This Essential Problem Solving Skills (EPSS) series is designed as an enhanced-learning resource for Primary 3 to 6 students. Based on the MOE syllabus, EPSS adopts a scaffold approach to learning right from the concept stage in each opening chapter.

Key features in EPSS:
- ✔ Opening Chapter – introduces basis of concepts covered in the chapter.
- ✔ Let’s Get Started – learn the fundamental understanding of the concepts in a scaffold approach through pre-exercises before it is being applied to a full word problem sum.
- ✔ Let’s Learn – showcases a problem sum complete with solution while guiding the learner with prompts.
- ✔ Let’s Practise – reinforces understanding of the concepts with 6 problem sums which are carefully crafted and developed at increasing levels of difficulty to better expose and prepare students in their learning.
- ✔ Review Questions – test competency in application of concepts at the end of each main chapter through problem sums which have been randomly put together in a mixed-question format.

Users of EPSS are encouraged to go through the user guide under the Overview of EPSS to better appreciate the merits of the content to reap optimal benefits from the use of the book. For additional practices and more question types after the completion of each chapter, users may access other Review Questions and also post questions as well as clarify concepts by visiting www.onspunge.com.
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.

<table>
<thead>
<tr>
<th>4</th>
<th>72, 84</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>18, 21</td>
</tr>
<tr>
<td></td>
<td>6, 7</td>
</tr>
</tbody>
</table>

Maximum number of necklaces = 4 x 3 = 12
(a) She can make 12 necklaces.
(b) There are 6 red beads and 7 blue beads in each necklace.

Question 1

2.

<table>
<thead>
<tr>
<th>2</th>
<th>28, 40, 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>14, 20, 30</td>
</tr>
<tr>
<td></td>
<td>7, 10, 15</td>
</tr>
</tbody>
</table>

Highest common factor (‘HCF’): 2 x 2 = 4

3.

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

Highest common factor (‘HCF’): 2 x 2 x 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 2

<table>
<thead>
<tr>
<th>3</th>
<th>45, 75</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9, 15</td>
</tr>
<tr>
<td></td>
<td>3, 5</td>
</tr>
</tbody>
</table>

Maximum number of trays needed = 5 x 3 = 15
(a) She needs 15 trays.
(b) There are 3 brownies and 5 strawberry cupcakes in each tray.

Question 3

<table>
<thead>
<tr>
<th>3</th>
<th>21, 63, 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1, 3, 5</td>
</tr>
</tbody>
</table>

Number of staff = 3 x 7 = 21
(a) She has 21 staff.
(b) Each staff received 1 cup, 3 coasters and 2 ball pens.

Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Unit 1.1 – Highest Common Factors

Question 4

<table>
<thead>
<tr>
<th></th>
<th>48, 80, 96</th>
<th>24, 40, 48</th>
<th>6, 10, 12</th>
<th>3, 5, 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(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.

Question 5

<table>
<thead>
<tr>
<th></th>
<th>24, 42</th>
<th>8, 14</th>
<th>4, 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th></th>
<th>20, 36</th>
<th>10, 18</th>
<th>5, 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

Chef Lee can make 45 rectangular 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

Exercise B

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

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

3. FCM of 18 and 48 = \(3 \times 2 \times 3 \times 8\) = 144

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

<table>
<thead>
<tr>
<th></th>
<th>4, 6, 7</th>
<th>2, 3, 7</th>
<th>1, 3, 7</th>
<th>1, 1, 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FCM of 4, 6 and 7 = \(2 \times 2 \times 3 \times 7\) = 84

They will cycle again 84 days later.
Let's Practise 1.2

Question 1

5
2
1, 2
1, 1

FCM of 5 and 10 = 5 × 2 = 10

7.35pm 7.45pm
Both lamps would flicker at 7.45 p.m.

Question 2

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

FCM of 4, 8 and 10 = 2 × 2 × 2 × 5
= 40

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

Question 3

2
3
2, 6, 15
3
1, 3, 15
5
1, 1, 5
1, 1, 1

FCM of 2, 6 and 15 = 2 × 3 × 5
= 30

The shortest possible length is 30 cm.

Question 4

4
5
5, 8, 12
5
2, 3, 6
2
1, 2, 3
3
1, 3, 1
1, 1, 1

LCM of 5, 8 and 12 = 4 × 5 × 2 × 3
= 120

Olivia has a minimum of 120 paper clips.

Question 5

<table>
<thead>
<tr>
<th>Multiples of 5</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add 3 sweets</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
<td>+3</td>
</tr>
<tr>
<td>Actual sweets</td>
<td>9</td>
<td>13</td>
<td>18</td>
<td>23</td>
<td>28</td>
<td>33</td>
<td>38</td>
<td>43</td>
<td>48</td>
<td>53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiples of 6</th>
<th>6</th>
<th>12</th>
<th>18</th>
<th>24</th>
<th>30</th>
<th>36</th>
<th>42</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add 13 sweets</td>
<td>+13</td>
<td>+13</td>
<td>+13</td>
<td>+13</td>
<td>+13</td>
<td>+13</td>
<td>+13</td>
<td>+13</td>
</tr>
<tr>
<td>Actual sweets</td>
<td>19</td>
<td>25</td>
<td>31</td>
<td>37</td>
<td>43</td>
<td>49</td>
<td>55</td>
<td>61</td>
</tr>
</tbody>
</table>

Julie has 43 sweets.

Question 6

<table>
<thead>
<tr>
<th>Multiples of 4</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
<th>28</th>
<th>32</th>
<th>36</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add 15 pens</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
<td>+15</td>
</tr>
<tr>
<td>Actual pens</td>
<td>19</td>
<td>23</td>
<td>27</td>
<td>31</td>
<td>35</td>
<td>39</td>
<td>43</td>
<td>47</td>
<td>51</td>
<td>55</td>
</tr>
</tbody>
</table>

Minimum number of pens Kristine has is 39.

Let's Get Started 1.3

2.
A
| 1u | 15 |
C
| 1u |

3.
A
| 1u | 45 |
S
| 1u |

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 left in the bag.

\[
\begin{array}{c|c|c}
B & 100 & 1000 \\
W & 100 & 1000 & 1560 \\
\end{array}
\]

2660

Let’s Practise 1.3

Question 1

\[
\begin{align*}
K & = 9500 \\
I & = 9500 \\
9500 + 500 & = 10000 \\
\end{align*}
\]

Irene picked 10,000 tea leaves.

\[
\begin{align*}
9500 + 10000 & = 19500 \\
\end{align*}
\]

They picked 19,500 tea leaves in all.

Question 2

\[
\begin{align*}
B & = 15700 \\
S & = 15700 \\
21750 & = 6050 \\
\end{align*}
\]

The smaller number is 15,700.

\[
\begin{align*}
15700 + 21750 & = 37450 \\
\end{align*}
\]

Sum of the two numbers is 37,450.

Question 3

At first

\[
\begin{array}{c|c|c}
S & 380 \\
M & \\
\end{array}
\]

In the end

\[
\begin{array}{c|c|c}
S & 1u & 180 \\
M & 1u \\
\end{array}
\]

\[
\begin{align*}
1u & = 180 \\
2u & = 180 + 180 \\
& = 360 \\
\end{align*}
\]

Question 3 (Cont.)

Sheila had 360 seashells in the end.

\[
\begin{align*}
360 + 200 & = 560 \\
\end{align*}
\]

Sheila had 560 seashells at first.

Question 4

At first

\[
\begin{align*}
G & = 18 \\
B & \\
\end{align*}
\]

In the end

\[
\begin{align*}
G & = 1u & 12 \\
B & = 1u & 12 \\
3u & = ? \\
\end{align*}
\]

2u = 12

1u = 12 ÷ 2

= 6

There were 6 girls at the library in the end.

\[
\begin{align*}
6u & + 18 = 6 \times 6 + 18 \\
& = 54 \\
\end{align*}
\]

There were 54 children at the library first.

Question 5

At first

\[
\begin{align*}
Mr & = 265 \\
Mrs & \\
\end{align*}
\]

In the end

\[
\begin{align*}
Mr & = 1u & 199 & 215 & 50 \\
Mrs & = 1u & 199 \\
\end{align*}
\]

\[
\begin{align*}
3u & = 199 + 215 \\
& = 414 \\
1u & = 414 ÷ 3 \\
& = 138 \\
\end{align*}
\]

Mrs Lim had 138 button pins in the end.

\[
\begin{align*}
5u & + 199 + 50 & = 5 \times 138 + 249 \\
& = 939 \\
\end{align*}
\]

They had 939 button pins at first.
Answers to Unit 1.3 – More than / Less than

Question 6
At first
A
B
In the end
A
B
\[2u = 900 + 2880\]
\[= 3780\]
\[1u = \frac{3780}{2}\]
\[= 1890\]
There were 1890 mini fruit tarts in Bakery B in the end.
\[1u + 900 = 1890 + 900\]
\[= 2790\]
There were 2790 mini fruit tarts in Bakery B at first.

Answers to Unit 1.4 – More than / Less than

Let’s Get Started 1.4

2.
In the end
C
B
At first
C
B
\[2u = 6\]
\[1u = \frac{6}{2}\]
\[= 3\]
\[3u = 3 \times 3\]
\[= 9\]
Helen had 9 soft toys at first.

Let’s Practise 1.4

Question 1
At first
H
D
In the end
H
D
\[2u = 6\]
\[1u = \frac{6}{2}\]
\[= 3\]
\[3u = 3 \times 3\]
\[= 9\]
Helen had 9 soft toys at first.

Question 2
At first
A
B
In the end
A
B
Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Unit 1.4 – More than / Less than

**Question 2 (Cont.)**

4u = 24
1u = 24 ÷ 4
= 6

Ben took 6 photos.

**Question 3**

At first

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
</table>

In the end

<table>
<thead>
<tr>
<th>X</th>
<th>120</th>
<th>1470</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>120</td>
<td>3u</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
</tr>
</thead>
</table>

In the end

<table>
<thead>
<tr>
<th>C</th>
<th>1000</th>
<th>6200</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1000</td>
<td>5u</td>
</tr>
</tbody>
</table>

5u = 7200 – 1000
= 6200
1u = 6200 ÷ 5
= 1240
6u = 6 × 1240
= 7440

Constance had $7440 at first.

**Question 5**

At first

<table>
<thead>
<tr>
<th>F</th>
<th>G</th>
</tr>
</thead>
</table>

In the end

<table>
<thead>
<tr>
<th>F</th>
<th>1u</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>1u</td>
<td>24 8</td>
</tr>
</tbody>
</table>

2u = 96 – 24 – 8
= 64
1u = 64 ÷ 3
= 32

Fred had 32 eggs at first.
1u + 24 + 8 = 32 + 24 + 8
= 64

Geneve has 64 eggs at first.

