N & 15 & \text{Difference} \\
\end{array} \]

Future
\[ \begin{array}{c|c|c}
L & 1u & 1u \\
\hline
N & 1u & \text{Difference} \\
\end{array} \]

1u = 36 (nephew’s age in the future)
36 + 36 = 72
Aunt Lisa will be **72 years old** when she is twice as old as her nephew.

Let’s Practise 1.7

**Question 1**

Present
<table>
<thead>
<tr>
<th>Jamie</th>
<th>Daughter</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>29</td>
<td>21</td>
</tr>
</tbody>
</table>

Past
<table>
<thead>
<tr>
<th>Jamie</th>
<th>Daughter</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>7</td>
<td>22</td>
</tr>
</tbody>
</table>

Jamie’s age was 4 times as old as her daughter 22 years ago.

**Question 2**

Age difference between Alicia and Mrs Fong = 12 years

Present
<table>
<thead>
<tr>
<th>Alicia</th>
<th>Mrs Fong</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

Past
<table>
<thead>
<tr>
<th>Alicia</th>
<th>Mrs Fong</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
<td>12</td>
</tr>
</tbody>
</table>

Mrs Fong will be 25 years old in **7 years’ time**.

**Question 3**

Present
<table>
<thead>
<tr>
<th>M</th>
<th>D</th>
<th>Difference</th>
</tr>
</thead>
</table>

(a) Total age now = 8u
\[ \begin{align*}
8u &= 64 - 16 \\
&= 48 \\
1u &= 48 / 8 \\
&= 6 \\
6u &= 6 \times 6 \\
&= 36
\end{align*} \]

Their age difference at present is 36 years.
Question 3 (Cont)

Some years later

\[ 2u = 36 \]
\[ 1u = 36 \div 2 = 18 \]

Dan will be 18 years old, when Mike is 3 times as old as him.

Question 4

At first

<table>
<thead>
<tr>
<th>Y</th>
<th>7u</th>
<th>7u</th>
<th>7u</th>
</tr>
</thead>
</table>

In the end

<table>
<thead>
<tr>
<th>Y</th>
<th>7u</th>
<th>7u</th>
<th>7u</th>
</tr>
</thead>
</table>

Decrease = 4u - 3u = 1u

1u = 16

There were 16 green chairs in the hall in the end.

4u = 4 \times 16 = 64

There were 64 chairs in the hall in the end.

Question 5

At first

<table>
<thead>
<tr>
<th>B</th>
<th>10</th>
</tr>
</thead>
</table>

End

| B | 10 | 18 |

Decrease = 5u - 3u = 2u

5u = 115

1u = 115 \div 5 = 23

Total balloons and whistles bought = 3u + 3u = 6u

6u = 6 \times 23 = 138

She bought 138 balloons and whistles in all.

Question 6

At first

<table>
<thead>
<tr>
<th>J</th>
<th>7u</th>
<th>7u</th>
<th>7u</th>
</tr>
</thead>
</table>

End

<table>
<thead>
<tr>
<th>J</th>
<th>7u</th>
<th>7u</th>
<th>7u</th>
</tr>
</thead>
</table>

Joni spent 21u - 16u = 5u

5u = 45

1u = 45 \div 5 = 9

Difference = 14u

14u = 14 \times 9 = 126

Joni had $126 more than Glen.

Answer to Unit 1.8 – Repeated Items

Let’s Get Started 1.8

1. The repeated item is the apricots.

2. When drawing model, make the model representing the apricots in the middle as it makes it easier to make comparison.

Think Further

\[ \text{Total} = 6u + 2u + 1u = 9u \]

\[ 9u = 2412 \]

\[ 1u = 2412 \div 9 = 268 \]

\[ 6u = 6 \times 268 = 1608 \]

There were 1608 pineapples.
Let’s Practise 1.8

Question 1

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>25</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[25 + 25 + 30 = 80\]

\[3u = 344 - 80\]
\[= 264\]
\[1u = \frac{264}{3} = 88\]

Leonard had $88.

\[88 + 25 + 30 = 143\]

Jason has $143.

**Question 2**

\[\begin{array}{cccc}
J & 1u & 36 & 1u & 36 \\
R & 1u & 36 &   &   \\
K & 1u &   &   &   \\
\end{array}\]

\[1u = 40\]
\[5u = 5 \times 40\]
\[= 200\]
\[4 \times 36 = 144\]
\[5u + 144 = 200 + 144\]
\[= 344\]

The girls had **344 pairs of earrings** altogether.

**Question 3**

\[\begin{array}{cccc}
C & 1u & 25 & 1u & 25 \\
R & 1u & 25 &   &   \\
D & 1u &   &   &   \\
\end{array}\]

\[25 \times 3 = 75\]
\[2u = 279 - 75\]
\[= 204\]
\[1 \text{ unit} = 204 \div 2\]
\[= 102\]

There were 102 stalks of daisies.

Difference in carnations and roses = 2u + 50
\[2u + 50 = 204 + 50\]
\[= 254\]

There were **254 more** stalks of carnations than roses.

**Question 4**

A

B

C

D

\[\text{Difference between boys and girls} = 3u - 1u = 2u\]
\[2u = 2300\]
\[1u = \frac{2300}{2} = 1150\]
\[8u = 8 \times 1150 = 9200\]

There were **9200 adults** at the book fair.

**Question 5**

B

R + G

\[\text{Difference between red and grey} = 2u - 1u = 1u\]
\[1u = 10\]
\[\text{Difference between black and red} = 9u - 2u = 7u\]
\[7u = 7 \times 10 = 70\]

Mrs. Wong has **70 more black** than red shawls.

**Question 6**

Y

X

Z

\[\text{Difference between Z and Y} = 2u - 1u = 1u\]
\[1u = 42\]
\[2u = 2 \times 42 = 84\]
\[4u = 4 \times 42 = 168\]

Storerooms X, Y and Z can hold **168, 42 and 84 boxes** respectively.
Answers to Unit 1.9 – Quantity x Value

Let’s Get Started 1.9

2.  

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of Items</th>
<th>Value of each Item (Wheels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1u</td>
<td>4</td>
</tr>
<tr>
<td>M</td>
<td>1u</td>
<td>2</td>
</tr>
</tbody>
</table>

3.  

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of Items</th>
<th>Value of each Item (Drawer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4</td>
<td>2u</td>
</tr>
<tr>
<td>R</td>
<td>9</td>
<td>1u</td>
</tr>
</tbody>
</table>

4.  

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of Items</th>
<th>Value of each Item (Stationery)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pens</td>
<td>15</td>
<td>3u</td>
</tr>
<tr>
<td>Pencils</td>
<td>10</td>
<td>1u</td>
</tr>
</tbody>
</table>

Ask yourself

1. The quantity is represented by “4 times as many as” and the values are $3 and $1 for pineapples and peaches respectively.
2. The problem sum provides both the quantity and the values and there is only one total provided. In Guess and Check questions we are normally provided with two totals.

Think Further

1. Farmer Sally sold a total of 150 pineapples and peaches. Each pineapple was sold at $3 and each peach at $2 less. If Farmer Sally collected $210 from the sale of all the fruits, how many more peaches than pineapples did she sell?

Let’s Practice 1.9

Question 1

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>Value of each unit (Wheels)</th>
<th>Total Value (Wheels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>2u</td>
<td>2</td>
<td>4u</td>
</tr>
<tr>
<td>G</td>
<td>1u</td>
<td>4</td>
<td>4u</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>8u</td>
</tr>
</tbody>
</table>

8u = 160  
1u = 160 ÷ 8  
= 20  
There were 20 go-karts.
3u = 3 × 20  
= 60  
There were 60 vehicles altogether.

Question 2

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>Value of each unit ($)</th>
<th>Total Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2u</td>
<td>1</td>
<td>2u</td>
</tr>
<tr>
<td>D</td>
<td>1u</td>
<td>8</td>
<td>8u</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>10u</td>
</tr>
</tbody>
</table>

10u = 80  
1u = 80 ÷ 10  
= 8  
She sold 8 more coconuts than durians.

Question 3

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>Value of each unit (Candy)</th>
<th>Total Value (Candy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>1u</td>
<td>2</td>
<td>2u</td>
</tr>
<tr>
<td>B</td>
<td>3u</td>
<td>1</td>
<td>3u</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>5u</td>
</tr>
</tbody>
</table>

5u = 150  
1u = 150 ÷ 5  
= 30  
There were 30 girls.
2u = 2 × 30  
= 60  
There were 60 more boys than girls at the party.

Question 4

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>Value of each unit (Treats)</th>
<th>Total Value (Treats)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>3u</td>
<td>3</td>
<td>9u</td>
</tr>
<tr>
<td>S</td>
<td>1u</td>
<td>2</td>
<td>2u</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>11u</td>
</tr>
</tbody>
</table>

9u – 2u = 7u  
7u = 35  
1u = 35 ÷ 7  
= 5  
There were 5 sheep.
4u = 4 × 5  
= 20  
There were 20 animals that received the treats from the children.

Page 13  
For more review questions, please visit www.onsponge.com
Question 5

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>×</th>
<th>Value of each unit (Chicken wings)</th>
<th>Total Value (Chicken wings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>3u</td>
<td>×</td>
<td>4</td>
<td>12u</td>
</tr>
<tr>
<td>Boys</td>
<td>1u</td>
<td>×</td>
<td>8</td>
<td>8u</td>
</tr>
<tr>
<td>Total</td>
<td>4u</td>
<td></td>
<td></td>
<td>20u</td>
</tr>
</tbody>
</table>

\[12u - 8u = 4u\]
\[4u = 52\]
\[1u = 52 + 4\]
\[= 13\]
\[20u = 20 \times 13\]
\[= 260\]

There were 260 chicken wings that were eaten at the barbecue.

Question 6

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>×</th>
<th>Value of each unit Strawberry</th>
<th>Total Value (Strawberry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>12</td>
<td>×</td>
<td>3u</td>
<td>36u</td>
</tr>
<tr>
<td>Children</td>
<td>30</td>
<td>×</td>
<td>1u</td>
<td>30u</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td></td>
<td></td>
<td>66u</td>
</tr>
</tbody>
</table>

\[36u - 30u = 6u\]
\[6u = 42\]
\[1u = 42 + 6\]
\[= 7\]

Strawberry picked = 66u
\[66u - 66 \times 7\]
\[= 462\]

They picked 462 strawberries together.

Answers to Unit 1.10 – Gap & Difference

Let’s Get Started 1.10

3.

Actual number of key chains

Case 1

\[\text{3 key chains} \quad \text{Gap} = 12\]

Case 2

\[\text{3 key chains} \quad \text{3 key chains}\]

\[\text{Gap} = 18 \quad \text{6}\]
\[\text{= 12 (key chains)}\]

\[\text{Difference} = 6 - 3\]
\[\text{= 3 (key chains)}\]

4.

Actual number of badges

Case 1

\[1 \text{ badge/member} \quad 3 \text{ badges/member}\]

\[\text{Gap} = 8 + 7\]
\[= 15 \text{ (badges)}\]

\[\text{Difference} = 4 - 1\]
\[= 3 \text{ (badges/member)}\]

Ask yourself

1. When both conditions result in ‘short or ‘left over’ scenario, the two results are subtracted. When one result is ‘short’ and other is ‘left over’ we add the two results.

Think Further

1. Pablo has some money. If he buys 7 books, he will be short of $26. If he buys 5 books, he will be left with $2. Find the amount of money Pablo has.

Let’s Practice 1.10

Question 1

Actual number of badges

Case 1

\[3 \text{ tarts/N} \quad 19 \text{ left}\]

\[\text{Gap} = 14\]
\[\text{Difference between Case 1 and Case 2} = 5 - 3\]
\[= 2\]

(a) \[14 + 2 - 7\]

She shared the tarts with 7 neighbours.

(b) Number of tarts made:

Using Case 1: \[7 \times 3 + 19 = 40\]

Using Case 2: \[7 \times 5 + 5 = 40\] (Checked)

She made 40 tarts.
Question 2

Case 1
4 stamps/pg

Case 2
4 stamps/pg

21 left

2 stamps/pg

3 left

Gap = 21 – 3

= 18

Difference between Case 1 and Case 2 = 6

4

= 2

(a) 18 + 2 = 9

The stamps fill 9 pages of the album.

(b) Number of stamps:

Using Case 1 : 4 × 9 + 21 = 57

Using Case 2 : 6 × 9 + 3 = 57 (Checked)

Amos had 57 stamps.

Question 3

Case 1
8 pens/friend

Case 2
8 pens/friend

2 short

3 pens/friend

Gap = 8 – 2

= 6

Difference between Case 1 and Case 2 = 11

8

= 3

(a) 6 + 3 = 2

Shawn has 2 friends.

(b) Number of pens:

Using Case 1 : 2 × 8 – 2 = 14

Using Case 2 : 2 × 11 – 8 = 14 (Checked)

Shawn has 14 pens.

Question 4

Case 1
4 mooncakes/box

Case 2
4 mooncakes/box

Gap = 25 – 7

= 18

Difference between Case 1 and Case 2 = 6 – 2 = 4

(a) Number of mooncakes : 96 + 4 = 24

There were 24 bags.

Using Case 1 : 6 × 24 + 36 = 180

Using Case 2 : 10 × 24 – 60 = 180 (Checked)

Mr Tang gave 180 mooncakes to his sons.

J

K

(b) 4u = 180

1u = 180 + 4

= 45

Keith received 45 marbles.
Answers to Review 1

**Question 1**

\[ C \]
\[ 1u \]
\[ 1u \]
\[ 652 \]

\[ 2u = 2160 - 652 \]
\[ = 1508 \]
\[ 1u = 1508 \div 2 \]
\[ = 754 \]

754 children attended the Gala Premier.

754 + 652 = 1406

1406 adults attended the Gala Premier.

**Question 2**

At first

\[ J \]
\[ M \]
\[ K \]

In the end

\[ J \]
\[ 1u \]
\[ 1u \]
\[ \_ \]

\[ M \]
\[ 1u \]
\[ 1u \]
\[ 5 \]

\[ K \]
\[ 1u \]
\[ 1u \]

\[ 5u = 40 - 5 \]
\[ = 35 \]
\[ 1u = 35 + 5 \]
\[ = 7 \]

Juwita had 7 bottle caps in the end.

\[ 2u = 7 \times 2 \]
\[ = 14 \]

Each girl had 14 bottle caps at first.

**Question 3**

In the end

\[ W \]
\[ M \]

At first

\[ W \]
\[ 1u \]
\[ 1u \]
\[ 4 \]

\[ M \]
\[ 1u \]
\[ 1u \]
\[ 2u \]

\[ 2u = 16 \]
\[ 1u = 16 \div 2 \]
\[ = 8 \]

There were 8 men at first.

\[ 3u = 3 \times 8 \]
\[ = 24 \]

There were 24 women at the session at first.

**Question 4**

In the end

\[ G \]
\[ H \]
\[ I \]

At first

\[ G \]
\[ 1u \]
\[ 70 \]
\[ 20 \]
\[ 20 \]

\[ 360 \]

\[ H \]
\[ 1u \]
\[ 70 \]
\[ 20 \]
\[ 70 \]

\[ 360 \]

\[ I \]
\[ 1u \]
\[ 70 \]
\[ 20 \]

\[ 360 \]

(a) \[ 3u = 360 \]
\[ 1u = 360 \div 3 \]
\[ = 120 \]

Each of them had 120 cards in the end.

(b) \[ 120 - 70 - 20 = 30 \]

Ian had 30 cards at first.

**Question 5**

At first

\[ H \]
\[ 80 \]

\[ J \]

In the end

\[ H \]
\[ 1u \]
\[ 24 \]
\[ 80 \]

\[ 3u \]

\[ J \]
\[ 1u \]
\[ 24 \]

\[ 2u \]

\[ 2u = 24 + 80 \]
\[ = 104 \]
\[ 1u = 104 \div 2 \]
\[ = 52 \]

Johan had 52 marbles in the end.

\[ 52 + 24 = 76 \]

Johan had 76 marbles at first.

**Question 6**

At first

\[ E \]
\[ 80 \]
\[ 40 \]

\[ 200 \]

\[ F \]
\[ 80 \]

\[ 3u \]

In the end

\[ E \]
\[ ? \]
\[ 1u \]
\[ 40 \]

\[ F \]
\[ ? \]
\[ 1u \]

\[ 2u \]
Question 6 (Cont.)

2u = 40
1u = 40 ÷ 2
= 20
Fred had $20 left in the end.
80 – 20 = 60
Each set of game cards cost $60.

Question 7

<table>
<thead>
<tr>
<th>N</th>
<th>1u</th>
<th>16</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>1u</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>1u</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) 16 + 16 + 40 = 72
3u = 369 – 72
= 297
1u = 297 ÷ 3
= 99
Maddie collected 99 seashells
(b) 99 + 16 = 115
Louisa collected 115 seashells.

Question 8

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of items</th>
<th>×</th>
<th>Value of each unit ($)</th>
<th>Total value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4</td>
<td>×</td>
<td>1u + 6</td>
<td>4u + 24</td>
</tr>
<tr>
<td>W</td>
<td>6</td>
<td>×</td>
<td>1u</td>
<td>6u</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td></td>
<td>10u + 24</td>
<td>10u + 24</td>
</tr>
</tbody>
</table>

10u = 124 – 24
= 100
1u = 100 ÷ 10
= 10
Each walnut cake cost $10.
10 + 6 = 16
Each cheesecake cost $16.

Question 9

<table>
<thead>
<tr>
<th>Actual number of lollipops</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 8 lollipops per child</td>
</tr>
<tr>
<td>C2 8 lollipops per child</td>
</tr>
</tbody>
</table>

Gap = 25 + 5
= 30
Difference between Case 1 and Case 2
= 3 lollipops per child

(b) Number of lollipops:
Case 1: 10 × 11 = 110
Case 2: 10 × 8 + 25 = 105 (Checked)
There were 105 lollipops.

Question 10

At first
X 880 370 2130g
Y 880 2130g

In the end
X 880 1u 100 1u
Y 880 1u

2u = 370 – 100
= 270
1u = 270 ÷ 2
= 135
135 g of sand must be transferred from Bag X to Bag Y.

Question 11

At first
N 76
V

In the end
N 1u 12 76
V 1u 12

2u = 12 + 76
= 88
1u = 88 ÷ 2
= 44
Veronica had 44 stalks of roses in the end.
44 + 88 = 132
Nisa had 132 stalks of roses at first.

Question 12

Difference between Emma’s age and Fatima’s age
= 29 – 17
= 12
Question 12 (Cont.)

Now

<table>
<thead>
<tr>
<th>F</th>
<th>E</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

? years ago (Past)

<table>
<thead>
<tr>
<th>F</th>
<th>E</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

1u = 12
17 - 12 = 5
Fatima was twice as old as Fatima 5 years ago.

Chapter 2 Fractions

Answers to Unit 2.1 – Fractions Basics

Let’s Get Started 2.1

1. \[
\begin{align*}
\frac{2}{3} &= \frac{14}{21} \\
\frac{1}{7} &= \frac{3}{21}
\end{align*}
\]

\[
\frac{14}{21} + \frac{3}{21} = \frac{17}{21}
\]

2. 2 poles = \[
\frac{21}{21} \quad \frac{21}{21}
\]

Poles unpainted = \[
\frac{42}{21} - \frac{17}{21} = \frac{25}{21} + \frac{4}{21}
\]

3. \[
\begin{align*}
\frac{1}{3} &= \frac{7}{21} \\
\frac{1}{7} &= \frac{3}{21}
\end{align*}
\]

Bryan painted = \[
\frac{7}{21} + \frac{3}{21} = \frac{10}{21}
\]

Total poles painted = \[
\frac{7}{21} + \frac{10}{21} = \frac{17}{21}
\]

4. \[
\begin{align*}
\frac{2}{3} &= \frac{14}{21} \\
\frac{2}{7} &= \frac{6}{21}
\end{align*}
\]

Total painted = \[
\frac{14}{21} + \frac{6}{21} = \frac{20}{21}
\]

Poles unpainted = \[
\frac{42}{21} - \frac{20}{21} = \frac{22}{21}
\]

\[
\frac{22}{21} \text{ of the poles} = 57 \text{ cm}
\]

\[
\frac{21}{21} \text{ of the poles} = 57 \times \frac{22}{21} = 57 \times \frac{21}{21} = \frac{1197}{21} = 56.41 \text{ cm}
\]

Ask Yourself

1. Make the denominator of \(\frac{2}{3}\) and \(\frac{1}{7}\) the same using the first common multiples of 6 and 4.

Think Further

1. We will not be able to solve the problem sum as there is insufficient information given. To solve the sum, we will need to know the amount of money Karen’s brother has.

Let’s Practise 2.1

Question 1

\[
\begin{align*}
\frac{1}{5} &= \frac{7}{35} \text{ (Friends)} \\
\frac{3}{7} &= \frac{15}{35} \text{ (Neighbours)}
\end{align*}
\]

\[
\frac{7}{35} \text{ of the cookies} = 56 \text{ cm}
\]

\[
\frac{1}{35} \text{ of the cookies} = 56 \times \frac{7}{35} = 8
\]

\[
\frac{15}{35} \text{ of the cookies} = 8 \times 15 = 120
\]

120 cookies were given to the neighbours.

Question 2

\[
\begin{align*}
\frac{1}{3} &= \frac{3}{9} \text{ (Asia)} \\
\frac{4}{9} \text{ (Europe)}
\end{align*}
\]

\[
\frac{3}{9} + \frac{4}{9} = \frac{2}{9} \text{ (Asia + Europe)}
\]

\[
1 - \frac{2}{9} = \frac{2}{9} \text{ (America)}
\]

\[
\frac{7}{9} \text{ of the stamps} = 84 \text{ cm}
\]

\[
\frac{1}{9} \text{ of the stamps} = 84 \times \frac{7}{9} = 12
\]

\[
\frac{2}{9} \text{ of the stamps} = 2 \times 12 = 24
\]

24 stamps are from America.
Question 3

(a) \[ \frac{3}{4} \div \frac{21}{28} \text{ (Participants)} \]
\[ \frac{1}{7} = \frac{4}{28} \text{ (Non-participants)} \]
\[ \frac{21}{28} \div \frac{4}{28} = \frac{25}{28} \text{ (Organisers)} \]
\[ 1 - \frac{25}{28} = \frac{3}{28} \text{ (Participants)} \]
\[ \frac{28}{28} \text{ of the people} = 2800 \]
\[ \frac{1}{28} \text{ of the people} = 2800 \div 28 \]
\[ = 100 \]
\[ \frac{3}{8} \text{ of the people} = 3 \times 100 \]
\[ = 300 \]
There were 300 organisers.