**Question 6**

At first

<table>
<thead>
<tr>
<th>M</th>
<th>W</th>
</tr>
</thead>
</table>

In the end

<table>
<thead>
<tr>
<th>M</th>
<th>1u</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>1u</td>
<td>6</td>
</tr>
</tbody>
</table>

2u = 30
1u = 30 ÷ 2
= 15

There were 15 women at the park at first.
1u + 6 = 15 + 6
= 21
21 + 21 = 42

There was a total of 42 men and women in the park in the end.
Let's Get Started 1.5

2. **At first**

\[
\begin{array}{c|c}
A & 30 \\
C & \\
\end{array}
\]

**In the end**

\[
\begin{array}{c|c|c}
A & 12 & 15 & 30 \\
C & 12 & 15 & 15 \\
\end{array}
\]

3. **In the end**

\[
\begin{array}{c|c}
I & \\
O & \\
\end{array}
\]

**At first**

\[
\begin{array}{c|c|c}
I & 245 & 245 \\
O & 245 & \\
\end{array}
\]

\[860\]

4. **At first**

\[
\begin{array}{c|c}
J & 45 \\
P & \\
\end{array}
\]

**In the end**

\[
\begin{array}{c|c|c}
J & 1u & 45 & 1u \\
P & 1u & & \\
\end{array}
\]

5. **In the end**

\[
\begin{array}{c|c}
C & \\
R & \\
\end{array}
\]

**At first**

\[
\begin{array}{c|c|c}
C & 1u & 200 \\
R & 1u & 200 \\
\end{array}
\]

### Ask Yourself

1. From ‘At first’ since it is given in the question that Sean and Jovan had an equal number of toy cars at first.

### Think Further

2. 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**

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

**In the end**

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

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

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**

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

**In the end**

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

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

Yvette has **710 bookmarks** in the end.
Answers to Unit 1.5 – Internal Transfer

Question 3

In the end

<table>
<thead>
<tr>
<th>J</th>
<th>1u</th>
<th>3700</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>1u</td>
<td>3700</td>
</tr>
</tbody>
</table>

At first

<table>
<thead>
<tr>
<th>J</th>
<th>1u</th>
<th>3700</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>1u</td>
<td>3700</td>
</tr>
</tbody>
</table>

2u = 15 000 – 3700 – 3700
= 7600
1u = 7600 ÷ 2
= 3800
1u + 7400 = 3800 + 7400
= 11 200
Kaitlin had $11 200 at first.

Question 4

Morning

<table>
<thead>
<tr>
<th>A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

Evening

<table>
<thead>
<tr>
<th>A</th>
<th>1u</th>
<th>1800</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1u</td>
<td>1800</td>
</tr>
</tbody>
</table>

Towels transferred from A to B = 2500 – 700
= 1800

2u = 3600
1u = 3600 ÷ 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

<table>
<thead>
<tr>
<th>M</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td></td>
</tr>
</tbody>
</table>

In the end

<table>
<thead>
<tr>
<th>M</th>
<th>1u</th>
<th>5</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>1u</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

1u = 3700
1u + 5 = 35 + 5
= 40
Johnny had 40 cookies at first.

Question 6

8u = 1680
1u = 1680 ÷ 8
= 210
3u = 3 × 210
= 630
630 decks of cards must be moved from B to A.

Answers to Unit 1.6 – One Item Unchanged

Let’s Get Started 1.6

2. What had changed? | What remained unchanged?
-------------------|-------------------
• Damien’s money    | • Gillian’s money
• Total amount of money both had
• Difference between the amount of money both had

3. What had changed? | What remained unchanged?
-------------------|-------------------
• Volume of water in Tank B
• Total volume in Tank A and Tank B
• Difference in the volume of water in Tank A and Tank B

4. What had changed? | What remained unchanged?
-------------------|-------------------
• Number of women
• Total number of passengers
• Difference between the number of men and the number of women.
### Ask Yourself
1. The number of cookies Jordan had changed as he ate some.
2. Michelle still had the same number of cookies.

### 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:
  - 16

**In the end**
- P:
  - 1u
  - 16
- W:
  - 4u

4u = 16 + 4
= 20
1u = 20 ÷ 4
= 5

Wayne had 5 shirts in the end.
5u = 5 × 5
= 25

Paul had **25 shirts** in the end.

#### Question 2
**At first**
- A:
  - 19 200

**In the end**
- A:
  - 1u
  - 4200
- B:
  - 1u
  - 4200

5u = 23 400 – 19 200
= 4200
1u = 4200 ÷ 5
= 840

#### Question 2 (Cont.)

1u + 23 400 = 840 + 23 400
= 24 240

There were **24 240 ants** in Farm A at first.

**Question 3**
**At first**

<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
</tr>
</thead>
</table>

**In the end**

<table>
<thead>
<tr>
<th>C</th>
<th>1u</th>
<th>12</th>
<th>1u</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1u</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2u = 12 + 12
= 24
1u = 24 ÷ 2
= 12

Denise had 12 hair clips in the end.
12 + 12 = 24

Denise had **24 hair clips** at first.

**Question 4**
**At first**

| L | G |

**In the end**

<table>
<thead>
<tr>
<th>L</th>
<th>1u</th>
<th>15</th>
<th>1u</th>
<th>15</th>
<th>1u</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>1u</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1u = 15 + 15 + 15
= 45 pens

Gillian had 45 pens in the end.
45 + 15 = 60

Gillian had **60 pens** at first.

**Question 5**
**At first**

| B | G |

**In the end**

| B | G | 750 |

Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Unit 1.6 – One Item Unchanged

Question 5 (Cont.)
5u = 750
1u = 750 ÷ 5
= 150
There were 150 boys at the science fair in the end.
9u = 9 × 150
= 1350
There were 1350 children at the Science fair at first.

Question 6
At first
M
W

In the end 3200

M W

8u = 3200
1u = 3200 ÷ 8
= 400
There were 400 men at the convention centre in the end.
2u = 2 × 400
= 400
There were 800 more women than men at the convention in the end.

Answers to Unit 1.7 – Difference Unchanged

Let’s Get Started 1.7
2.

At first
A 100
B Difference

In the end
A 100
B Difference

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?
Let's Practise 1.7

Question 1

Present

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamie</td>
<td>50 years old</td>
<td></td>
</tr>
<tr>
<td>Daughter</td>
<td>29 years old</td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>21 years old</td>
<td></td>
</tr>
</tbody>
</table>

Past

<table>
<thead>
<tr>
<th>J</th>
<th>D</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>3u</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>1u</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>29 - 7</td>
<td>22</td>
<td></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></th>
<th>M</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alicia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mrs Fong</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>12 years old</td>
<td></td>
</tr>
</tbody>
</table>

2u = 12
1u = 12 ÷ 2
= 6
Mrs Fong = 3 × 6
= 18
7 years' time (future)
18 + 7 = 25
Mrs Fong will be 25 years old in 7 years' time.

Question 3

Present

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamie</td>
<td>50 years old</td>
<td></td>
</tr>
<tr>
<td>Daughter</td>
<td>29 years old</td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>21 years old</td>
<td></td>
</tr>
</tbody>
</table>

Past

<table>
<thead>
<tr>
<th>J</th>
<th>D</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>3u</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>1u</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>29 - 7</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

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

(a) Total age now = 8u
8u = 64 – 16
= 48
1u = 48 ÷ 8
= 6
6u = 6 × 6
= 36

Their age difference at present is 36 years.

Some years later

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dan</td>
<td>18 years old</td>
<td></td>
</tr>
<tr>
<td>Mike</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase</td>
<td>2u = 36</td>
<td></td>
</tr>
<tr>
<td>1u = 36 ÷ 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>= 18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Question 4

At first

<table>
<thead>
<tr>
<th></th>
<th>Y</th>
<th>G</th>
</tr>
</thead>
</table>

Decrease = 4u – 3u
= 1u
1u = 16
There were 16 green chairs in the hall in the end.
4u = 4 × 16
= 64
There were 64 chairs altogether in the hall in the end.
Answers to Unit 1.7 – Difference Unchanged

Question 5
At first

\[
\begin{array}{c}
  \text{B} \\
  \text{W}
\end{array}
\]

\[5u = 20\]
\[1u = \frac{20}{5} = 4\]
Total balloons and whistles bought = \[3u + 3u\]
\[= 6u\]
\[6u = 6 \times 4 = 24\]
She bought 24 balloons and whistles in all.

Question 6
At first

\[
\begin{array}{c}
  \text{J} \\
  \text{G}
\end{array}
\]

Joni Spent = \[21u - 16u\]
\[= 5u\]
\[5u = 45\]
\[1u = \frac{45}{5} = 9\]
\[18u = 18 \times 9 = 162\]
They had $162 altogether in the end.

Answers to Unit 1.8 – Repeated Items

Ask yourself
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

\[
\begin{array}{c}
  \text{P} \\
  \text{A} \\
  \text{W}
\end{array}
\]

Total = \[6u + 2u + 1u\]
\[= 9u\]
\[9u = 2412\]
\[1u = \frac{2412}{9} = 268\]
\[6u = 6 \times 268 = 1608\]
There were 1608 pineapples.

Let’s Practise 1.8

Question 1

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

\[25 + 25 + 30 = 80\]
\[3u = 344 - 80\]
\[= 264\]
\[1u = \frac{264}{3} = 88\]
Leonard had $88.
\[88 + 25 + 30 = 143\]
Jason has $143.

Question 2

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

\[1u = 40\]
\[5u = 5 \times 40\]
\[= 200\]
\[4 \times 36 = 144\]
Answers to Unit 1.8 – Repeated Items

Question 2 (Cont.)

\[5u + 144 = 200 + 144\]
\[= 344\]

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

Question 3

\[\begin{array}{l|lllll}
  C & 1u & 25 & 1u & 25 & 1u \\
  R & 1u & 25 & \\
  D & 1u & \\
\end{array}\]

\[\text{Total: } 275\]

\[25 \times 4 = 100\]
\[5u = 275 - 100\]
\[= 175\]
\[1 \text{ unit } = 175 \div 5\]
\[= 35\]

There were 35 stalks of daisies.

\[C + D = 4u + 75\]
\[= 4 \times 35 + 75\]
\[= 215\]

There were **215 stalks** of carnations and daisies.

Question 4

\[\text{Difference between boys and girls } = 3u - 1u\]
\[= 2u\]

\[2u = 2300\]
\[1u = 2300 \div 2\]
\[= 1150\]
\[8u = 8 \times 1150\]
\[= 9200\]

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

Question 5

\[\text{Difference between red and grey } = 2u - 1u\]
\[= 1u\]

\[1u = 10\]

\[\text{Difference between black and red } = 9u - 2u\]
\[= 7u\]

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

Question 6

\[\begin{array}{l|l}
  Y & \\
  X & \\
  Z & \\
\end{array}\]

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.

Visit the forum page at www.onsponge.com for more challenging problem sums.
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 Practise 1.9

Question 1

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>×</th>
<th>Value of each unit (Wheels)</th>
<th>Total Value (Wheels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>2u</td>
<td>×</td>
<td>2</td>
<td>4u</td>
</tr>
<tr>
<td>G</td>
<td>1u</td>
<td>×</td>
<td>4</td>
<td>4u</td>
</tr>
<tr>
<td>Total</td>
<td>3u</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>×</th>
<th>Value of each unit ($)</th>
<th>Total Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2u</td>
<td>×</td>
<td>1</td>
<td>2u</td>
</tr>
<tr>
<td>D</td>
<td>1u</td>
<td>×</td>
<td>8</td>
<td>8u</td>
</tr>
<tr>
<td>Total</td>
<td>3u</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>×</th>
<th>Value of each unit (candy)</th>
<th>Total Value (candy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>1u</td>
<td>×</td>
<td>2</td>
<td>2u</td>
</tr>
<tr>
<td>B</td>
<td>3u</td>
<td>×</td>
<td>1</td>
<td>3u</td>
</tr>
<tr>
<td>Total</td>
<td>4u</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

Question 3 (Cont.)