(b) \[ \frac{4}{5} \text{ of the organisers} = 300 \]
\[ \frac{1}{3} \text{ of the organisers female} = 300 \div 4 \]
\[ = 75 \]
75 of organisers were female.

Question 4

\[ \frac{3}{4} = \frac{15}{40} \text{ (Children)} \]
\[ \frac{2}{5} = \frac{16}{40} \text{ (Colleagues)} \]
Difference between children + colleagues = \[ \frac{16 - 15}{40} \]
\[ = \frac{1}{40} \]
\[ \frac{1}{40} \text{ of the lemonade} = 80 \]
\[ \frac{40}{40} \text{ of the lemonade} = 80 \times 40 \]
\[ = 3200 \]
Mrs Jones made 3200 ml of lemonade.

Question 5 (Cont.)

Selina bought 24 m of fabric.

(b) \[ \frac{4}{5} \text{ of fabric} = 24 \]
\[ \frac{1}{4} \text{ of fabric} = 24 \div 4 \]
\[ = 6 \]
Since Selina was left with 2 m of the fabric and she needed another m, she would need = 6 m – 2 m = 4 m
Selina would need to buy another 4 m of the fabric.

Question 5

(a) \[ \frac{2}{3} = \frac{8}{12} \text{ (Cushion)} \]
\[ \frac{1}{3} = \frac{3}{12} \text{ (Patchwork)} \]
Total used for cushions and patchwork = \[ \frac{8}{12} + \frac{3}{12} \]
\[ = \frac{11}{12} \]
\[ \frac{11}{12} \text{ of fabric} = 22 \]
\[ \frac{1}{12} \text{ of fabric} = 22 + 11 \]
\[ = 2 \]

Question 6

\[ \frac{1}{5} = \frac{2}{10} \text{ (Nuts)} \]
\[ \frac{1}{5} = \frac{2}{10} \text{ (Fruit)} \]
Fruit + Nut = \[ \frac{2}{10} + \frac{5}{10} \]
\[ = \frac{7}{10} \]
Original = \[ 1 - \frac{7}{10} \]
\[ = \frac{3}{10} \]

(a) \[ \frac{1}{15} \text{ of the total} = 270 \]
\[ \frac{1}{15} \text{ of the total} = 270 \div 3 \]
\[ = 90 \]
\[ \frac{10}{10} \text{ of the total} = 90 \times 10 \]
\[ = 900 \]
There were 900 muffins.

(b) \[ \frac{1}{6} \text{ of total} = 900 \]
\[ \frac{1}{6} \text{ of total} = 900 \div 6 \]
\[ = 150 \]
There were 150 muffins left.

Answers to Unit 2.2 - Numerators the same

Let’s Get Started 2.2

3. Model-drawing approach

C

D
Unitary approach

\[
\begin{align*}
\frac{3}{4} C &= \frac{2}{5} D \\
\frac{1}{2} C &= \frac{2}{15} D \\
\text{Total } C &= 8u \\
\text{Total } D &= 15u \\
\text{Total } &= 8u + 15u \\
\text{Total } &= 23u
\end{align*}
\]

4.

unitary approach

\[
\begin{align*}
\frac{5}{7} E &= \frac{3}{5} F \\
\frac{15}{21} E &= \frac{15}{25} F \\
\text{Total } E &= 21u \\
\text{Total } F &= 25u \\
\text{Total } &= 21u + 25u \\
\text{Total } &= 46u
\end{align*}
\]

Ask Yourself
1) The total number of boys is represented by the denominator 3.
2) No. It only means that the given fractions of the boys and girls are equal.

Think Further
1.

\[
\begin{align*}
\frac{7}{9} B &= \frac{3}{5} G \\
\frac{6}{9} B &= \frac{6}{10} G \\
\text{Total } B &= 9u \\
\text{Total } G &= 10u \\
\text{Total } &= 9u + 10u \\
\text{Total } &= 19u
\end{align*}
\]

Difference = 10u – 9u

\[= 1u\]

1u = 15

19u = 19 × 15

= 285

There were 285 children altogether.

Let’s Practise 2.2

Question 1

\[
\begin{align*}
\frac{1}{2} S &= \frac{3}{4} C \\
\frac{3}{6} S &= \frac{3}{4} C \\
\text{Total } S &= 6u \\
\text{Total } C &= 4u \\
\text{Total } &= 6u + 4u \\
\text{Total } &= 10u
\end{align*}
\]

10u = 60

1u = 60 ÷ 10

= 6

(a) 6u = 6 × 6

= 36

There are 36 storybooks

(b) 2u = 2 × 6

= 12

There are 12 more storybooks than comic books.

Question 2

\[
\begin{align*}
\frac{1}{3} A &= \frac{2}{3} C \\
\frac{2}{5} A &= \frac{2}{3} C \\
\text{Total } A &= 6u \\
\text{Total } C &= 3u \\
\text{Total } &= 6u + 3u \\
\text{Total } &= 9u
\end{align*}
\]

9u = 45

1u = 45 ÷ 9

= 5

6u = 6 × 5

= 30

There were 30 apple sweets.

Question 3

Orange Tiles

\[
\begin{align*}
\frac{2}{3} \text{ (Used)} &= \frac{1}{3} \text{ (Left)} \\
\frac{3}{3} \text{ (At first)}
\end{align*}
\]

Blue Tiles

\[
\begin{align*}
\frac{1}{4} \text{ (Used)} &= \frac{1}{4} \text{ (Left)} \\
\frac{4}{4} \text{ (At first)}
\end{align*}
\]

Left

\[
\begin{align*}
\frac{1}{3} O &= \frac{3}{4} B \\
\frac{3}{9} O &= \frac{3}{4} B \\
\text{Total } O &= 9u \\
\text{Total } B &= 4u \\
\text{Total } &= 9u + 4u \\
\text{Total } &= 13u
\end{align*}
\]

13u = 130

1u = 130 ÷ 13

= 10

3u = 3 × 10

= 30

Chu Kang had 30 orange tiles in the end.

Question 4

Chickens

\[
\begin{align*}
\frac{3}{8} \text{ (Sold)} &= \frac{5}{8} \text{ (Left)} \\
\frac{8}{8} \text{ (At first)}
\end{align*}
\]

Ducks

\[
\begin{align*}
\frac{3}{5} \text{ (Sold)} &= \frac{2}{5} \text{ (Left)} \\
\frac{5}{5} \text{ (At first)}
\end{align*}
\]

Left

\[
\begin{align*}
\frac{5}{8} C &= \frac{2}{5} D \\
\frac{10}{16} C &= \frac{2}{25} D \\
\text{Total } C &= 16u \\
\text{Total } C &= 16u + 10u \\
\text{Total } &= 6u
\end{align*}
\]

D = 25u

D = 25u + 10u

= 15u

Difference = 15u – 6u

= 9u
Question 4 (Cont.)

9u = 36
1u = 36 + 9
    = 4
Total sold = 6u + 15u
           = 21u
21u = 21 x 4
    = 84
Mr Lim sold 84 ducks and chickens.

Question 5

\[
\begin{align*}
\frac{1}{5} J &= \frac{3}{4} K = \frac{2}{3} L \\
\frac{6}{30} J &= \frac{5}{8} K = \frac{6}{9} L
\end{align*}
\]

Total J = 30u
Total K = 8u
Total L = 9u
Total = 30u + 8u + 9u
= 47u

Difference = 9u – 8u
= 1u

1u = 9
47u = 47 x 9
= 423

The boys received $423 from their uncle.

Question 6

\[
\begin{align*}
\frac{3}{4} L &= \frac{6}{7} E = \frac{4}{5} G \\
\frac{12}{16} L &= \frac{12}{14} E = \frac{12}{15} G
\end{align*}
\]

Total L = 16u
Total E = 14u
Total G = 15u

Difference = 16u – 14u
= 2u

2u = 14
1u = 14 + 2
= 7
16u = 16 x 7
= 112 (Lucia)
14u = 14 x 7
= 98 (Eliza)
15u = 15 x 7
= 105 (Grace)

Lucia, Eliza and Grace collected 112, 98 and 108 leaves respectively.

Answers to Unit 2.3 – Repeated Items

Let’s Get Started 2.3

<table>
<thead>
<tr>
<th>Model-drawing approach</th>
<th>Unitary Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>J</strong></td>
<td>J = 1u^3 (3u)</td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>S = 2u^3 (6u)</td>
</tr>
<tr>
<td><strong>L</strong></td>
<td>S = 3u^2 (6u) L = 4u^2 (8u)</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>S = 6u J = 3u L = 8u</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model-drawing approach</th>
<th>Unitary Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>B = 2u</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>A = 3u</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>A = 1u^3 (3u) C = 3u^2 (9u)</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>A = 3u B = 2u C = 9u</td>
</tr>
</tbody>
</table>

Ask Yourself

1) Sylvia is repeated.
2) The units representing the repeated subject must be made the same.

Think Further

1. 

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>S = 2u^3 (6u)</td>
<td>S = 6u</td>
</tr>
<tr>
<td>C = 5u^3 (15u)</td>
<td>C = 15u</td>
</tr>
<tr>
<td><strong>Case 2</strong></td>
<td>Total = 6u + 15u + 20u</td>
</tr>
<tr>
<td>J = 20u</td>
<td>= 41u</td>
</tr>
</tbody>
</table>

20u = 40
1u = 40 x 20
= 2

Number of files Charmaine bought more than Sylvia
= 15u – 6u
= 9u
9u = 9 x 2
= 18

Charmaine bought 18 more files than Sylvia.
Let’s Practise 2.3

Question 1

Case 1

\[ \begin{align*}
A &= 1u \\
P &= 3u
\end{align*} \]

Summary

\[ \begin{align*}
A &= 1u \\
P &= 3u \\
O &= 2u \\
\text{Total} &= 1u + 2u + 3u \\
&= 6u
\end{align*} \]

Case 2

\[ \begin{align*}
A &= 1u \\
O &= 2u
\end{align*} \]

\[ \begin{align*}
6u &= 60 \\
1u &= 60 \div 6 \\
&= 10 \\
3u &= 3 \times 10 \\
&= 30
\end{align*} \]

There are 30 pears.

Question 2

Case 1

\[ \begin{align*}
M &= 2u \\
L &= 3u
\end{align*} \]

Summary

\[ \begin{align*}
M &= 2u \\
L &= 3u \\
N &= 6u \\
\text{Total} &= 2u + 3u + 6u \\
&= 11u
\end{align*} \]

Case 2

\[ \begin{align*}
M &= 1u^2 (2u) \\
N &= 3u^2 (6u)
\end{align*} \]

\[ \begin{align*}
\text{Difference between Nathaniel and Michael} &= 6u - 2u \\
&= 4u \\
4u &= 44 \\
1u &= 44 \div 4 \\
&= 11 \\
11u &= 11 \times 11 \\
&= 121
\end{align*} \]

They have a total of 121 cards.

Question 3

Case 1

\[ \begin{align*}
P &= 3u^2 (6u) \\
S &= 5u^2 (10u)
\end{align*} \]

Summary

\[ \begin{align*}
P &= 6u \\
S &= 10u \\
T &= 15u \\
\text{Total} &= 6u + 10u + 15u \\
&= 31u
\end{align*} \]

Case 2

\[ \begin{align*}
S &= 2u^3 (10u) \\
T &= 3u^3 (15u)
\end{align*} \]

\[ \begin{align*}
9u &= 63 \\
1u &= 63 \div 9 \\
&= 7
\end{align*} \]

\[ \begin{align*}
31u &= 31 \times 7 \\
&= 217
\end{align*} \]

The children were given 217 sweets.

Question 4

Case 1

\[ \begin{align*}
\text{Red} &= 4u^3 (12u) \\
\text{Yellow} &= 7u^3 (21u)
\end{align*} \]

Summary

\[ \begin{align*}
\text{Red} &= 12u \\
\text{Yellow} &= 21u \\
\text{Green} &= 5u^4 (20u) \\
\text{Total} &= 12u + 21u + 20u \\
&= 53u
\end{align*} \]

\[ \begin{align*}
53u &= 106 \\
1u &= 106 \div 53 \\
&= 2 \\
21u &= 21 \times 2 \\
&= 42
\end{align*} \]

A total of 42 yellow ribbons were used in August.

Question 5

Case 1

\[ \begin{align*}
\text{C} &= 2u^2 (10u) \\
\text{M} &= 3u^2 (15u)
\end{align*} \]

Summary

\[ \begin{align*}
\text{C} &= 10u \\
\text{M} &= 15u \\
\text{I} &= 8u \\
\text{Total} &= 10u + 15u + 8u \\
&= 33u
\end{align*} \]

Case 2

\[ \begin{align*}
\text{C} &= 5u^2 (10u) \\
\text{I} &= 4u^2 (8u) \\
\text{Total} &= 10u + 15u + 8u \\
&= 33u
\end{align*} \]

Malay and Indian = 15u + 8u

\[ \begin{align*}
&= 23u
\end{align*} \]

Difference between Chinese students and the Malay and Indian students combined = 23u - 10u

\[ \begin{align*}
&= 13u
\end{align*} \]

\[ \begin{align*}
13u &= 104 \\
1u &= 104 \div 13 \\
&= 8 \\
33u &= 33 \times 8 \\
&= 264
\end{align*} \]

A total of 264 students enrolled in the school.

Question 6

\[ \begin{align*}
\frac{2}{3} M &= \frac{1}{4} K \\
\frac{2}{3} M &= \frac{2}{8} K
\end{align*} \]
Question 6 (Cont.)

Case 1
\[ M = 3u^4 \times 12u \]
\[ K = 8u^3 \times 32u \]
Summary
\[ M = 12u \]
\[ K = 32u \]
\[ L = 21u \]
Total = 12u + 32u + 21u = 65u

Case 2
\[ M = 4u^3 \times 12u \]
\[ L = 7u^2 \times 21u \]
Kelvin and Marvin = 12u + 32u = 44u
Difference of Kelvin and Marvin with Lionel = 44u – 21u = 23u
23u = 115
1u = 115 + 23 = 5
21u = 21 × 5 = 105
Lionel has 105 bullets.

Answers to Unit 2.4 – Branching

Let’s Get Started 2.4

1. Total number of marbles
\[ (5u) \]
\[ H \quad \text{Remainder} \quad (4u) \]
\[ K \quad \text{Left} \quad (1u) \]

2. Total number of muffins
\[ (9u) \]
\[ M \quad \text{Remainder} \quad (8u) \]
\[ A \quad \text{Left} \quad (4u) \]

Let’s Practise 2.4

Question 1
Total amount of money
\[ (7u) \]
\[ T \quad \text{Remainder} \quad (3u) \]
\[ P \quad \text{Left} \quad (2u) \]
\[ 1u = 5 \]
\[ 7u = 7 \times 5 = 35 \]
He had $35 at first.

Question 2
Total number of pages
\[ (7u) \]
\[ M \quad \text{Remainder} \quad (4u) \]
\[ T \quad \text{Left} \quad (1u) \]
\[ W \quad (3u) \]
Question 2 (Cont.)
Difference  = 3u – 1u
= 2u
2u  = 60
1u  = 60 + 2
= 30
7u  = 7 × 30
= 210
There were 210 pages in the novel.

Question 3
Total number of fish
5u^2 (10u)
M
2u^2 (4u)
Remainder
3u^2 (6u)
A
(1u)
Left
(5u)
5u  = 25
1u  = 25 + 5
= 5
Difference  = 4u – 1u
= 3u
3u  = 3 × 5
= 15
He sold 15 more fish in the morning than in the afternoon.

Question 4
Total mass of fish
5u^3 (15u)
O
2u^3 (6u)
Remainder
3u^2 (9u)
D
(4u)
Left
(5u)
15u  = 600
5u  = 600 ÷ 3
= 200
Maureen had 200 g of fish left.

Question 5
Total amount of money
4u^3 (20u)
Spent
1u^3 (5u)
Remainder
3u^3 (15u)
Saved
2u^2 (6u)
3 siblings
3u^2 (9u)
20u  = 240
1u  = 240 ÷ 20
= 12
3 siblings  = 9u
1 sibling  = 9u ÷ 3
= 3u
3u  = 3 × 12
= 36
Each of her siblings received $36.

Question 6
Amount of meat
7u^4 (28u)
C
2u^4 (8u)
Remainder
5u^3 (20u)
T
1u^3 (5u)
L+H+P
3u^3 (15u)
P  = 15u + 3
= 5u
5u  = 30
1u  = 30 + 5
= 6
28u  = 28 × 6
= 168
He needed 168 kg of meat to feed all the animals

Answers to Unit 2.5 – One Item Unchanged

Let’s Get Started 2.5
2. What did not change? The number of buns.
Model-drawing approach

At first

\[
\begin{array}{c}
B \\
C
\end{array}
\]

End

\[
\begin{array}{c}
B \\
C
\end{array}
\]

Unitary approach

At first

\[
\begin{array}{c}
B = 3u^2 \quad (6u) \\
C = 5u^2 \quad (10u)
\end{array}
\]

End

\[
\begin{array}{c}
B = 6u \\
C = 7u
\end{array}
\]

Change in the number of cakes = 10u – 7u

\[
3u = 12
\]

\[
1u = 12 + 3
\]

= 4

3. What did not change? The amount of money Keith has.

Model-drawing approach

At first

\[
\begin{array}{c}
J \\
K
\end{array}
\]

End

\[
\begin{array}{c}
J \\
K
\end{array}
\]

$24 spent

Unitary approach

At first

\[
\begin{array}{c}
J = 3u^3 \quad (15u) \\
K = 7u^2 \quad (35u)
\end{array}
\]

End

\[
\begin{array}{c}
J = 1u^2 \quad (7u) \\
K = 5u^2 \quad (35u)
\end{array}
\]

8u = 24

\[
\begin{array}{c}
1u = 24 + 8 \\
= 3
\end{array}
\]

Ask Yourself

1. Increase in number of wine glasses

\[
\frac{12}{3} = 4
\]

There were 3 times increased in the number of wine glasses compared to the number of wine glasses at first.

Let’s Practise 2.5

Question 1

At first

\[
\begin{array}{c}
D = 2u \\
C = 1u
\end{array}
\]

End

\[
\begin{array}{c}
D = 1u^2 \quad (2u) \\
C = 6u^2 \quad (12u)
\end{array}
\]

Changes in C = 12u – 1u

\[
= 11u
\]

11u = 22

1u = 22 + 11

\[
= 2
\]

Total in the end = 12u + 2u

\[
= 14u
\]

14u = 14 \times 2

\[
= 28
\]

There are 28 cakes in the end.

Question 2

At first

\[
\begin{array}{c}
M = 4u \\
F = 5u
\end{array}
\]

End

\[
\begin{array}{c}
M = 1u^2 \quad (4u) \\
F = 3u^2 \quad (12u)
\end{array}
\]

Difference = 12u – 5u

\[
= 7u
\]

7u = 28

1u = 28 + 7

\[
= 4
\]

12u = 12 \times 4

\[
= 48
\]

There were 48 female dancers in the CCA in the end.

Question 3

At first

\[
\begin{array}{c}
P = 2u^2 \quad (14u) \\
M = 3u^2 \quad (21u)
\end{array}
\]

Page 25 For more review questions, please visit www.onspong.com
Question 3 (Cont.)

\[ P = 3ux^3 \quad (9u) \]
\[ M = 7ux^3 \quad (21u) \]
\[ \text{Difference} = 14u - 9u = 5u \]
\[ 5u = 25 \]
\[ 1u = 25 + 5 = 5 \]
\[ 14u = 14 \times 5 = 70 \quad (P \text{ at first}) \]
\[ 21u = 21 \times 5 = 105 \quad (M \text{ at first}) \]
\[ 70 + 105 = 175 \]

Heidi has 175 stamps altogether in both boxes at first.

Question 4

\[ \text{At first} \]
\[ B = 3ux^3 \quad (9u) \quad C = 3ux^3 \quad (24u) \]
\[ G = 5ux^3 \quad (15u) \quad A = 1ux^3 \quad (8u) \]
\[ C = 8ux^3 \quad (24u) \]

\[ \text{End} \]
\[ C = 4ux^6 \quad (24u) \]
\[ A = 1ux^6 \quad (8u) \]
\[ \text{Difference} = 8u - 6u = 2u \]
\[ 2u = 28 \]
\[ 1u = 28 + 2 = 14 \]
\[ \text{Difference (end)} = 24u - 6u = 18u \]
\[ 18u = 18 \times 14 = 252 \]

There were 252 more children than adults in the end.

Question 5

\[ \text{At first} \]
\[ C = 2u \]
\[ R = 3u \]

\[ \text{End} \]
\[ C = 1ux^2 \quad (2u) \]
\[ R = 4ux^2 \quad (8u) \]
\[ \text{Difference} = 8u - 3u = 5u \]
\[ 5u = 35 \]
\[ 1u = 35 + 5 = 7 \]

\[ 3u = 3 \times 7 = 21 \]

There were 21 stalks of roses in the basket.

Question 6

\[ \text{At first} \]
\[ T = 2ux^5 \quad (10u) \quad S = 5ux^5 \quad (25u) \]

\[ \text{End} \]
\[ T = 5ux^2 \quad (10u) \quad S = 4ux^2 \quad (8u) \]

\[ \text{Change in } S = 25u - 8u = 17u \]
\[ 17u = 51 \]
\[ 1u = 51 + 17 = 3 \]
\[ 10u = 10 \times 3 = 30 \]

There were 30 teachers at the hall.

Answers to Unit 2.6 – Difference Unchanged

Let’s Get Started 2.6

3. What remained the same?
   The age difference between Ethan and his mother.

Model-drawing approach

12 years ago
\[ \begin{array}{c|c|c}
E & & \text{Difference} \\
\hline
\end{array} \]
\[ M \]

Now
\[ \begin{array}{c|c|c}
E & & \text{Difference} \\
\hline
\end{array} \]
\[ M \]

Unitary approach

12 years ago
\[ \begin{array}{c|c|c}
E & & \text{Difference} \\
\hline
\end{array} \]
\[ M \]

Now
\[ \begin{array}{c|c|c}
E & & \text{Difference} \\
\hline
\end{array} \]
\[ M \]

4. What remained the same?
   Difference between Basket A and Basket B
Model-drawing approach

At First

A

Removed

B

Difference

End

A

Difference

B

Unitary approach

At first
A = 5u² (25u)
B = 7u² (35u)
Difference = 2u² (10u)

End
A = 3u³ (6u)
B = 8u² (16u)
Difference = 5u³ (10u)

19u = 95
1u = 95 + 17
= 5

Let's Learn 2.6

Ask Yourself
1. Jonathan cannot be \( \frac{3}{5} \) as old as Diana at every stage of their life since their age differs and at every stage of comparison the numerator and denominator will not be the same.