There were 60 more boys than girls at the party.

Question 4

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity of Items</th>
<th>×</th>
<th>Value of each unit (Treats)</th>
<th>Total Value (Treats)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>3u</td>
<td>×</td>
<td>3</td>
<td>9u</td>
</tr>
<tr>
<td>S</td>
<td>1u</td>
<td>×</td>
<td>2</td>
<td>2u</td>
</tr>
<tr>
<td>Total</td>
<td>4u</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.

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 × 13
= 260
There were 260 chicken wings that were eaten at the barbeque.

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 × 7
= 462
Answers to Unit 1.9 – Quantity x Value

**Question 6 (Cont.)**

They picked 462 strawberries together.

Answers to Unit 1.10 – Gap & Difference

**Let’s Get Started 1.10**

3. 

![Diagram showing key chains per friend](image)

- **Case 1:** 3 key chains/friend
- **Case 2:** 3 key chains/friend

**Gap** = 18 – 6
= 12 (key chains)

**Difference** = 6 – 3
= 3 (key chains per friend)

4. 

![Diagram showing badges per member](image)

- **Case 1:** 1 badge/member
- **Case 2:** 1 badge/member

**Gap** = 8 + 7
= 15 (badges)

**Difference** = 4 – 1
= 3 (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.

2. 

**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**

![Diagram showing tarts per neighbour](image)

- **Case 1:** 3 tarts/N
- **Case 2:** 2 tarts/N

**Gap** = 19 – 5
= 14

**Question 2**

![Diagram showing stamps per page](image)

- **Case 1:** 4 stamps/pg
- **Case 2:** 2 stamps/pg

**Gap** = 21 – 3
= 18

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

(a) \(14 \div 2 = 7\)
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 3**

![Diagram showing pens per friend](image)

- **Case 1:** 8 pens/friend
- **Case 2:** 3 pens/friend

**Gap** = 8 – 2
= 6

**Difference** between Case 1 and Case 2 = 11 – 8
= 3

(a) \(6 \div 3 = 2\)
Shawn has 2 friends.

(b) Number of pens:
Using Case 1: \(2 \times 8 – 2 = 14\)
Using Case 2: \(2 \times 11 – 8 = 14\) (Checked)
Shawn has 14 pens.

Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Unit 1.10 – Gap & Difference

Question 4

Gap   = 25 – 7  
= 18

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

(a)  18 ÷ 2 = 9  
There were 9 workers.
(b)  Number of mooncakes bought:
    Using Case 1: 9 × 4 – 7 = 29
    Using Case 2: 9 × 6 – 25 = 29 (Checked)
    Mr Tan bought 29 mooncakes.

Question 5

Gap = 10 + 8  
= 18

Difference between Case 1 and Case 2 = 15 – 12  
= 3

(a)  18 + 3 = 6  
There were 6 groups of volunteers.
(b)  Number of volunteers:
    Using Case 1: 12 × 6 + 10 = 82
    Using Case 2: 15 × 6 – 8 = 82 (Checked)
    There were 82 volunteers at the event.

Question 6

Gap = 36 + 60  
= 96

Difference = 10 – 6  
= 4

(a)  Number of marbles : 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 marbles to his sons.
    J
    K

(b)  4u = 180
    1u = 180 ÷ 4
    = 45
    Keith received 45 marbles.

Answers to Unit 1.11 – Guess and Check

Let’s Get Started 1.11

1.  Quantity × Value
2.  Guess-and-Check
3.  Guess-and-Check
4.  Guess-and-Check
5.  Quantity × Value

Let’s Learn 1.11

Ask Yourself
1.  Total quantity, total value, value of items
2.  Guess-and-Check

Think Further
1.  Use Quantity × Value to solve the question

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity</th>
<th>×</th>
<th>Value (legs)</th>
<th>Total value (legs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>2u</td>
<td>×</td>
<td>2</td>
<td>4u</td>
</tr>
<tr>
<td>Cow</td>
<td>1u</td>
<td>×</td>
<td>4</td>
<td>4u</td>
</tr>
<tr>
<td>Total</td>
<td>3u</td>
<td></td>
<td>8u</td>
<td></td>
</tr>
</tbody>
</table>

8u = 64
1u = 64 ÷ 8
= 8
2u = 2 × 8
= 16
There are 16 chickens on the farm.

Let’s Practise 1.11

Question 1

<table>
<thead>
<tr>
<th>No. of hamsters</th>
<th>No. of hamsters' legs</th>
<th>No. of birds</th>
<th>No. of birds' legs</th>
<th>Total no. of legs</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>32 × 4 = 128</td>
<td>0</td>
<td>0</td>
<td>128</td>
<td>x</td>
</tr>
<tr>
<td>31</td>
<td>31 × 4 = 124</td>
<td>1</td>
<td>1 × 2 = 2</td>
<td>124 + 2 = 126</td>
<td>x</td>
</tr>
<tr>
<td>32 – 11 = 21</td>
<td>32 × 4 = 128</td>
<td>11</td>
<td>11 × 2 = 22</td>
<td>84 + 22 = 106</td>
<td>÷</td>
</tr>
</tbody>
</table>

Difference = 128 – 106
= 22
Answers to Unit 1.11 – Guess and Check

Question 1 (Cont.)
Gap = 128 – 126 = 2
No. of birds = 22 ÷ 2 = 11
There are 11 birds in the shop.

Question 2

<table>
<thead>
<tr>
<th>No. of white marbles</th>
<th>Total cost of white marbles</th>
<th>No. of black marbles</th>
<th>Total cost of black marbles</th>
<th>Total cost of all marbles</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>40 × 0.5 = 20</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>x</td>
</tr>
<tr>
<td>39</td>
<td>39 × 0.5 = 19.5</td>
<td>1</td>
<td>1 × 2 = 0.2</td>
<td>19.5 + 0.2 = 19.7</td>
<td>x</td>
</tr>
<tr>
<td>22 – 18 = 4</td>
<td>22 × 0.5 = 11</td>
<td>18</td>
<td>18 × 0.2 = 3.6</td>
<td>21.3 + 3.6 = 14.6</td>
<td>(\checkmark)</td>
</tr>
</tbody>
</table>

Difference = 20 – 14.6 = 5.4
Gap = 20 – 19.7 = 0.3
No. of birds = 5.4 ÷ 0.3 = 18
There are 18 black marbles in the box.

Question 3

<table>
<thead>
<tr>
<th>No. of motor-cycles</th>
<th>No. of motor-cycles' wheels</th>
<th>No. of cars</th>
<th>No. of cars' wheels</th>
<th>Total no. of wheels</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>54 × 2 = 108</td>
<td>0</td>
<td>0</td>
<td>108</td>
<td>x</td>
</tr>
<tr>
<td>53</td>
<td>53 × 2 = 106</td>
<td>1</td>
<td>1 × 4 = 4</td>
<td>106 + 4 = 110</td>
<td>x</td>
</tr>
<tr>
<td>54 – 29 = 25</td>
<td>25 × 2 = 50</td>
<td>29</td>
<td>29 × 4 = 116</td>
<td>50 + 116 = 166</td>
<td>(\checkmark)</td>
</tr>
</tbody>
</table>

Difference = 166 – 108 = 58
Gap = 110 – 108 = 2
No. of cars = 58 ÷ 2 = 29
There are 29 cars.

Question 4

<table>
<thead>
<tr>
<th>No. of bottles of water</th>
<th>Total cost of bottles of water</th>
<th>No. of bottles of fruit juice</th>
<th>Total cost of bottles of fruit juice</th>
<th>Total amount collected</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30 × 1 = 30</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>x</td>
</tr>
<tr>
<td>29</td>
<td>29 × 1 = 29</td>
<td>1</td>
<td>1 × 2 = 2</td>
<td>29 + 2 = 31</td>
<td>x</td>
</tr>
<tr>
<td>30 – 8 = 22</td>
<td>22 × 1 = 22</td>
<td>8</td>
<td>8 × 2 = 16</td>
<td>22 + 16 = 38</td>
<td>(\checkmark)</td>
</tr>
</tbody>
</table>

Difference = 38 – 30 = 8

Answers to Review Questions on Chapter 1

Question 1
\[C\]
\[\begin{array}{c|c}
A & 1u \\
\hline
652 & 1u
\end{array}\]

2u = 2160 – 652 = 1508

Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Review Questions on Chapter 1

Question 1 (Cont.)

1u = 1508 ÷ 2
= 754

754 children attended the Gala Premier.
754 + 652 = 1406

1406 adults attended the Gala Premier.

Question 2

At first

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

In the end

\[
\begin{array}{c|c|c|c}
\hline
J & M & K \quad 40 \\
\hline
1u & 1u & 1u \\
\hline
\end{array}
\]

5u = 40 − 5
= 35
1u = 35 ÷ 5
= 7

Juwita had 7 bottle caps in the end.
2u = 7 × 2
= 14

Each girl had 14 bottle caps at first.

Question 3

In the end

\[
\begin{array}{c|c|c|c}
\hline
W & M \\
\hline
1u & 4 \\
\hline
\end{array}
\]

At first

\[
\begin{array}{c|c|c|c}
\hline
W & M \\
\hline
1u & 4 & 12 \\
\hline
\end{array}
\]

2u = 16
1u = 16 ÷ 2
= 8

There were 8 men at first.
3u = 3 × 8
= 24

There were 24 women at the session at first.

Question 4

In the end

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c}
\hline
G & H & I \quad 360 \\
\hline
1u & 70 & 20 & 20 \\
1u & 70 & 20 \\
1u & 70 & 20 \\
\hline
\end{array}
\]

At first

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c}
\hline
G & H & I \quad 360 \\
\hline
1u & 70 & 20 & 20 \\
1u & 70 & 20 \\
1u & 70 & 20 \\
\hline
\end{array}
\]

(a) 3u = 360
1u = 360 ÷ 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

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c}
\hline
H & J \\
\hline
80 & \\
\hline
\end{array}
\]

In the end

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c}
\hline
H & J \\
\hline
1u & 24 & 80 \\
1u & 24 \\
\hline
\end{array}
\]

2u = 24 + 80
= 104
1u = 104 ÷ 2
= 52

Johan had 52 marbles in the end.
52 + 24 = 76
Johan had 76 marbles at first.

Question 6

At first

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c}
\hline
E & F \quad 200 \\
\hline
80 & 40 \\
80 & \\
\hline
\end{array}
\]

In the end

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c}
\hline
E & F \quad 200 \\
\hline
? & 1u & 40 \\
? & 1u & \\
\hline
\end{array}
\]
Answers to Review Questions on Chapter 1

**Question 6 (Cont.)**

\[2u = 40\]
\[1u = 40 \div 2\]
\[= 20\]
Fred had $20 left in the end.
\[80 - 20 = 60\]
Each set of game cards cost $60.