Think Further
J = 2u
D = 1u
Difference = 1u
1u = 12
12 = 3 = 9
In 9 years time.

Let's Practise 2.6

Question 1

34 years ago
W = 2u² (4u)
R = 9u³ (18u)
Difference = 7u² (14u)

Now
W = 3u³ (21u)
R = 5u³ (35u)
Difference = 2u³ (14u)

17u = 34
1u = 34 + 17
= 2
35u = 35 x 2
= 70
Uncle Roy is 70 years old now.

Question 2

15 years ago
S = 1u
E = 5u
Difference = 4u

Now
S = 1u³ (4u)
E = 2u³ (8u)
Difference = 4u³ (12u)

3u = 15
1u = 15 + 3
= 5
4u = 4 x 5
= 20
31 + 20 = 51
Eileen would be 51 years old when Samuel was 31 years old.

Question 3

Now
R = 3u³ (9u)
F = 7u² (21u)
Difference = 4u³ (12u)

Future
R = 5u³ (20u)
F = 8u³ (32u)
Difference = 3u³ (12u)

12u = 24
1u = 24 + 12
= 2
Number of years later = 20u
9u
= 11u
11u = 11 x 2
= 22
In 22 years' time, Roger will be \( \frac{5}{8} \) as old as his father.

Question 4

At first
Tin = 3u² (9u)
Plastic = 5u² (15u)
Difference = 2u² (6u)

End
Tin = 2u² (4u)
Plastic = 5u² (10u)
Difference = 3u² (6u)

5u = 150
1u = 150 + 5
= 30
15u = 15 x 30
= 450
The mass of the plastic bottle at first is 450 g.
Question 5
At first
B = 5u² (25u)  End
B = 4u² (12u)
C = 8u³ (40u)  C = 9u³ (27u)
Difference = 3u² (15u)  Difference = 5u³ (15u)
Difference in the button pins at first and at the end = 13u
Jennifer gave away \(\frac{13}{25}\) of the button pins.

Question 6
Clint
At first  = 6u⁴ (24u)  End  = 1u⁴ (4u)
Difference  = 5u⁴ (20u)
20u = 40
1u = 40 + 20
= 2
24u = 24 × 2
= 48 (Clint at first)
35u = 35 × 2
= 70 (Emma at first)
Clint and Emma had $48 and $70 respectively at first.

Chapter 3  Geometry

Answers to Unit 3.1 – Perpendicular and Parallel

Let’s Practise 3.1
Question 1

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Perpendicular</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Question 2
(a) C and B, D and A
(b) H and D

Question 3
Rhombus

Answers to Unit 3.2 – Angles

Let’s Practice 3.2
Question 1

Question 2
(a) 100°
(b) 100°
(c) 80°
(d) 80°
(e) 180°
(f) 180°
Question 3
(a) 200°
(b) 52°

Question 4
AC = 5.3cm
BC = 5.3cm

Let’s Learn
1. 90° to their right for the school that is on the West.
2. The Bakery
3. The Market
4. 225 turn

Think Further
1. 90° to their right for the school that is on the North.
2. The Bakery
3. The Market
4. 315 turn

Let’s Practice 3.3

Question 1
(a) Home
(b) Sports hall
(c) Sports hall
(d) Club
(e) \( \frac{1}{8} \) turn to her right / \( \frac{7}{8} \) turn to her left
(f) \( \frac{3}{8} \) turn to her left / \( \frac{5}{8} \) turn to her right

Question 2
(a) Toy section
(b) Electrical section
(c) \( \frac{3}{8} \) turn to his right / \( \frac{5}{8} \) turn to his left
(d) Shoes section
(e) Toy section
(f) 315°

Question 3
(a) Art Room, South
(b) Canteen, Southeast
(c) Art Room, Northeast
(d) Basketball Court, Auditorium
(e) \( \frac{3}{9} \) turn to her right / \( \frac{5}{9} \) turn to her left, East
(f) 90° anticlockwise turn / 270° clockwise turn. Northwest

Question 4
(a) Theatre, West
(b) Supermarket South
(c) Temple, Northwest
(d) MRT station, Temple
(e) \( \frac{5}{8} \) turn to his right / \( \frac{3}{8} \) turn to his left, South
(f) 180 clockwise turn to the left / 180 anticlockwise turn to right, Northeast

Answers to Unit 3.3 – 8-Point Compass

Let’s Get Started
1. North
2. North
3. South
4. \( \frac{3}{8} \)
5. East
6. 135°

For more review questions, please visit www.onspunge.com
Question 5
(a) Dewi
(b) Barbara, Canns and Ian
(c) Ian
(d) Canns, Barbara and Florence

Question 6
(a) 1 square South, followed by 1 square Southeast
(b) Fire station

Chapter 4 Symmetry and Tessellation
Answers to Unit 4.1 – Identifying Symmetrical

Let’s Get Started 4.1

Let’s Practise 4.1
Question 1

Answers to Unit 4.2 – Forming Symmetrical Figure

Let’s Practice 4.2
Question 1

Question 2

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Answers to Unit 4.3 – Symmetry in a Grid

Let’s Practice 4.3

Question 1

Question 2

Question 3

Question 4

Answers to Unit 4.4 – Tessellation

Let’s Practise 4.4

Question 1
Question 2

Question 3

Question 4

Question 5

Question 6

Question 7

Question 8

Question 9

For more review questions, please visit www.onsponge.com
Answers to Unit 5.1 – Decimals

Let’s Get Started 5.1
1. (a) 6.58 (b) 78.9 (c) 0.079
2. (a) 0.7 (b) 0.6 (c) 0.12
3. tenth
4. hundredth
5. 0.5
6. 0.8
7. (a) 8.3 (b) 16.5 (c) 18.3 (d) 25.0
8. (a) 5.26 (b) 25.65 (c) 46.74 (d) 65.28
9. 0.325, 0.65, 0.8, 0.91
10. (a) 6.853 (b) 4.458

Let’s Practise 5.1

Question 1
2.74

Question 2
$15.49

Question 3
$86.0

Question 4
3 m long, 2 m wide

Question 5
3.9kg

Question 6
27.1

Answers to 5.2 Addition and Subtraction of Decimals

Let’s Get Started 5.2
1. (a) 8.9 (b) 2.49 (c) 7.2 (d) 0.9 (e) 1.29 (f) 123.47
2. (a) 2.1 (b) 3.33 (c) 0.05 (d) 8.8

Let’s Practise 5.2

Question 1
$15.70 + $2.80 = $18.50
The DVD and market cost $18.50.
$20 – $18.50 = $1.50
He would receive $1.50 change.

Question 2
$18.50 + $25.80 + $28.30 = $72.60
They had a total of $72.60.
$84 – $72.60 = $11.40
They needed $11.40 more.

Question 3
$3.50 + $2.10 + $2.60 = $8.20
Robin spent a total of $8.20.
$18 – $8.20 = $9.80
She would have $9.80 left.

Question 4
Both items cost $35.75.
$35.75 – $25.65 = $10.10
The pencil case cost $10.10.

Question 5
Natalie had $14.05 after buying a bag.
$14.05 + $20 = $34.05
Natalie saved a total of $34.05.

Question 6
$389.75 + $150.80 + $45.30 = $585.85
Chester spent a total of $585.85.
$750 – $585.85 = $164.15
Chester had $164.15 left.
Answers to 5.3 Multiplication and Division of Decimals

Let's Get Started 5.3

1. (a) 1.8  (b) 3.25  (c) 13.6  (d) 28.56
2. (a) 0.23  (b) 1.67  (c) 1.3  (d) 1.225
3. (a) 2.5  (b) 7.1  (c) 4.7  (d) 12.5
   (e) 27.5  (f) 22.6
4. (a) 0.5  (b) 1.1  (c) 0.6  (d) 3.1
   (e) 2.6  (f) 1.4

Let's Practise 5.3

Question 1
$425.60 \times 6 = \$2553.60$
His family would receive $\$2553.60$.

Question 2
$5.35 \times 4 = \$21.40$
Melissa paid $\$21.40$.

Question 3
$65.30 \times 5 = \$326.50$
He would receive $\$326.50$.

Question 4
3.62 m × 7 = 25.34 m
Mrs Lim bought 25.34 m of carpet.

Question 5
$315 \div 7 = 45$
His daily wage is $\$45$.

Question 6
$23.40 \div 9 = \$2.60$
Each hair clip cost $\$2.60$.

Question 7
3.75 kg + 3 = 1.25 kg
Each packet contains 1.25 kg of sugar.

Question 8
$4.80 \times 4 = \$19.20$
4 notebooks cost $\$19.20$
$55 - \$19.20 = \$35.80$
He had $\$35.80$ left after buying notebooks.
$35.80 - \$21 = \$14.80$
$14.80 \div 8 = \$1.85$
Each pencil cost $\$1.85$.

Answers to Review Questions on Decimals

Question 1
P
T
7.46
3.7
7.46 + 3.7 = 11.16
The tank can hold 11.16 litres of water.
11.16 + 7.46 = 18.62 = 18.6 t
Both containers can hold 18.6t of water.

Question 2

Case 1
T = 4u³ (16u)
B = 5u³ (20u)

Summary
T = 16u
B = 20u

Case 2
P = 1u³ (5u)
P = 5u
Total = 16u + 20u + 5u
= 41u
B = 4u³ (20u)

Difference between batteries and tissue pack
= 20u
16u
= 4u
4u = 24
1u = 24 ÷ 4
= 6
5u = 5 × 6
= 30

Heidi bought 30 paper clips.

Question 3

Case 1
T = 2u³ (6u)
C = 5u³ (15u)

Summary
T = 6u
C = 15u
K = 20u

Case 2
T = 3u² (6u)
K = 10u² (20u)

Total = 6u + 15u + 20u
= 41u

Difference between Clair and Timothy
= 15u
6u
= 9u
9u = 54
1u = 54 ÷ 9
= 6
20u = 20 × 6
= 120

120 books on the shelf belonged to Kristine.

For more review questions, please visit www.onspunge.com
Question 4

Case 1
A = $3u^{10} (30u)$
B = $2u^{10} (20u)$

Case 2
A = $10u^3 (30u)$
C = $7u^3 (21u)$

Summary
A = 30u
B = 20u
C = 21u
Total = 30u + 20u + 21u
= 71u

Difference between Pouch B and Pouch C
= 21u – 20u
= 1u
71u = 71 × 160
= 11 360
The mass of the bag of seeds is 11 kg 360 g.

Question 5

Sauce
4u

A
1u

Remainder
3u

E
1u

Left
2u

4u = 10.8
1u = 10.8 ÷ 4
= 2.7
2u = 2 × 2.7
= 5.4

There were 5.4 litres of sauce left.

Question 6

Rice
5u^4 (20u)

Sat
3u^3 (12u)

Remainder
2u^4 (8u)
4u^2 (8u)

Sun
1u^3 (2u)

Left
3u^2 (6u)

6u = 3.9
1u = 3.9 ÷ 6
= 0.65
20u = 20 × 0.65
= 13

He had 13 kg of rice at first.

Question 7

Total amount of money
4u^5 (20u)

1u^5 (5u)

3u^5 (15u)

B

Remainder
5u^3 (15u)

C

4u^3 (12u)

Left
1u^3 (3u)

Difference between computer game and board game
= 12u – 5u
= 7u
7u = 41.65
1u = 41.65 ÷ 7
= 5.95
3u = 5.95 × 3
= 17.85

Caleb had $17.85 left.