**Question 7**

\[
\begin{array}{ccc}
N & 1u & 16 \\
L & 1u & 16 \\
M & 1u & \\
\end{array}
\]

(a) \[16 + 16 + 40 = 72\]
\[3u = 369 - 72\]
\[= 297\]
\[1u = 297 \div 3\]
\[= 99\]
Maddie collected 99 seashells.
(b) \[99 + 16 = 115\]
Louisa collected 115 seashells.

**Question 8**

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity</th>
<th>Of items</th>
<th>\times</th>
<th>Value of each unit ($)</th>
<th>Total value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4</td>
<td>$1u + 6$</td>
<td>$4u + 24$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>6</td>
<td>$1u$</td>
<td>$6u$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td></td>
<td>$10u + 24$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
\[10u = 124 - 24\]
\[= 100\]
\[1u = 100 \div 10\]
\[= 10\]
Each walnut cake cost $10.
\[10 + 6 = 16\]
Each cheesecake cost $16.

**Question 9**

\[\text{Gap} = 25 + 5\]
\[= 30\]
Difference between Case 1 and Case 2
\[= 3 \text{ lollipops per child}\]
(a) \[30 \div 3 = 10\]
There were 10 children altogether.

(b) Number of lollipops:

Case 1: \[10 \times 11 - 5 = 105\]
Case 2: \[10 \times 8 + 25 = 105\] (Checked)
There were 105 lollipops.

**Question 10**

At first
\[
\begin{array}{c}
X & 880 \\
Y & 880 \\
\end{array}
\]
\[2130g\]
In the end
\[
\begin{array}{cccc}
X & 880 & 1u & 100 \\
Y & 880 & 1u & \\
\end{array}
\]
\[2130g\]
\[\begin{array}{c}
2u = 370 - 100 \\
= 270 \\
1u = 270 \div 2 \\
= 135 \\
135 g\] of sand must be transferred from Bag X to Bag Y.

**Question 11**

At first
\[
\begin{array}{c}
N & 76 \\
V & \\
\end{array}
\]
In the end
\[
\begin{array}{c}
N & 1u & 12 \\
V & 1u & 12 \\
\end{array}
\]
\[\begin{array}{c}
2u = 12 + 76 \\
= 88 \\
1u = 88 \div 2 \\
= 44 \\
\end{array}\]
Veronica had 44 stalks of roses in the end.
\[44 + 88 = 132\]
Nisa had 132 stalks of roses at first.

Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Review Questions on Chapter 1

Question 12
Difference between Emma's age and Fatima's age
= 29 – 17
= 12

Now

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

7 years ago (Past)

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

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

Question 13

<table>
<thead>
<tr>
<th>D</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1u</td>
<td>1u</td>
</tr>
<tr>
<td>1u</td>
<td>1u</td>
</tr>
</tbody>
</table>

Total = 3u + 3u + 3u + 1u
= 10u
10u = 200
1u = 200 ÷ 10
= 20
6u = 6 × 20
= 120
2 such dresses cost $120.

Question 14

<table>
<thead>
<tr>
<th>M</th>
<th>D</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>1u</td>
<td>1u</td>
<td>1u</td>
</tr>
<tr>
<td>1u</td>
<td>1u</td>
<td>1u</td>
</tr>
</tbody>
</table>

6u = 2432 – 998
= 1434
1u = 1434 ÷ 6
= 239
4u = 4 × 239
= 956
The mobile phone cost $956.

Question 15

Multiples of 7: 7, 14, 21, 28, 35, 42, 49,…
(add 6 extra): 13, 20, 27, 34, 41, 48, …
Multiples of 8: 8, 16, 24, 32, 40, 48
(add 2 extra): 10, 18, 26, 34, 42,…
Jeremy has 34 lollipops.

Question 16

- In the end

<table>
<thead>
<tr>
<th>M</th>
<th>1u</th>
<th>1u</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1u</td>
<td></td>
</tr>
</tbody>
</table>

At first

<table>
<thead>
<tr>
<th>M</th>
<th>1u</th>
<th>1u</th>
<th>247</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1u</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3u = 2350 – 247
= 2103
1u = 2103 ÷ 3
= 701
2u = 2103 – 701
= 1402
Magnets (at first) = 1402 + 247
= 1649
Mr Lim had 1649 magnets at first.

Question 17

- In the end

<table>
<thead>
<tr>
<th>A</th>
<th>1u</th>
<th>1u</th>
<th>1u</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1u</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4u = 54 + 12 – 18
= 48
1u = 48 + 4
= 12
1u + 18 = 12 + 18
= 30
30 children boarded the bus at the interchange.

Question 18

4T + 5S = 56
2T + 3S = 30
4T + 6S = 2 × 30
= 60
1S = 60 – 56
= 4
10S = 10 × 4
= 40
10 such pairs of shorts cost $40.
Answers to Review Questions on Chapter 1

Question 19

\[6u = 3678\]
\[1u = 3678 \div 6\]
\[= 613\]
Shiro (at first) = 613 – 34
\[= 579\]
Shiro had $579 at first.

Question 20

<table>
<thead>
<tr>
<th>No. of adult tickets</th>
<th>Total cost of adult tickets</th>
<th>No. of child tickets</th>
<th>Total cost of child tickets</th>
<th>Total cost</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>35 × 12 = 420</td>
<td>0</td>
<td>0</td>
<td>420</td>
<td>x</td>
</tr>
<tr>
<td>34</td>
<td>34 × 12 = 408</td>
<td>1</td>
<td>1 × 5 = 5</td>
<td>413</td>
<td>x</td>
</tr>
<tr>
<td>35 − 15 = 20</td>
<td>20 × 12 = 240</td>
<td>15</td>
<td>15 × 5 = 75</td>
<td>315</td>
<td>√</td>
</tr>
</tbody>
</table>

Difference = 420 – 315
\[= 105\]
Gap = 420 – 413
\[= 7\]
No. of child tickets = 105 ÷ 7
\[= 15\]
Alison bought 15 child tickets.

Chapter 2 Fractions

Answers to Unit 2.1 – Fractions Basics

Let’s Get Started 2.1

1.
\[\frac{2}{3} + \frac{14}{21} = \frac{7}{21}\]
\[\frac{3}{7}\] (Friends)
\[\frac{2}{3} + \frac{3}{7} = \frac{17}{21}\]

2.
\[\frac{1}{3} + \frac{18}{21} = \frac{7}{21}\]
\[\frac{14}{21}\]
\[\frac{1}{3} + \frac{7}{21} = \frac{10}{21}\]

3.
\[\frac{1}{3} + \frac{7}{21} = \frac{3}{21}\]
Bryan painted
\[\frac{7}{21} + \frac{3}{21} = \frac{10}{21}\]

Answers to Unit 2.1 – Fractions Basics

Total poles painted
\[\frac{7}{21} + \frac{19}{21}\]
\[= \frac{17}{21}\]

4.
\[\frac{2}{3} + \frac{14}{21}\]
\[\frac{2}{7} + \frac{6}{21}\]
Total painted
\[= \frac{20}{21}\]
Poles unpainted
\[= \frac{1}{21}\]

1u = 57 cm
21u = 1197 cm

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

\[\frac{1}{5} = \frac{7}{35}\] (Friends)
\[\frac{3}{7} = \frac{15}{35}\] (Neighbours)
\[7u = 56\]
1u = 56 ÷ 7
\[= 8\]
15u = 8 × 15
\[= 120\]

120 cookies were given to her neighbours.

Question 2

\[\frac{1}{3} + \frac{3}{9}\] (Asia)
\[\frac{4}{9}\] (Europe)
\[\frac{3}{9} + \frac{4}{9} = \frac{7}{9}\] (Asia + Europe)
Answers to Unit 2.1 – Fractions Basics

Question 2 (Cont.)

1 − \(\frac{7}{9}\) = \(\frac{2}{9}\) (America)

7u = 84
1u = \(\frac{84}{7}\)
= 12
2u = 2 \times 12
= 24

24 stamps are from America.

Question 3

(a) \(\frac{3}{4}\) = \(\frac{21}{28}\) (Participants)
\(\frac{1}{7}\) = \(\frac{4}{28}\) (Non-participants)
\(\frac{21}{28} - \frac{4}{28}\) = \(\frac{17}{28}\) (Organisers)

28u of the people = 2800
1u of the people = \(\frac{2800}{28}\)
= 100
3u of the people = 3 \times 100
= 300

There were 300 organisers.

(b) 4u of the people = 300
1u of the people = \(\frac{300}{4}\)
= 75

75 of the organising members were female.

Question 4

\(\frac{3}{8}\) = \(\frac{15}{40}\) (Children)
\(\frac{2}{5}\) = \(\frac{16}{40}\) (Colleagues)

Difference between children + colleagues = \(\frac{15}{40} + \frac{16}{40}\)

= \(\frac{1}{40}\)

1u of the lemonade = 80
40u of the lemonade = 80 \times 40
= 3200

Mrs Jones made 3200 ml of lemonade.

Question 5

\(\frac{2}{3}\) = \(\frac{8}{12}\) (Cushion)
\(\frac{1}{4}\) = \(\frac{3}{12}\) (Patchwork)

Total used for cushions and patchwork = \(\frac{8}{12} + \frac{3}{12}\)
= \(\frac{11}{12}\)

(a) 11u of fabric = 22
1u of fabric = \(\frac{22}{11}\)
= 2

12u of fabric = 12 \times 2
= 24

Selina bought 24 m of fabric.

(b) 4u of fabric = 24
1u of fabric = \(\frac{24}{4}\)
= 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 6

\(\frac{1}{2}\) = \(\frac{5}{10}\) (Nuts)
\(\frac{1}{5}\) = \(\frac{2}{10}\) (Fruit)

Fruit + Nut = \(\frac{2}{10} + \frac{5}{10}\)
= \(\frac{7}{10}\)

Original = 1 − \(\frac{7}{10}\)
= \(\frac{3}{10}\)

(a) 3u of the total = 270
1u of the total = \(\frac{270}{3}\)
= 90
10u of the total = 90 \times 10
= 900

There were 900 muffins.

(b) 6p of total = 900
1p of total = \(\frac{900}{6}\)
= 150

There were 150 muffins left.
Let's Get Started 2.2

3.

Model-drawing approach

- \( C = \frac{3}{4} \)
- \( D = \frac{2}{5} \)

Unitary approach

- \( \frac{3}{4} C = \frac{2}{5} D \)
- Total \( C = 8u \)
- Total \( D = 15u \)
- Total = \( 8u + 15u = 23u \)

4.

Unitary approach

- \( \frac{5}{7} E = \frac{3}{5} F \)
- Total \( E = 21u \)
- Total \( F = 25u \)
- Total = \( 21u + 25u = 46u \)

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.

- \( \frac{2}{3} B = \frac{3}{5} G \)
- Total \( B = 9u \)
- Total \( G = 10u \)
- Total = \( 9u + 10u = 19u \)

Difference = \( 10u - 9u = 1u \)

1u = 15

19u = \( 19 \times 15 = 285 \)

There were 285 children altogether.