Question 8

Salary
5u^5 (25u)

2u^5 (10u)

3u^5 (15u)

W

Remainder
5u^3 (15u)

B

1u^3 (3u)

Left
4u^2 (12u)

10u = 1840
1u = 1840 ÷ 10
= 184
3u = 3 × 184
= 552

Mr Imran spent $552 on bills.

Question 9

3u = 0.48
1u = 0.48 ÷ 3
= 0.16
2u = 2 × 0.16
= 0.32 (Flour)

The mass of each sack of flour is 0.32 kg and each packet of sugar is 0.16 kg.
Question 10

Cotton  
Silk

\[ 2C = 2 \times 3u \]
\[ = 6u \]
\[ 3S = 3 \times 1u \]
\[ = 3u \]
\[ 2C + 3S = 6u + 3u \]
\[ = 9u \]
\[ 9u = 1.8 \]
\[ 1u = 1.8 + 9 \]
\[ = 0.2 \]

The length of each silk ribbon is 0.2m.

Question 11

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of units</th>
<th>×</th>
<th>Value of each unit ($)</th>
<th>Total Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>4u</td>
<td></td>
<td>1.5</td>
<td>6u</td>
</tr>
<tr>
<td>F</td>
<td>1u</td>
<td></td>
<td>1</td>
<td>1u</td>
</tr>
<tr>
<td>Total</td>
<td>5u</td>
<td></td>
<td></td>
<td>7u</td>
</tr>
</tbody>
</table>

7u = 14
1u = 14 ÷ 7
= 2
6u = 6 x 2
= 12

She paid $12 for the egg tarts.

Question 12

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of units</th>
<th>×</th>
<th>Value of each unit (items)</th>
<th>Total Value (items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>3u</td>
<td></td>
<td>25</td>
<td>75u</td>
</tr>
<tr>
<td>P</td>
<td>4u</td>
<td></td>
<td>20</td>
<td>80u</td>
</tr>
<tr>
<td>Total</td>
<td>7u</td>
<td></td>
<td></td>
<td>155u</td>
</tr>
</tbody>
</table>

\[ \text{Difference} = 80u - 75u \]
\[ = 5u \]
\[ 5u = 160 \]
\[ 1u = 160 ÷ 5 \]
\[ = 32 \]
\[ 3u = 3 \times 32 \]
\[ = 96 \]

There are 96 boxes of screws.

Question 13

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of units</th>
<th>×</th>
<th>Value of each item ($)</th>
<th>Total Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>3u</td>
<td></td>
<td>2.5</td>
<td>7.5u</td>
</tr>
<tr>
<td>G</td>
<td>2u</td>
<td></td>
<td>1.25</td>
<td>2.5u</td>
</tr>
<tr>
<td>Total</td>
<td>5u</td>
<td></td>
<td></td>
<td>10u</td>
</tr>
</tbody>
</table>

10u = 120
1u = 120 ÷ 10
= 12

\[ \text{Difference} = 3u - 2u \]
\[ = 1u \]

The customer bought 12 more boxes of red than green lamp bulbs.

Question 14

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity of units</th>
<th>×</th>
<th>Value of each item (m)</th>
<th>Total (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>5u</td>
<td></td>
<td>0.2</td>
<td>1u</td>
</tr>
<tr>
<td>L</td>
<td>1u</td>
<td></td>
<td>2.0</td>
<td>2u</td>
</tr>
<tr>
<td>Total</td>
<td>6u</td>
<td></td>
<td></td>
<td>3u</td>
</tr>
</tbody>
</table>

3u = 12
1u = 12 ÷ 3
= 4
6u = 4 x 6
= 24

Joash used 24 tubes in all.

Chapter 6 Graphs

Answers to Unit 6.1 – Interpreting Graphs

6.1 Interpreting Graphs

Table 1
(i) Class 4 Courageous
(ii) Class 4 Courageous and Class 4 Honesty
(iii) 158 pupils

Table 2
(i) 13 girls
(ii) 57 girls + 75 boys = 132 pupils
(iii) 0 girls + 5 boys = 5 pupils

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Let’s Practise 6.1

Question 1

(a) **625 cups of sugar cane juice**

\[
123 + 212 + 112 + 178 = 625
\]

(b) **$469**

\[
179 + 290 = 469
\]

(c) **Stall A and C**

- **Stall A**
  \[
  123 + 56 = 179
  \]
- **Stall B**
  \[
  212 + 78 = 290
  \]
- **Stall C**
  \[
  112 + 67 = 179
  \]
- **Stall D**
  \[
  178 + 61 = 239
  \]

(d) **$262**

\[
56 + 78 + 67 + 61 = 262
\]

All the shops sold a total of 262 cups of orange juice.

262 × 1 = 262

Question 2

(a) **$2140**

\[
450 + 420 + 420 + 430 + 420 = 2140
\]

(b) **$30**

\[
\text{Total amount (Max) = 450}
\]
\[
\text{Total amount (Min) = 420}
\]
\[
\text{Difference = 450 – 420 = 30}
\]

(c) **210 plates**

\[
420 ÷ 2 = 210
\]

(d) **70 plates**

Number of plates of curry rice sold = 1u
Number of plates of duck noodles sold = 2u
Total plates sold = 3u
\[
210 ÷ 3 = 70
\]

Question 3

(a) **$8**

Using Monday data,
\[
\text{total tickets sold} = 1300 + 650 = 1950
\]
\[
\text{Cost of a ticket} = 15 600 ÷ 1950 = 8
\]

(b) **$26 800**

\[
(750 + 600 + 2000) × 8 = 26 800
\]

(c) **$70 800**

\[
32 000 × 38 800 = 70 800
\]

(d) **150 people**

Total people on Sunday = 38 800 ÷ 8 = 4850
Total people for Movie A and Movie B (Sun) = 4850 – 3500 = 1350
Movie A (Sun) = 1u
Movie B (Sun) = 8u
9u = 1350
1u = 1350 ÷ 9
= 150

(e) I would replace **Movie A**.

The number of people has decreased to 150.

Missing information from the table,
Movie B (Sun) = 8 x 150
= 1200
Total people on Saturday = 32 000 ÷ 8
= 4 000
Total people for Movie B (Sat) = 4000 – 2700 – 300
= 1000

Question 4

(a) **$5**

Using Laundromat data,
Total mass = 200 + 200 + 150 + 20 = 570
For Laundromat, Cost to wash 1 kg of laundry
\[
\text{Total amount collected} = \frac{\text{Total mass}}{\text{Total amount}}
\]
\[
= \frac{570}{2850}
\]
\[
= \frac{1}{5}
\]
\[
= 5
\]

(b) **85 kg**

For Drydays, total mass of laundry
= 2 400 ÷ 5
= 480
Mass of socks (Drydays) = 480 – 150 – 220 – 100
= 10
Total mass of socks (all 5) = 10 × 20 + 15 + 30 + 10
= 85

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Question 4 (Cont.)

(c) 100 kg
For Evergreen, total mass of laundry
= 1750 ÷ 5
= 350
Mass of blouses and shirts (Evergreen)
= 350 – 170 – 30
= 150
Since the mass of blouses is 2 times of the mass of shirts, mass of blouses is \( \frac{2}{3} \times 150 = 100 \)

(d) $15 675
(100 + 150 + 150 + 15) × 5 = 2075
CleanFast collected a total of $2075.

(140 + 270 + 900 +10) × 5 = 6600
QuickSpin collected a total of $6600.
2400 + 2850 + 2075 + 1750 + 6600 = 15 675

(e) 850 kg
Most shirts washed = 900
Least shirts washed = 50
Biggest Difference = 900 – 50
= 850

Question 5

(a) $3
For Edmund, Amount spent on pencils + Amount spent on erasers + Amount spent on files = $23.80
6 × 0.30 + 2 × 0.50 + Amount spent on files = 23.80
23.80 – 1.80 – 1.00 = 21
$21 was spent on the files.
21 ÷ 7 = 3

(b) $33.50
5 × 0.30 + 4 × 0.50 + 10 × 3 = 33.50

(c) 5 files
For Cathy, Amount spent on pencils + Amount spent on erasers + Amount spent on files = $17.90
17.90 – 2.40 – 0.50 = 15
She spent $15 on files.
15 + 3 = 5

(d) Brian
Number of files (Brian) = 14 – 11 – 2
= 1
Brian = 11 × 0.30 + 2 × 0.50 + 1 × 3
= 7.30
Cathy = 8 × 0.30 + 1 × 0.50 + 5 × 3
= 17.90

(e) $98.10
Abel = 17 × 0.30 + 3 × 0.50 + 3 × 3
= 15.60
15.60 + 7.30 + 17.90 + 33.50 + 23.80 = 98.10

Answers to Unit 6.2 – Line Graphs

Let’s Practise 6.2

Question 1

(a) 9 a.m.
(b) 6 a.m.
(c) 5200 cars
Number of cars from 6 a.m. to 11 a.m.
= 100 + 500 + 1300 + 1700 + 900 + 700
= 5 200
(d) 7 a.m. to 8 a.m.
(e) 10 a.m. to 11 a.m.

Question 2

(a) 134
(b) May
(c) Jan to Feb, Feb to Mar
Jan to Feb = increase by 22
Feb to Mar = increase by 22
Mar to Apr = decrease by 27
Apr to May = increase by 72
May to June = decrease by 25
(d) 908
112 + 134 + 156 + 129 + 201 + 176 = 908
(e) April

Question 3

(a) 14°C
(b) 20°C
(c) 7:30 a.m.
(d) 30 minutes
When temperature = 14°C, Time is 7:40 a.m.

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Question 3 (Cont.)

When temperature = 20°C, Time is 8.10 a.m.
Elapsed time = 10 + 20
= 30
(e) 13.5°C
21.5°C – 8°C = 13.5°C

Question 4
(a) 270 litres
(b) 230 litres
Amount of water at 10 a.m. – Amount of water at 9 a.m. = 450 – 220 = 230
(c) 12.30 p.m.
(d) 4 h 30 min
1st time at 285 litres, time is 7 a.m.
2nd time at 285 litres, Time is 11:30 a.m.
Elapsed time is 4 h 30 min.
(e) 10 a.m. to 11 a.m., 12 noon to 1 p.m.
7 a.m. to 8 a.m. (decrease by 15 litres)
8 a.m. to 9 a.m. (decrease by 50 litres)
9 a.m. to 10 a.m. (increase by 230 litres)
10 a.m. to 11 a.m. (decrease by 130 litres)
11 a.m. to 12 noon. (decrease by 70 litres)
12 noon to 1 p.m. (decrease by 130 litres)

Question 5
(a) 1700 houses
Increase from 2008 to 2009 = 1200 – 1100
= 100
Increase from 2009 to 2010 = 5 × 100
= 500
Number of private houses sold in 2010
= 1200 + 500 = 1700
(b) 2000 houses
Number of private houses sold in 2011
= 2 × number of private houses sold in 2012
= 2 × 1000
= 2000
(c) Years 2009 and 2013
2008 = 1100
2009 = 1200
2010 = 1700
2011 = 2000
2012 = 1000
2013 = 1200
(d) 5900 houses
Total number of houses (2010 to 2013)
= 1700 + 2000 + 1000 + 1200
= 5900

Question 6
(a) 00:00:06
(b) 8 m
(c) 00:00:08
(d) 10 seconds
1st time ball is at 7 m – 00:00:04
2nd time ball is at 7 m – 00:00:14
Time elapsed = 14 – 4
= 10
(e) 8 seconds
Ball is at 0m – 00:00:08
Ball increases height to 7.5m – 00:00:16
Time elapsed = 16 – 8
= 8s
(f) 15.5 m
The ball falls from 10m to ground (00:00:08) = 10 m
The ball bounces from ground to 5.5m (00:00:12)
= 5.5 m
Total = 10 + 5.5
= 15.5

Chapter 7 Area and Perimeter

Answers to Unit 7.1

Let’s Practise 7.1

Question 1
(a) Area of Square A = 9 cm × 9 cm
= 81 cm²
Perimeter of Square A = 4 × 9 cm
= 36 cm
(b) Area of Rectangle B = 8 m × 4 m
= 32 m²
Perimeter of Rectangle B = 8 m + 4 m + 8 m + 4 m
= 24 m
Question 1 (Cont.)

(c) Area of Rectangle C = 17 m × 9 m = 153 m²

Perimeter of Rectangle C
= 17 m + 9 m + 17 m + 9m
= 52 m

Question 2

(a) Length of Square A = 2 × 6 cm = 12 cm

Perimeter of Square A = 4 × 12 cm = 48 cm

Area of Square A = 12 cm × 12 cm = 144 cm²

(b) Length of Rectangle B = 2 × 11 cm = 22 cm

Breadth of Rectangle B = 2 × 2 cm = 4 cm

Perimeter of Rectangle B
= 22 cm + 4 cm + 22 cm + 4 cm
= 52 cm

Area of Rectangle B = 22 cm × 4 cm
= 88 cm²

Question 3

Area of the unpaved region = 14 m × 14 m
= 196 m²

Perimeter of pavement
= 16 m + 16 m + 2 m + 2 m + 14 m + 14 m
= 64 m

Question 4

(a) 2 × length of field = 20 m + 20 m
= 40 m

2 × breadth of field = 64 m – 40 m
= 24 m

Breadth of field = 24 m + 2
= 12 m

The breadth of the field is 12 m.

(b) Perimeter of garden = 64 m + 2
= 32 m

Length of garden = 32 m + 4
= 8 m

Area of garden = 8 m × 8 m
= 64 m²

The area of the garden is 64 m².

Question 5

Length of CD = 2u.

Distance covered walked by the ant = 2u + 2u + 1u = 5u

5u = 37.5

1u = 37.5 ÷ 5 = 7.5

2u = 2 × 7.5 = 15

The length of the paper is 15 cm.

(a) 15 cm × 15 cm = 225 cm²

The area of the paper is 225 cm².

(b) 4 × 15 cm = 60 cm

The perimeter of the paper is 60 cm.

Question 6

Let the length of each square be 1u.

Total length of wire = 1u + 3u + 1u + 3u = 8u

8u = 96

1u = 96 ÷ 8 = 12

(a) Length of line AD is 12 cm.

(b) 3u = 3 × 12
= 36

36 cm × 12 cm = 432 cm²

The area of Rectangle ABCD is 432 cm².
Answers to Unit 7.2

Let's Practise 7.2

Question 1

(a)
Area of Square A = 1u \times 1u
1u \times 1u = 49 (7 \times 7)
1u = 7
Length of Square A = 7 cm
Perimeter of Square A = 4 \times 7 cm
= 28 cm

(b)
Length of Rectangle B = 84 m^2 \div 8 m
= 10.5 m
Perimeter of Rectangle B = (10.5 m \times 2) + (8 m \times 2)
= 37 m

(c)
Area of Square C = 1u \times 1u
1u \times 1u = 25 (5 \times 5)
1u = 5
Length of Square C = 5 cm
Perimeter of Square C = 4 \times 5 cm
= 20 cm

Question 2

(a)
2 \times \text{breadth} = 2 \times 14 cm
= 28 cm
2 \times \text{length} = 78 cm - 28 cm
= 50 cm
Length of Rectangle D = 50 cm + 2
= 52 cm
Area of Rectangle D = 25 cm \times 14 cm
= 350 cm^2

(b)
Length of Square E = 24 cm + 4
= 28 cm
Area of Square E = 6 cm \times 6 cm
= 36 cm^2

(c)
2 \times \text{breadth} = 2 \times 17 cm
= 34 cm
2 \times \text{length} = 92 cm - 34 cm
= 58 cm
Length of Rectangle F = 58 cm + 2
= 60 cm
Area of Rectangle F = 29 cm \times 17 cm
= 493 cm^2

Question 3

Length of wire = 80 cm + 60 cm + 80 cm + 60 cm
= 280 cm
Length of each side of square = 280 cm \div 7
= 40 cm
The length of each side of the square is 40 cm.

Question 4

Area of one square = 80 cm^2 \div 5
= 16 cm^2
Length of each square = 4 cm

Question 5

Area of each identical squares = 81 cm^2 \div 9 = 9 cm^2
Length of each identical square = 3 cm

Question 6

B = 4u
A = 1u

Summary

D = 4u^2 (16u)
A = 1u
B = 1u^2 (4u)
C = 9u
D = 16u

Area of Square A = 4 cm \times 4 cm
= 16 cm^2 (1u)
Question 6 (cont.)

Area of Square B = 4 \times 16 \text{ cm}^2 = 64 \text{ cm}^2

Length of Square B = 8 \text{ cm}

Area of Square C = 9 \times 16 \text{ cm}^2 = 144 \text{ cm}^2

Length of Square C = 12 \text{ cm}

Area of Square D = 16 \times 16 \text{ cm}^2 = 256 \text{ cm}^2

Length of Square D = 16 \text{ cm}

Perimeter of Square A = 4 \times 4 \text{ cm} = 16 \text{ cm}

Perimeter of Square B = 4 \times 8 \text{ cm} = 32 \text{ cm}

Perimeter of Square C = 4 \times 12 \text{ cm} = 48 \text{ cm}

Perimeter of Square D = 4 \times 16 \text{ cm} = 64 \text{ cm}

16 \text{ cm} + 32 \text{ cm} + 48 \text{ cm} + 64 \text{ cm} = 160 \text{ cm}

The length of wire is 160 \text{ cm}.

Answers to Unit 7.3

Let’s Practise 7.3

Question 1

When Johan walked at the centre of the path, you will need to add 1 m around the perimeter of the park.

Perimeter of park = 30 m + 40 m + 30 m + 40 m = 140 m

31 m + 41 m + 31 m + 41 m = 144 m

Johan walked a total distance of 144 m.

Question 2 (cont.)

(from left)

Area of Square A = 10 \times 10 \text{ cm}^2 = 100 \text{ cm}^2

Area of Square B = 16 \times 16 \text{ cm}^2 = 256 \text{ cm}^2

Area of Square C = 26 \times 26 \text{ cm}^2 = 676 \text{ cm}^2

Area of Square D = 12 \times 12 \text{ cm}^2 = 144 \text{ cm}^2

Area of Square E = 8 \times 8 \text{ cm}^2 = 64 \text{ cm}^2

Total area of figure

= 100 \text{ cm}^2 + 256 \text{ cm}^2 + 676 \text{ cm}^2 + 144 \text{ cm}^2 + 64 \text{ cm}^2

= 1240 \text{ cm}^2

The area of the figure is 1240 \text{ cm}^2.

Question 2

Length of figure

= 10 \text{ cm} + 16 \text{ cm} + 26 \text{ cm} + 12 \text{ cm} + 8 \text{ cm}

= 72 \text{ cm}

Breadth of figure = 26 \text{ cm}

72 \text{ cm} + 26 \text{ cm} + 72 \text{ cm} + 26 \text{ cm} = 196 \text{ cm}

The perimeter of the figure is 196 \text{ cm}.

Question 3

Area of land used for strawberries

= 9 \text{ m} \times 18 \text{ m}

= 162 \text{ m}^2

Area of land used for herbs

= 5 \text{ m} \times 5 \text{ m}

= 25 \text{ m}^2

Total area of land used

= 162 \text{ m}^2 + 25 \text{ m}^2

= 187 \text{ m}^2

Area of plot of land

= 28 \text{ m} \times 25 \text{ m}

= 700 \text{ m}^2

Area of plot of land still not used

= 700 \text{ m}^2 - 187 \text{ m}^2

= 513 \text{ m}^2

513 \text{ m}^2 of the plot of land is still unused.

Question 4

Area of 1 rectangle = 600 \text{ cm}^2 + 8

= 75 \text{ cm}^2.

<table>
<thead>
<tr>
<th>Length</th>
<th>Breadth</th>
<th>Area</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 cm</td>
<td>1 cm</td>
<td>3 \text{ cm}^2</td>
<td>X</td>
</tr>
<tr>
<td>6 cm</td>
<td>2 cm</td>
<td>12 \text{ cm}^2</td>
<td>X</td>
</tr>
<tr>
<td>9 cm</td>
<td>3 cm</td>
<td>27 \text{ cm}^2</td>
<td>X</td>
</tr>
<tr>
<td>12 cm</td>
<td>4 cm</td>
<td>48 \text{ cm}^2</td>
<td>X</td>
</tr>
<tr>
<td>15 cm</td>
<td>5 cm</td>
<td>75 \text{ cm}^2</td>
<td>✓</td>
</tr>
</tbody>
</table>

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Question 4 (Cont.)

Length of each rectangle = 15 cm
Breadth of each rectangle = 5 cm
Length of figure = $6 \times 5 \text{ cm}$
= 30 cm
Breadth of figure = $5 \text{ cm} + 15 \text{ cm}$
= 20 cm
Perimeter of figure = $30 \text{ cm} + 30 \text{ cm} + 20 \text{ cm} + 20 \text{ cm}$
= 100 cm
The perimeter of the figure is 100 cm.

Question 5

Area of one of the rectangles = $20 \text{ m} \times 10 \text{ m}$ = $200 \text{ m}^2$

Question 6

Area of large rectangle = $10 \text{ cm} \times 6 \text{ cm}$
= 60 cm$^2$
Area of overlapped 4 squares = $4 \times 1 \text{ cm}^2$
= 4 cm$^2$
Area of shaded region = $60 \text{ cm}^2 - 4 \text{ cm}^2 - 4 \text{ cm}^2$
= 52 cm$^2$
The area of the shaded region is 52 cm$^2$.

Question 7

Using guess-and-check and the factors of 72 to find the length and breadth of the pond.

<table>
<thead>
<tr>
<th>Area of pond</th>
<th>Length</th>
<th>Breadth</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 cm$^2$</td>
<td>36</td>
<td>2</td>
<td>x</td>
</tr>
<tr>
<td>72 cm$^2$</td>
<td>18</td>
<td>4</td>
<td>x</td>
</tr>
<tr>
<td>72 cm$^2$</td>
<td>12</td>
<td>6</td>
<td>(\sqrt{\text{Check}})</td>
</tr>
</tbody>
</table>

Length of park = $2 \text{ m} + 10 \text{ m} + 12 \text{ m}$
= 24 m
Breadth of park = $6 \text{ m} + 2 \text{ m} + 2 \text{ m}$
= 10 m
Area of park = $24 \text{ m} \times 10 \text{ m}$
= 240 m$^2$
Area of shaded region = $240 \text{ m}^2 - 72 \text{ m}^2$
= 168 m$^2$
The area of shaded region is 168 m$^2$.

Question 8

Using guess-and-check and the factors of 63 to find the length and breadth of the park.