Let's Practise 2.2

Question 1

- \( \frac{1}{2} S = \frac{3}{4} C \)
- Total \( S = 6u \)
- Total \( C = 4u \)
- Total = \( 6u + 4u = 10u \)

10u = 60

1u = \( 60 \div 10 = 6 \)

Question 2

- \( \frac{1}{3} A = \frac{2}{3} C \)
- Total \( A = 6u \)
- Total \( C = 3u \)
- Total = \( 6u + 3u = 9u \)

9u = 45

1u = \( 45 \div 9 = 5 \)

6u = \( 6 \times 5 = 30 \)

There were 30 apple sweets.

Question 3

Orange Tiles

\( \frac{2}{3} \) (Used) \( \frac{1}{3} \) (Left) \( \frac{3}{3} \) (At first)

Blue Tiles

\( \frac{1}{4} \) (Used) \( \frac{3}{4} \) (Left) \( \frac{4}{4} \) (At first)

Left

- \( \frac{1}{3} O = \frac{2}{4} B \)
- Total \( O = 9u \)
- Total \( B = 4u \)
- Total = \( 9u + 4u = 13u \)

13u = 130

1u = \( 130 \div 13 = 10 \)

3u = \( 3 \times 10 = 30 \)

Chu Kang had 30 orange tiles in the end.

Question 4

Chickens

\( \frac{3}{8} \) (Sold) \( \frac{5}{8} \) (Left) \( \frac{8}{8} \) (At first)

Ducks

\( \frac{2}{5} \) (Sold) \( \frac{3}{5} \) (Left) \( \frac{5}{5} \) (At first)

Left

- \( \frac{5}{8} C = \frac{2}{5} D \)
- Total \( C = \frac{10}{16} \)
- Total \( D = \frac{10}{25} \)

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Answers to Unit 2.2 – Numerators the Same

Question 4 (Cont.)

<table>
<thead>
<tr>
<th>Total</th>
<th>Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>C = 16u</td>
<td>C = 16u − 10u</td>
</tr>
<tr>
<td></td>
<td>= 6u</td>
</tr>
<tr>
<td>D = 25u</td>
<td>D = 25u − 10u</td>
</tr>
<tr>
<td></td>
<td>= 15u</td>
</tr>
</tbody>
</table>

Difference = 15u − 6u

= 9u

9u = 36

1u = 36 ÷ 9

= 4

Total sold = 6u + 15u

= 21u

21u = 21 × 4

= 84

Mr Lim sold 84 ducks and chickens.

Question 5

\[
\begin{align*}
\frac{1}{5} J &= \frac{3}{4} K = \frac{2}{5} L \\
\frac{6}{30} J &= \frac{6}{8} K = \frac{6}{15}
\end{align*}
\]

Total J = 30u

Total K = 8u

Total L = 15u

Total = 30u + 8u + 15u

= 53u

Difference = 15u − 8u

= 7u

7u = 7

1u = 1

53u = 53

The boys received $53 from their uncle.

Question 6

\[
\begin{align*}
\frac{3}{4} L &= \frac{3}{7} E = \frac{4}{5} G \\
\frac{12}{16} L &= \frac{12}{28} E = \frac{12}{15} G
\end{align*}
\]

Total L = 16u

Total K = 8u

Total G = 15u

Difference = 28u − 16u

= 12u

12u = 24

1u = 24 ÷ 12

= 2

16u = 16 × 2

= 32 (Lucia)

28u = 28 × 2

= 56 (Eliza)

15u = 15 × 2

= 30 (Grace)

Lucia, Eliza and Grace collected 32, 56 and 30 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>J</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>J</th>
<th>S</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

Summary

J = 3u² (3u)

S = 3u² (6u)

L = 4u² (8u)

Total = 6u + 3u² + 4u²

= 13u²

Ask Yourself

1) Sylvia is repeated.

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

Think Further

1.

Case 1

S = 2u³ (6u)

C = 5u³ (15u)

Case 2

C = 3u³ (15u)

J = 4u⁶ (20u)

<table>
<thead>
<tr>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>J = 20u</td>
</tr>
</tbody>
</table>

Total = 6u + 15u + 20u

= 41u

20u = 40

1u = 40 ÷ 20

= 2

Number of files Charmaine bought more than Sylvia

= 15u − 6u

= 9u

9u = 9 × 2

= 18

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

#### Question 1

**Case 1**
- \(A = 1u\)
- \(P = 3u\)

**Summary**
- \(A = 1u\)
- \(P = 3u\)
- \(O = 2u\)
- Total = \(1u + 2u + 3u = 6u\)

**Case 2**
- \(A = 1u\)
- \(O = 2u\)

**Summary**
- \(A = 1u\)
- \(O = 2u\)
- \(Total = 1u + 2u + 6u = 9u\)

There are 30 pears.

#### Question 2

**Case 1**
- \(M = 2u\)
- \(L = 3u\)

**Summary**
- \(M = 2u\)
- \(L = 3u\)
- \(N = 6u\)
- Total = \(2u + 3u + 6u = 11u\)

**Case 2**
- \(M = \frac{1}{2}u^2\) (2u)
- \(N = \frac{3}{2}u^2\) (6u)

**Summary**
- \(M = \frac{1}{2}u^2\) (2u)
- \(L = \frac{3}{2}u^2\) (6u)
- \(N = 6u\)
- Total = \(2u + 3u + 6u = 11u\)

Difference between Nathaniel and Michael
- \(= 6u - 2u\)
- \(= 4u\)
- \(1u = \frac{44}{4}\)
- \(= 11\)
- \(11u = 11 \times 11\)
- \(= 121\)

They have a total of 121 cards.

#### Question 3

**Case 1**
- \(P = 3u^2\) (6u)
- \(S = 5u^2\) (10u)

**Summary**
- \(P = 6u\)
- \(S = 10u\)

**Case 2**
- \(S = 2u^3\) (10u)
- \(T = 3u^3\) (15u)

**Summary**
- \(S = 2u^3\) (10u)
- \(T = 3u^3\) (15u)
- \(Total = 6u + 10u + 15u = 31u\)

Difference between Tess and Patrick = \(15u - 6u = 9u\)

- \(9u = 63\)
- \(1u = \frac{63}{9}\)
- \(= 7\)

The children were given 217 sweets.

**Question 4**

**Case 1**
- \(Red = 4u^3\) (12u)
- \(Yellow = 7u^3\) (21u)

**Summary**
- \(Red = 12u\)
- \(Yellow = 21u\)

**Case 2**
- \(Red = 3u^4\) (12u)
- \(Green = 5u^4\) (20u)

**Summary**
- \(Red = 12u\)
- \(Green = 20u\)
- \(Total = 12u + 21u + 20u = 53u\)

- \(53u = 106\)
- \(1u = \frac{106}{53}\)
- \(= 2\)
- \(21u = 21 \times 2\)
- \(= 42\)

A total of 42 m of yellow ribbons were used in August.

#### Question 5

**Case 1**
- \(C = 2u^2\) (10u)
- \(M = 3u^2\) (15u)

**Summary**
- \(C = 10u\)
- \(M = 15u\)

**Case 2**
- \(C = 5u^3\) (10u)
- \(I = 4u^3\) (8u)

**Summary**
- \(C = 10u\)
- \(I = 8u\)
- \(Total = 10u + 15u + 8u = 33u\)

Malay and Indian = \(15u + 8u = 23u\)

Difference between Chinese students and the Malay and Indian students combined = \(23u - 10u = 13u\)

- \(13u = 104\)
- \(1u = \frac{104}{13}\)
- \(= 8\)
- \(33u = 33 \times 8\)
- \(= 264\)

A total of 264 students enrolled in the school.

#### Question 6

\[
\begin{align*}
\frac{2}{3}M & = \frac{1}{4}K \\
\frac{2}{3}M & = \frac{2}{8}K \\
\end{align*}
\]
Answers to Unit 2.3 – Repeated Items

Question 6 (Cont.)

Case 1
\[ M = 3u^4 (12u) \]
\[ K = 8u^4 (32u) \]

Summary
\[ M = 12u \]
\[ K = 32u \]
\[ L = 21u \]
Total = \[ 12u + 32u + 21u \] = 65u

Case 2
\[ M = 4u^3 (12u) \]
\[ L = 7u^3 (21u) \]

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
\[ (5u) \]
\[ H \]
\[ (1u) \]
Remainder
\[ (4u) \]
\[ K \]
\[ (1u) \]
Left
\[ (3u) \]

2. Total number of muffins
\[ (9u) \]
\[ M \]
\[ (1u) \]
Remainder
\[ (8u) \]
\[ A \]
\[ (4u) \]
Left
\[ (4u) \]

Answers to Unit 2.4 – Branching

3. Total number of buttons
\[ 2u^3 (6u) \]
\[ R \]
\[ 1u^3 (3u) \]
Remainder
\[ 1u^3 (3u) \]
\[ B \]
\[ (1u) \]
Left
\[ (2u) \]

Ask Yourself
1. “The keywords are ‘of the remainder’.

Think Further
1. Total number of balloons
\[ 5u^3 (25u) \]
\[ R \]
\[ 2u^3 (15u) \]
Remainder
\[ 3u^3 (15u) \]
\[ G \]
\[ 1u^3 (3u) \]
\[ B \]
\[ 4u^3 (12u) \]

Let’s Practise 2.4

Question 1
Total amount of money
\[ (7u) \]
\[ T \]
\[ (4u) \]
Remainder
\[ (3u) \]
\[ P \]
\[ (2u) \]
Left
\[ (1u) \]

1u = 5
7u = 7 × 5 = 35
He had $35 at first.
Question 2

**Total number of pages**

\[ (7u) \]

\[ \begin{align*}
M & \quad \text{(3u)} \\
\text{Remainder} & \quad \text{(4u)} \\
T & \quad \text{(1u)} \\
W & \quad \text{(3u)}
\end{align*} \]

**Difference**

\[ = 3u - 1u \]

\[ = 2u \]

\[ 2u = 60 \]

\[ 1u = 60 ÷ 2 \]

\[ = 30 \]

\[ 7u = 7 \times 30 \]

\[ = 210 \]

There were 210 pages in the novel.

---

Question 3

**Total number of fish**

\[ 5u^2 (10u) \]

\[ \begin{align*}
M & \quad 2u^2 (4u) \\
\text{Remainder} & \quad 3u^3 (6u) \\
A & \quad (1u) \\
\text{Left} & \quad (5u)
\end{align*} \]

**5u**

\[ = 25 \]

**1u**

\[ = 25 ÷ 5 \]

\[ = 5 \]

**Difference**

\[ = 4u - 1u \]

\[ = 3u \]

\[ 3u = 3 \times 5 \]

\[ = 15 \]

He sold 15 more fish in the morning than in the afternoon.

---

Question 4

**Total mass of fish**

\[ 5u^3 (15u) \]

\[ \begin{align*}
O & \quad 2u^3 (6u) \\
\text{Remainder} & \quad 3u^3 (9u) \\
D & \quad (4u) \\
\text{Left} & \quad (5u)
\end{align*} \]

**15u**

\[ = 600 \]

**5u**

\[ = 600 ÷ 3 \]

\[ = 200 \]

Maureen had 200 g of fish left.