<table>
<thead>
<tr>
<th>Area of park</th>
<th>Length</th>
<th>Breadth</th>
<th>Difference</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 m$^2$</td>
<td>63</td>
<td>1</td>
<td>62</td>
<td>x</td>
</tr>
<tr>
<td>63 m$^2$</td>
<td>21</td>
<td>3</td>
<td>18</td>
<td>x</td>
</tr>
<tr>
<td>63 m$^2$</td>
<td>9</td>
<td>7</td>
<td>2</td>
<td>(\sqrt{\text{Check}})</td>
</tr>
</tbody>
</table>

Length of park with pavement = $9 \text{ m} + 2 \text{ m} + 2 \text{ m}$
= 13 m
Breadth of park with pavement = $7 \text{ m} + 2 \text{ m} + 2 \text{ m}$
= 11 m
Area of park with pavement = $13 \text{ m} \times 11 \text{ m}$
= 143 m$^2$
Area of pavement = $143 \text{ m}^2 - 63 \text{ m}^2$
= 80 m$^2$
The area of the pavement is 80 m$^2$.

Question 9

Area of shaded region = 3 shaded squares
3 squares = 48
1 square = 48 $\div$ 3
= 16
Length of square A = 4 cm
Length of square B = $2 \times 4 \text{ cm}$
= 8 cm
The length of square A and square B is 4 cm and 8 cm respectively.

Question 10

(a) Total distance travelled
= $4 \text{ cm} + 2 \text{ cm} + 2 \text{ cm} + 4 \text{ cm} + 2 \text{ cm} +$
$4 \text{ cm} + 2 \text{ cm}$
= 22 cm
The marble travelled a distance of 22 cm.

(b) Area of 1st step = $14 \text{ cm} \times 2 \text{ cm}$
= $28 \text{ cm}^2$
Area of 2nd step = $10 \text{ cm} \times 2 \text{ cm}$
= $20 \text{ cm}^2$
Area of 3rd step = $6 \text{ cm} \times 2 \text{ cm}$
= $12 \text{ cm}^2$
Area of 4th step = $4 \text{ cm} \times 2 \text{ cm}$
= $8 \text{ cm}^2$
Total area of the shaded region
= $28 \text{ cm}^2 + 20 \text{ cm}^2 + 12 \text{ cm}^2 + 8 \text{ cm}^2$
= 68 cm$^2$
The area of the shaded region is 68 cm$^2$. 
Question 11
Length of 2 strokes = 20 cm – 14 cm
= 6 cm
Perimeter
= 30 cm + 20 cm + 30 cm + 20 cm + 6 cm + 6 cm
= 112 cm
The perimeter of the figure is 112 cm.
Area of figure
= (30 cm x 14 cm) + (6 cm x 5 cm) + (7 cm x 6 cm)
= 492 cm²
The area of the figure is 492 cm².

Question 12
Perimeter of figure
= 30 cm + 25 cm + 30 cm + 25 cm
= 110 cm
The perimeter of the figure is 110 cm.
Length of 2 strokes = (25 cm ± 15 cm) ÷ 2
= 5 cm
Length of 3 strokes = 30 cm ÷ 3
= 10 cm
Area of the figure
= (25 cm x 10 cm) + (10 cm x 10 cm) + (10 cm x 5 cm)
= 400 cm²
The area of the figure is 400 cm².

Question 13
Length of UV = 290 m – 30 m
= 260 m
Area of furniture department = 260 m x 30 m
= 7800 m²
The area of the furniture department is 7800 m².

Question 14
(a) Length of Square D = 3 cm
Length of Square F = 15 cm² + 3 cm
= 5 cm
The length of Square F is 5 cm.
(b) Area of E = 3 cm x 5 cm
= 15 cm²
The area of E is 15 cm².

Answers to Unit 7.4

Let’s Practise 7.4

Question 1

<table>
<thead>
<tr>
<th>Unitary approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>L → 3u</td>
</tr>
<tr>
<td>L → 3u</td>
</tr>
<tr>
<td>B → 1u</td>
</tr>
<tr>
<td>B → 1u</td>
</tr>
<tr>
<td>Total → 8u</td>
</tr>
</tbody>
</table>

Each rectangle has – 2 lengths
– 2 breadths

8u = 128
(B) 1u = 128 ÷ 8
= 16
(L) 3u = 16 x 3
= 48
Area of rectangle = 16 x 48
= 768
The area of the rectangle is 768 cm².

Question 2

Let the length of Square A = 1u
1u = 2 cm
Length of Rectangle B = 8u
= 8 x 2 cm
= 16 cm
Breadth of Rectangle B = 4u
= 4 x 2 cm
= 8 cm
Perimeter of Rectangle B = 16 + 16 + 8 + 8
= 48
The perimeter of Rectangle B is 48 cm.

Question 3

<table>
<thead>
<tr>
<th>Perimeter</th>
<th>Rectangle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sq</td>
<td>B = 3u</td>
</tr>
<tr>
<td>Rec</td>
<td>L = 4u</td>
</tr>
<tr>
<td>Total Perimeter  = 7u + 7u = 14u</td>
<td></td>
</tr>
</tbody>
</table>

Area of sq = 100 cm²
1 side of sq = 10 cm
Perimeter of sq (4u) = 10 + 10 + 10 + 10
= 40

For more review questions, please visit www.onsponge.com
**Question 3 (Cont.)**

1u = 40 + 4
= 10

Breadth of rectangle (3u) = 3 × 10
= 30

The breadth of rectangle is **30 cm**.

**Question 4**

<table>
<thead>
<tr>
<th>Area of Rectangular Figure</th>
<th>L</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 cm²</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

Area of 1 small square = 100 cm²
Length of 1 small square = 10 cm
Length of 1 big square = 10 cm + 10 cm = 20 cm
Length of figure = 10 cm + 20 cm = 30 cm
Length of 1 rectangle = 30 cm + 2
= 15 cm
Length of 1 rectangle = 3u
3u = 15 cm
1u = 15 cm ÷ 3
= 5 cm
Breadth of 1 rectangle = 2u
2u = 5 cm ÷ 2
= 10 cm
Area of 1 rectangle = 15 cm × 10 cm = 150 cm²
Area of 1 big square = 20 cm × 20 cm = 400 cm²
Area of figure = 100 + 100 + 400 + 150 = 900

The area of the figure is **900 cm²**.

**Question 5**

5u × 3u = 15

Factors of 135, Guess & Check

<table>
<thead>
<tr>
<th>Area of Rectangle</th>
<th>L</th>
<th>B</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>135 cm²</td>
<td>45</td>
<td>3</td>
<td>✗</td>
</tr>
<tr>
<td>135 cm²</td>
<td>27</td>
<td>5</td>
<td>✗</td>
</tr>
<tr>
<td>135 cm²</td>
<td>15</td>
<td>9</td>
<td>✓</td>
</tr>
</tbody>
</table>

Perimeter = 15 cm + 15 cm + 9 cm + 9 cm = 48 cm

The perimeter of the figure is **48 cm**.

**Question 6**

<table>
<thead>
<tr>
<th>ABCD</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>L = 2u</td>
<td>L = 4u</td>
<td>L = 4u</td>
<td>L = 4u</td>
<td>L = 1u</td>
<td></td>
</tr>
</tbody>
</table>

Breadth (C + D) = 2u + 4u
= 6u
Length (C + A) = 4u + 2u
= 6u
Perimeter E = 24 cm
(1u) breadth of E = 24 cm ÷ 4
= 6 cm

(a) 1u = 6 cm
6u = 6 × 6 cm
= 36 cm
The length of Square ABCD is **36 cm**.

(b) Breadth of B (2u) = 2 × 6 cm
= 12 cm
Length of B (4u) = 4 × 6 cm
= 24 cm
Area of B = 12 cm × 24 cm
= 288 cm²

The area of B is **288 cm²**.

**Answers to Unit 7.5**

**Let’s Practise 7.5**

**Question 1**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Total</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 × 7 = 49</td>
<td>10 × 10 = 100</td>
<td>49 + 100 = 149</td>
<td>✗</td>
</tr>
<tr>
<td>8 × 8 = 64</td>
<td>11 × 11 = 121</td>
<td>64 + 121 = 185</td>
<td>✗</td>
</tr>
<tr>
<td>9 × 9 = 81</td>
<td>12 × 12 = 144</td>
<td>81 + 144 = 225</td>
<td>✓</td>
</tr>
</tbody>
</table>

Perimeter = 9 + 9 + 9 + 9 + 12 + 12 + 12 + 12 + 6
= 27 + 3 + 36 + 6
= 72

The perimeter is **72 cm**.

**Question 2**

<table>
<thead>
<tr>
<th>Area of small sq</th>
<th>Area of big sq</th>
<th>Difference (Shaded area)</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 × 6 = 36</td>
<td>8 × 8 = 64</td>
<td>64 - 36 = 28</td>
<td>✗</td>
</tr>
<tr>
<td>4 × 4 = 16</td>
<td>6 × 6 = 36</td>
<td>36 - 16 = 20</td>
<td>✓</td>
</tr>
</tbody>
</table>

The area of the smaller square is **16 cm²**.

**Question 3**
**Area of small sq** | **Area of big sq** | **Difference (Shaded area)** | **Check**
---|---|---|---
8 \(\times\) 8 = 64 | 10 \(\times\) 10 = 100 | 100 – 64 = 36 | ✗
9 \(\times\) 9 = 81 | 11 \(\times\) 11 = 121 | 121 – 81 = 40 | ✓

Perimeter of big square = 11 cm \(\times\) 4
= 44 cm
The perimeter of the big square is **44 cm**.

**Question 4**
Total area of Square A + Square B
= 176 cm\(^2\) + 9 cm\(^2\) + 9 cm\(^2\)
= 194 cm\(^2\)

<table>
<thead>
<tr>
<th>Area of A</th>
<th>Area of B</th>
<th>Unshaded region</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 (\times) 7 = 49</td>
<td>15 (\times) 15 = 225</td>
<td>225 + 49 = 274 274 – 9 – 9 = 256</td>
<td>✗</td>
</tr>
<tr>
<td>6 (\times) 6 = 36</td>
<td>14 (\times) 14 = 196</td>
<td>196 + 36 = 232 232 – 9 – 9 = 214</td>
<td>✗</td>
</tr>
<tr>
<td>5 (\times) 5 = 25</td>
<td>13 (\times) 13 = 169</td>
<td>169 + 25 = 194 194 – 9 – 9 = 176</td>
<td>✓</td>
</tr>
</tbody>
</table>

The length of A and B is **5 cm** and **13 cm** respectively.

**Question 5**
*Guess & Check. Factors of 24*

<table>
<thead>
<tr>
<th>Length</th>
<th>Breadth</th>
<th>Total Perimeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 (\times) 2 = 24</td>
<td>2 (\times) 2 = 4</td>
<td>24 + 4 = 28 28 (\times) 2 = 56</td>
</tr>
<tr>
<td>8 (\times) 2 = 16</td>
<td>3 (\times) 2 = 6</td>
<td>16 + 6 = 22 22 (\times) 2 = 44</td>
</tr>
<tr>
<td>6 (\times) 2 = 12</td>
<td>4 (\times) 2 = 8</td>
<td>12 + 8 = 20 20 (\times) 2 = 40</td>
</tr>
</tbody>
</table>

4 squares wide
6 squares long
Empowered Learning

While every care has been taken to compile this answer booklet, errors may still arise in the course of compilation and production. If you notice any error, kindly write to feedback@onsponge.com so that we can review it.