---

Question 5

**Total amount of money**

\[ 4u^2 (20u) \]

\[ \begin{align*}
\text{Spent} & \quad 1u^2 (5u) \\
\text{Remainder} & \quad 3u^3 (15u) \\
\text{Saved} & \quad 2u^3 (6u) \\
3 \text{ siblings} & \quad 3u^3 (9u)
\end{align*} \]

\[ 20u = 240 \]

**1u**

\[ = 240 ÷ 20 \]

\[ = 12 \]

3 siblings = 9u

1 sibling = 9u + 3

\[ = 3u \]

3u = 3 \times 12

\[ = 36 \]

Each of her siblings received $36.

---

Question 6

**Amount of meat**

\[ 7u^4 (28u) \]

\[ \begin{align*}
C & \quad 2u^4 (8u) \\
\text{Remainder} & \quad 5u^4 (20u) \\
T & \quad 1u^5 (5u) \\
\text{L+H+P} & \quad 3u^5 (15u)
\end{align*} \]
Answers to Unit 2.4 – Branching

Question 6 (Cont.)
P = \(15u \div 3\)
   = \(5u\)
5u = 30
1u = \(30 \div 5\)
   = 6
28u = \(28 \times 6\)
   = 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

<p>| | | | | | |</p>
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<tr>
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</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
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</tbody>
</table>

End

<p>| | | | | | |</p>
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<tbody>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
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</tbody>
</table>

Answers to Unit 2.5 – One Item Unchanged

Unitary approach
At first

\[J = 3u^5 (15u)\]
\[K = 7u^5 (35u)\]

End

\[J = 1u^7 (7u)\]
\[K = 5u^7 (35u)\]

8u = 24
1u = \(24 \div 8\)
   = 3

Ask Yourself

1. Increase in number of wine glasses \(\frac{12}{3} = 4\)
   Number of wine glasses at first

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

Answers to Unit 2.5 – One Item Unchanged

Let’s Practise 2.5

Question 1
At first

\[D = 2u\]
\[C = 1u\]

End

\[D = 1u^2 (4u)\]
\[C = 6u^2 (12u)\]

Changes in \(C = 12u - 1u\)
   \(= 11u\)

\[11u = 22\]
\[1u = 22 \div 11\]
   \(= 2\)

Total in the end = \(12u + 2u\)
   \(= 14u\)

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

There are \(28\) cakes in the end.

Question 2
At first

\[M = 4u\]
\[F = 5u\]

End

\[M = 1u^2 (4u)\]
\[F = 3u^2 (12u)\]
Answers to Unit 2.5 – One Item Unchanged

Question 2 (Cont.)

Difference = 12u – 5u
= 7u
7u = 28
1u = 28 ÷ 7
= 4
12u = 12 × 4
= 48
There were 48 female dancers in the CCA in the end.

Question 3

At first
P = 2u² (14u)
M = 3u³ (21u)

End
P = 3u³ (9u)
M = 7u³ (21u)

Difference = 14u – 9u
= 5u
5u = 25
1u = 25 ÷ 5
= 5
14u = 14 × 5
= 70 (P at first)
21u = 21 × 5
= 105 (M at first)
70 + 105 = 175
Heidi has 175 stamps altogether in both boxes at first.

Question 4

At first
A = 1u⁴ (4u)
C = 3u⁴ (12u)

End
A = 1u³ (3u)
C = 4u³ (12u)

Difference = 4u – 3u
= 1u
1u = 28
Difference (end) = 12u – 3u
= 9u
9u = 9 × 28
= 252
There were 252 more children than adults in the end.

Question 5

At first
C = 2u
R = 3u

End
C = 1u² (2u)
R = 4u² (8u)

Difference = 8u – 3u
= 5u
5u = 35
1u = 35 ÷ 5
= 7
8u = 8 × 7
= 56
There were 56 stalks of roses in the basket.

Question 6

At first
T = 2u⁵ (10u)
S = 5u⁵ (25u)

End
T = 5u² (10u)
S = 4u² (8u)

Change in S = 25u – 8u
= 17u
17u = 51
1u = 51 ÷ 17
= 3
10u = 10 × 3
= 30
There were 30 teachers at the hall.

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Answers to Unit 2.6 – Difference Unchanged

Unitary approach

12 years ago
E = 2u
M = 3u
Difference = 1u

Now
E = 3u
M = 4u
Difference = 1u
1u = 12

4. What remained the same?

Difference between Basket A and Basket B

Model-drawing approach

At First

\[ A \uparrow \quad \text{Removed} \quad \downarrow B \]

\[ \text{Difference} \]

End

\[ A \uparrow \quad \text{Difference} \quad \downarrow B \]

Unitary approach

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

End
A = 3u^2 (6u)
B = 8u^2 (16u)
Difference = 5u^2 (10u)

19u = 95
1u = 95 ÷ 19
= 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, Jonathan will be twice as old as Diana.

Let’s Practise 2.6

Question 1

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

17u = 34
1u = 34 ÷ 17
= 2
35u = 35 \times 2
= 70

Uncle Roy is 70 years old now.

Question 2

15 years ago

S = 1u
E = 5u
Difference = 4u

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

3u = 15
1u = 15 ÷ 3
= 5
4u = 4 \times 5
= 20
31 + 20 = 51

Eileen would be 51 years old when Samuel was 31 years old.

Question 3

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

Future
R = 5u^4 (20u)
F = 8u^4 (32u)
Difference = 3u^4 (12u)

12u = 24
1u = 24 ÷ 12
= 2

Number of years later = 20u – 9u
= 11u

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Question 3 (Cont.)

11u = 11 \times 2
= 22

In 22 years’ time, Roger will be \frac{5}{6} as old as his father.

Question 4

<table>
<thead>
<tr>
<th>At first</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin</td>
<td>3u^3 (9u)</td>
</tr>
<tr>
<td>Plastic</td>
<td>5u^3 (15u)</td>
</tr>
<tr>
<td>Difference</td>
<td>2u^3 (6u)</td>
</tr>
</tbody>
</table>

5u = 150
1u = 150 \div 5
= 30
15u = 15 \times 30
= 450

The mass of the plastic bottle at first is 450 g.

Question 5

<table>
<thead>
<tr>
<th>At first</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>5u^6 (25u)</td>
</tr>
<tr>
<td>C</td>
<td>8u^5 (40u)</td>
</tr>
<tr>
<td>Difference</td>
<td>3u^6 (15u)</td>
</tr>
</tbody>
</table>

Difference in the button pins at first and at the end = 13u

Jennifer gave away \frac{13}{25} of the button pins.

Question 6

<table>
<thead>
<tr>
<th>Clint</th>
<th>Emma</th>
</tr>
</thead>
<tbody>
<tr>
<td>At first</td>
<td>6u^4 (24u)</td>
</tr>
<tr>
<td>End</td>
<td>1u^4 (4u)</td>
</tr>
<tr>
<td>Difference</td>
<td>5u^4 (20u)</td>
</tr>
</tbody>
</table>

20u = 40
1u = 40 \div 20
= 2
24u = 24 \times 2
= 48 (Clint at first)
35u = 35 \times 2
= 70 (Emma at first)

Clint and Emma had $48 and $70 respectively at first.

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Answers to Review Questions in Chapter 2

Question 5
End
C
\[ \begin{array}{c|c}
3u \\
\hline
M \\
\end{array} \]

At first
C
\[ \begin{array}{c|c|c}
3u \\
1u \\
\hline
M \\
3u \\
14 \\
\end{array} \]

7u = 77 – 14
= 63
1u = 63 ÷ 7
= 9
Difference = 14 – 9
= 5
There were 5 more motorcycles than cars at first.

Question 6
S = 1u
D = 1u
C = 3u
3u = 39
1u = 39 ÷ 3
= 13
5u = 5 × 13
= 65
There were 65 animals in the farm altogether.

Question 7
Savings = 1 – \( \frac{1}{4} \) – \( \frac{1}{12} \) – \( \frac{1}{3} \)
\[ \frac{1}{5} \]
\( \frac{1}{5} \) Earnings = 2250
Earnings = 2250 × 3
= 6750
Mother = \( \frac{1}{4} \) × 6750
= 1687.50
He gave his mother $1687.50.

Question 8
Kalisa’s = 1 – \( \frac{1}{4} \) – \( \frac{1}{12} \)
\[ \frac{2}{3} \]
\( \frac{2}{3} \) Difference = \( \frac{2}{3} \) – \( \frac{1}{12} \)
\[ \frac{7}{12} \]
\( \frac{7}{12} \) Total = 602
\( \frac{1}{12} \) Total = 602 × 7
= 86
Total = 12 × 86
= 1032
They shared $1032.

Question 9
H
\[ \begin{array}{c|c}
1u \\
7.5 \\
\hline
M \\
1u \\
\hline
J \\
1u \\
1u \\
1u \\
\hline
\end{array} \]

55

Question 10
End
Y
\[ \begin{array}{c|c}
4u \\
\hline
G \\
4u \\
125 \\
\end{array} \]

At first
Y
\[ \begin{array}{c|c|c}
4u \\
1u \\
\hline
G \\
4u \\
125 \\
\end{array} \]

9u = 332 – 125
= 207
1u = 207 ÷ 9
= 23
5u = 5 × 23
= 115
He had 115 yellow baskets for sale at first.

Question 11
\( \frac{5}{6} \) × 150 = 120
Difference = 120 – 80
= 40
He gave 40 more erasers to his friends than his neighbour.

Question 12
Aminah = 1 – \( \frac{3}{8} \)
\[ \frac{5}{8} \]
\( \frac{5}{8} \) × 168 = 105
Sharon have 105 seashells to Aminah.

Question 13
Read = \( \frac{1}{4} \) + \( \frac{1}{4} \)
\[ \frac{1}{2} \]
Unread = 1 – \( \frac{3}{8} \)
\[ \frac{5}{8} \]
\( \frac{5}{8} \) Total = 95
\( \frac{2}{8} \) Total = 95 ÷ 5
= 19
Total = 8 × 19
= 152
There are 152 pages in the storybook.

Question 14
Difference = \( \frac{2}{3} \) – \( \frac{1}{4} \)
\[ \frac{5}{12} \]
\( \frac{5}{12} \) Salary = 890
\( \frac{1}{12} \) Salary = 890 ÷ 5
= 178

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Answers to Review Questions in Chapter 2

Question 14 (Cont.)
Salary = 178 \times 12
= 2136
Aslam’s salary was $2136.

Question 15
Fraction of money spent = \frac{\frac{1}{4}}{12}
= \frac{1}{3}
Amount of money left = 10 - 2
= 8
\frac{1}{3} \text{ of Total} = 8
Total = 3 \times 8
= 24
She had $24 at first.

Question 16
In the end
\[
\begin{array}{ccc}
L & 2u & 2u & 2u \\
C & 2u & & \\
\end{array}
\]
At first
\[
\begin{array}{cccc}
L & 2u & 2u & 2u & 123 \\
C & 2u & 1u & & \\
\end{array}
\]
\[
9u = 510 - 123
= 387
1u = 387 \div 9
= 43
3u = 3 \times 43
= 129
\]
Difference = 129 + 123
= 252
There were 252 more boxes of love letters than cookies at first.

Chapter 3 Geometry

Answers to Unit 3.1– Angles

Let’s Practice 3.1

Question 1

\[
\begin{array}{ccc}
D & P & X \\
Q & O & Y \\
A & B & C \\
\end{array}
\]

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

Answers to Unit 3.2– 8-Point Compass

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

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Answers to Unit 3.2 – 8-Point Compass

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 3.2

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) $\frac{3}{8}$ – turn to her right / $\frac{5}{8}$ – 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 3.2 – 8-Point Compass

Question 5
(a) Dewi
(b) Barbara, Canns and Ian
(c) Ian
(d) Canns, Barbara and Florence

Question 6
(a) 2 squares East, followed by 4 squares South
(b) Fire station

Chapter 4 Decimals

Answers to Unit 4.1 – Decimals

Let's Get Started 4.1

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 4.1

Question 1
2.65 litres

Question 2
$15.49

Question 3
$86.00

Question 4
3 m long, 2 m wide

Question 5
3.9 kg

Question 6
27.1
Answers to Unit 4.2 – Additional and Subtractions of Decimals

Let’s Get Started 4.2

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 4.2

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 $10.20
$18 − $8.20 = $9.80
She would have $9.80 left.

Question 4
$55.50 − $19.75 = $35.75
Both items cost $35.75.
$35.75 − $25.65 = $10.10
The pencil case cost $10.10.

Question 5
$60 − $45.95 = $14.05
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.

Let’s Get Started 4.3

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

4. (a) 0.5 (b) 1.1 (c) 0.6 (d) 3.1 (e) 2.8 (f) 1.4

Let’s Practise 4.3

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

Question 2
$5.35 × 4 = $21.40
Melissa paid $21.40.

Question 3
$65.30 × 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 ÷ 7 = $45
His daily wage is $45.

Question 6
$23.40 ÷ 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 × 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 ÷ 8 = $1.85
Each pencil cost $1.85.
Answers to Review Questions on Chapter 4

Question 1

\[
\begin{align*}
9.46 + 3.7 &= 11.16 \\
7.46 + 3.7 &= 11.16 \\
11.16 + 7.46 &= 18.62 \approx 18.6 \ell
\end{align*}
\]

The tank can hold 11.16 litres of water. Both containers can hold 18.6 litres of water.

Question 2

Case 1

\[
\begin{align*}
T &= 4u^3 \times 16u \\
B &= 5u^4 \times 20u \\
T &= 16u \\
B &= 20u \\
P &= 5u \\
\text{Summary} &\quad \text{Total} = 16u + 20u + 5u = 41u
\end{align*}
\]

Difference between batteries and tissue pack

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

Heidi bought 30 paper clips.

Question 3

Case 1

\[
\begin{align*}
T &= 2u^2 \times 6u \\
C &= 5u^3 \times 15u \]
\]

\[
\begin{align*}
\text{Summary} &\quad T = 6u \\
C &= 15u \\
K &= 20u \\
\text{Total} = 6u + 15u + 20u = 41u
\end{align*}
\]

Difference between Claire and Timothy

\[15u - 6u = 9u\]

There were 5.4 litres of sauce left.

Question 4

Case 1

\[
\begin{align*}
A &= 3u^3 \times 30u \\
B &= 2u^4 \times 20u \\
\text{Summary} &\quad A = 30u \\
B &= 20u \\
C &= 7u^3 \times 21u \]
\]

\[\text{Total} = 30u + 20u + 21u = 71u\]

Difference between Pouch B and Pouch C

\[21u - 20u = 1u\]

\[1u = 160, 71u = 71 \times 160 = 11360\]

The mass of the bag of seeds is 11 kg 360 g.

Question 5

\[
\begin{align*}
4u &= 10.8 \\
1u &= 10.8 \div 4 = 2.7 \\
2u &= 2 \times 2.7 = 5.4
\end{align*}
\]

There were 5.4 litres of sauce left.
Answers to Review Questions on Decimals

Question 6

Rice

\[ 5u^2 \times (10u) \]

Sat

\[ 3u^2 \times (6u) \]

Remainder

\[ 2u^2 \times (4u) \]

Sun

\[ 1u^3 \times (2u) \]

Left

\[ 3u^3 \times (1u) \]

3u = 3.9
1u = 3.9 ÷ 3
= 1.3
10u = 10 × 1.3
= 13

He had 13 kg of rice at first.

Question 7

Total amount of money

\[ 4u^3 \times (20u) \]

\[ 1u^5 \times (5u) \]

B

\[ 3u^3 \times (15u) \]

Remainder

\[ 5u^3 \times (15u) \]

C

\[ 4u^3 \times (12u) \]

Left

\[ 1u^3 \times (3u) \]

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

\[ 5u^5 \times (25u) \]

\[ 2u^5 \times (10u) \]

W

\[ 3u^5 \times (15u) \]

Remainder

\[ 5u^3 \times (15u) \]

B

\[ 1u^3 \times (3u) \]

Left

\[ 4u^3 \times (12u) \]

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

Mr Imran spent $552 on his 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

1u

Silk

\[ 1u^3 \times 2 \]

1.8 m

2C = 2 × 3u
= 6u
3S = 3 × 1u
= 3u
2C + 3S = 6u + 3u
= 9u
9u = 1.8
1u = 1.8 ÷ 9
= 0.2

The length of each silk ribbon is 0.2 m.

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 × 2
= 12

She paid $12 for the egg tarts.
Question 12

\[
\text{Difference} = 80u - 75u = 5u \\
5u = 160 \\
1u = 160 ÷ 5 = 32 \\
3u = 3 \times 32 = 96 \\
\text{There are 96 boxes of screws.}
\]

Question 13

\[
9.9u = 198 \\
1u = 198 ÷ 9.9 = 20 \\
\text{Difference} = 3u - 2u = 1u \\
\text{The customer bought 20 more boxes of red than green lamp bulbs.}
\]

Question 14

\[
3u = 12 \\
1u = 12 ÷ 3 = 4 \\
6u = 4 \times 6 = 24 \\
\text{Joash used 24 tubes in all.}
\]

Question 15

\[
1S + 4N = 33.3 \\
1S + 1N = 15.75 \\
3N = 33.3 - 15.75 = 17.55 \\
1N = 17.55 ÷ 3 = 5.85 \\
\text{One notebook cost $5.85.}
\]

Question 16

\[
4 \times 8.34 = 33.36 \\
4u = 50.4 - 33.36 = 17.04 \\
1u = 17.04 ÷ 4 = 4.26 \\
3u = 3 \times 4.26 = 12.78 \\
\text{A (at first) = 12.78 + 33.36 = 46.14} \\
\text{The mass of Bag A was 46.14 kg at first.}
\]

Question 17

\[
\text{Mass of 6 packets of figs} = 6 \times 0.35 = 2.1 \\
\text{Mass of 6 packets of cranberries} = 4.35 - 2.1 = 2.25 \\
\text{Mass of 1 packet of cranberries} = 2.25 ÷ 6 = 0.375 \\
\text{The mass of each packet of cranberries is 0.375 kg.}
\]
Total mass = 2.95 + 7.63 + 15.26
= 25.84
≈ 25.8
The total length of the three ropes is 25.8 m.

Question 19

3 pens = 3 x 2.05
= 6.15
2 notebooks = 2 x 2.25
= 4.5
Total cost = 6.15 + 4.50
= 10.65
Change = 50 – 10.65
= 39.35
He would receive $39.35 change.

Question 20

Distance between 2 flag poles = 3.06 ÷ 2
= 1.53
Distance between the 1st and 6th pole = 1.53 × 5
= 7.65
The distance between the 1st and 6th pole is 7.65 m.

Chapter 5 Graphs

Answers to Unit 5.1 – 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

Let’s Practise 5.1

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

(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
Total amount (Max) = 450
Total amount (Min) = 420
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,
total tickets sold = 1300 + 650
= 1950
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

Visit the forum page at www.onsponge.com for more challenging problem sums.
Answers to Unit 5.1 – Interpreting Graphs

Question 3 (Cont.)

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 × 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
= \frac{Total amount collected}{Total mass}
= \frac{2850}{570}
= 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

(c) 100 kg
For Evergreen, total mass of laundry
= 1 750 ÷ 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 \(\frac{2}{3} \times 150 = 100\)

Question 4 (Cont.)

(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 5.2 – Line Graphs

Let's Practise 5.2

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
= 5200
(d) 7 a.m. to 8 a.m.
(e) 9 a.m. to 10 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.
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.

Question 4 (Cont.)
(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
Year 2008 = 1100
Year 2009 = 1200
Year 2010 = 1700
Year 2011 = 2000
Year 2012 = 1000
Year 2013 = 1200
(d) 5900 houses
Total number of houses (2010 to 2013)
= 1700 + 2000 + 1000 + 1200
= 5900

Question 6
(a) 6 seconds
(b) 8 m
(c) 20 seconds
(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 0 m → 8 seconds
Ball increases height to 7.5 m → 16 seconds
Time elapsed = 16 – 8
= 8
Answers to Unit 5.2 – Line Graphs

Question 6 (Cont.)

(f) 15.5 m

The ball falls from 10 m to ground (8 s) = 10 m
The ball bounces from ground to 5.5 m (12 s)
= 5.5 m
Total = 10 + 5.5
= 15.5

Answers to Review Question on Chapter 5

Question 1

(a) June
(b) July savings = 10
October savings = 45
Difference = 45 − 10
= 35

Question 2

(a) Month | Sale | Change
Nov     | 250  | 250
Dec     | 300  | +50
Jan     | 200  | -100
Feb     | 150  | -50
Mar     | 100  | -50
Apr     | 50   | -50

The sale of the pots decreased the most between December and January.

(b) Month | Sale | Amount collected ($)
Nov     | 250  | 250 × 29 = 7250
Dec     | 300  | 300 × 29 = 8700
Jan     | 200  | 200 × 29 = 5800
Feb     | 150  | 150 × 29 = 4350
Mar     | 100  | 100 × 29 = 2900
Apr     | 50   | 50 × 29 = 1450

Total amount collected
= 7250 + 8700 + 5800 + 4300 + 2900 + 1450
= 30 450
The total amount collected is $30 450.

Question 3

(a) Difference = 700 − 325
= 375
Ahmad spent $375 more than Bernard.
(b) Total = 700 + 325 + 450 + 825 + 600
= 2900
They spent a total of $2900 in a month.

Answers to Review Question on Chapter 5

Question 4

(a) Month | Sale
Apr     | 150
May     | 75
Jun     | 200
Jul     | 125
Aug     | 225

Difference = 150 − 75
= 75
75 more bed sheets were sold in April than in May.

(b) Month | Sale | Amount collected ($)
May     | 75   | 75 × 24 = 1800
Jun     | 200  | 200 × 24 = 4800
Jul     | 125  | 125 × 24 = 3000
Aug     | 225  | 225 × 24 = 5400

Total amount collected = 1800 + 4800 + 3000 + 5400
= 15 000
The total amount collected would be $15 000.

Question 5

No. of children = 159 + 29 + 36
= 224
224 children read at least 2 books in a week.

Question 6

Class | Amount of clothings donated | No. of children
4A   | 266                         | 266 ÷ 7 = 38
4B   | 224                         | 224 ÷ 7 = 32
4C   | 238                         | 238 ÷ 7 = 34

Total = 38 + 32 + 34
= 104
There were 104 children altogether in the 3 classes.

Chapter 6 Area and Perimeter

Answers to Unit 6.1 – Finding Area and Perimeter with Given Sides

Let’s Practise 6.1

Question 1

(a) Area of Square A = 9 cm × 9 cm
= 81 cm²
Perimeter of Square A = 4 × 9 cm
= 36 cm
Answers to Unit 6.1 – Finding Area and Perimeter with Given Sides

(b) Area of Rectangle B = 8 m \times 4 m
   = 32 m^2
Perimeter of Rectangle B = 8 m + 4 m + 8 m + 4 m
   = 24 m

(c) Area of Rectangle C = 17 m \times 9 m
   = 153 m^2
Perimeter of Rectangle C
   = 17 m + 9 m + 17 m + 9 m
   = 52 m

Question 2

(a) Length of Square A = 2 \times 6 cm
   = 12 cm
Perimeter of Square A = 4 \times 12 cm
   = 48 cm
Area of Square A = 12 cm \times 12 cm
   = 144 cm^2

(b) Length of Rectangle B = 2 \times 11 cm
   = 22 cm
Breadth of Rectangle B = 2 \times 2 cm
   = 4 cm
Perimeter of Rectangle B
   = 22 cm + 4 cm + 22 cm + 4 cm
   = 52 cm
Area of Rectangle B
   = 22 cm \times 4 cm
   = 88 cm^2

Question 3

Area of the unpaved region = 14 m \times 14 m
   = 196 m^2
Perimeter of pavement
   = 16 m + 16 m + 2 m + 2 m + 14 m + 14 m
   = 64 m

Question 4

(a) 2 \times \text{length of field} = 20 m + 20 m
   = 40 m
2 \times \text{breadth of field} = 64 m - 40 m
   = 24 m
Breadth of field = 24 m + 2
   = 26 m
The breadth of the field is 26 m.

(b) Perimeter of garden = 64 m \div 2
   = 32 m
Length of garden = 32 m \div 4
   = 8 m
Area of garden = 8 m \times 8 m
   = 64 m^2
The area of the garden is 64 m^2.

Question 5

Length of CD = 2u.
Distance covered walked by the ant = 2u + 2u + 1u
   = 5u
5u = 37.5
1u = 37.5 \div 5
   = 7.5
2u = 2 \times 7.5
   = 15
The length of the paper is 15 cm.

(a) 15 cm \times 15 cm = 225 cm^2
   The area of the paper is 225 cm^2.

(b) 4 \times 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 \div 8
   = 12
(a) Length of line AD is 12 cm.

(b) 3u = 3 \times 12
   = 36
36 cm \times 12 cm = 432 cm^2
   The area of Rectangle ABCD is 432 cm^2.
Let's Practise 6.2

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 \text{ m}^2 \div 8 \text{ m}
= 10.5 \text{ m}
Perimeter of Rectangle B = (10.5 \text{ m} \times 2) + (8 \text{ m} \times 2)
= 37 \text{ 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 \text{ cm}
= 28 \text{ cm}
2 \times \text{ length} = 78 \text{ cm} - 28 \text{ cm}
= 50 \text{ cm}
Length of Rectangle D = 50 \text{ cm} \div 2
= 25 \text{ cm}
Area of Rectangle D = 25 \text{ cm} \times 14 \text{ cm}
= 350 \text{ cm}^2

(b)
Length of Square E = 24 \text{ cm} \div 4
= 6 \text{ cm}
Area of Square E = 6 \text{ cm} \times 6 \text{ cm}
= 36 \text{ cm}^2

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

Question 3

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

Question 4

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

![Diagram of a square with sides labeled]

The perimeter of the figure is **40 cm**.

Question 5

Area of each identical square = 81 \text{ cm}^2 \div 9
= 9 \text{ cm}^2
Length of each identical square = **3 cm**

![Diagram of a figure with sides labeled]

The perimeter of Figure B is **48 cm**.

Question 6

B = 4u
A = 1u

Summary

D = 4u \times 4 = 16u
B = 1u \times 4 = 4u
C = 9u
D = 16u
A = 1u

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

Area of Square C = \(9 \times 16 \text{ cm}^2\)
\[= 144 \text{ cm}^2\]
Length of Square C = 12 cm

Area of Square D = \(16 \times 16 \text{ cm}^2\)
\[= 256 \text{ cm}^2\]
Length of Square D = 16 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 cm + 32 cm + 48 cm + 64 cm = 160 cm
The length of wire is 160 cm.

Let’s Practise 6.3

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
\[= 140 \text{ m}\]

31 m + 31 m + 31 m + 31 m = 144 m
Johan walked a total distance of 144 m.

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 cm

72 cm + 26 cm + 72 cm + 26 cm = 196 cm
The perimeter of the figure is 196 cm.

Answers to Unit 6.3 – Area and Perimeter of Composite Figures

Question 2 (cont.)

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 cm².

Question 3

Area of land used for strawberries
\[= 9 \times 18 \text{ m}^2\]
\[= 162 \text{ m}^2\]
Area of land used for herbs
\[= 5 \times 5 \text{ m}^2\]
\[= 25 \text{ m}^2\]

Total area of land used
\[= 162 \text{ m}^2 + 25 \text{ m}^2\]
\[= 187 \text{ m}^2\]

Area of plot of land
\[= 28 \times 25 \text{ m}^2\]
\[= 700 \text{ m}^2\]

Area of plot of land still not used
\[= 700 \text{ m}^2 - 187 \text{ m}^2\]
\[= 513 \text{ m}^2\]

513 m² of the plot of land is still unused.

Question 4

Area of 1 rectangle = \(600 \text{ cm}^2 \div 8\)
\[= 75 \text{ cm}^2\]

<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 cm²</td>
<td>X</td>
</tr>
<tr>
<td>6 cm</td>
<td>2 cm</td>
<td>12 cm²</td>
<td>X</td>
</tr>
<tr>
<td>9 cm</td>
<td>3 cm</td>
<td>27 cm²</td>
<td>X</td>
</tr>
<tr>
<td>12 cm</td>
<td>4 cm</td>
<td>48 cm²</td>
<td>X</td>
</tr>
<tr>
<td>15 cm</td>
<td>5 cm</td>
<td>75 cm²</td>
<td>✓</td>
</tr>
</tbody>
</table>

Visit the forum page at www.onspone.com for more challenging problem sums.
Answers to Unit 6.3 – Area and Perimeter of Composite Figures

Question 4 (Cont.)
Length of each rectangle = 15 cm
Breadth of each rectangle = 5 cm
Length of figure = 6 \times 5 \text{ cm} = 30 \text{ cm}
Breadth of figure = 5 \text{ cm} + 15 \text{ cm} = 20 \text{ cm}
Perimeter of figure = 30 \text{ cm} + 30 \text{ cm} + 20 \text{ cm} + 20 \text{ cm} = 100 \text{ 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 \text{ cm}^2
Area of overlapped 4 squares = 4 \times 1 \text{ cm}^2 = 4 \text{ cm}^2
Area of shaded region = 60 \text{ cm}^2 - 4 \text{ cm}^2 - 4 \text{ cm}^2 = 52 \text{ cm}^2
The area of the shaded region is 52 \text{ 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 \text{ cm}^2</td>
<td>36</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>72 \text{ cm}^2</td>
<td>18</td>
<td>4</td>
<td>X</td>
</tr>
<tr>
<td>72 \text{ cm}^2</td>
<td>12</td>
<td>6</td>
<td>√</td>
</tr>
</tbody>
</table>
Length of park = 2 \text{ m} + 10 \text{ m} + 12 \text{ m} = 24 \text{ m}
Breadth of park = 6 \text{ m} + 2 \text{ m} + 2 \text{ m} = 10 \text{ m}
Area of park = 24 \text{ m} \times 10 \text{ m} = 240 \text{ m}^2
Area of shaded region = 240 \text{ m}^2 - 72 \text{ m}^2 = 168 \text{ m}^2
The area of shaded region is 168 \text{ 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 \text{ m}^2</td>
<td>63</td>
<td>1</td>
<td>62</td>
<td>X</td>
</tr>
<tr>
<td>63 \text{ m}^2</td>
<td>21</td>
<td>3</td>
<td>18</td>
<td>X</td>
</tr>
<tr>
<td>63 \text{ m}^2</td>
<td>9</td>
<td>7</td>
<td>2</td>
<td>√</td>
</tr>
</tbody>
</table>
Length of park with pavement = 9 \text{ m} + 2 \text{ m} + 2 \text{ m} = 13 \text{ m}
Breadth of park with pavement = 7 \text{ m} + 2 \text{ m} + 2 \text{ m} = 11 \text{ m}
Area of park with pavement = 13 \text{ m} \times 11 \text{ m} = 143 \text{ m}^2
Area of pavement = 143 \text{ m}^2 - 63 \text{ m}^2 = 80 \text{ m}^2
The area of the pavement is 80 \text{ m}^2.

Question 9
Area of shaded region = 3 shaded squares
3 squares = 48
1 square = 48 ÷ 3 = 16
Length of square A = 4 \text{ cm}
Length of square B = 2 \times 4 \text{ cm} = 8 \text{ cm}
The length of square A and square B is 4 \text{ cm} and 8 \text{ cm} respectively.

Question 10
(a) Total distance travelled
= 4 \text{ cm} + 2 \text{ cm} + 2 \text{ cm} + 4 \text{ cm} + 2 \text{ cm} + 2 \text{ cm}
= 22 \text{ cm}
The marble travelled a distance of 22 \text{ cm}.
(b) Area of 1\text{st} step = 14 \text{ cm} \times 2 \text{ cm} = 28 \text{ cm}^2
Area of 2\text{nd} step = 10 \text{ cm} \times 2 \text{ cm} = 20 \text{ cm}^2
Area of 3\text{rd} step = 6 \text{ cm} \times 2 \text{ cm} = 12 \text{ cm}^2
Area of 4\text{th} 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 \text{ cm}^2
The area of the shaded region is 68 \text{ cm}^2.
Answers to Unit 6.3 – Area and Perimeter of Composite Figures

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 × 14 cm) + (6 cm × 5 cm) + (7 cm × 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 × 10 cm)+(10 cm × 10 cm)+(10 cm × 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 × 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 × 5 cm
= 15 cm²
The area of E is 15 cm².
Question 3 (Cont.)
Breadth of rectangle \((3u)\) = \(3 \times 10\)
= 30
The breadth of rectangle is \(30 \text{ cm}\).

Question 4

\[
\begin{array}{|c|c|}
\hline
& \text{Area} \\
2u & 20 \\
3u & 10 \\
2u & \\
\hline
\end{array}
\]

Area of 1 small square = \(100 \text{ cm}^2\)
Length of 1 small square = \(10 \text{ cm}\)
Length of 1 big square = \(10 \text{ cm} + 10 \text{ cm}\) = \(20 \text{ cm}\)
Length of figure = \(10 \text{ cm} + 20 \text{ cm}\) = \(30 \text{ cm}\)
Length of 1 rectangle = \(30 \text{ cm} + 2\)
= \(15 \text{ cm}\)
Length of 1 rectangle = \(3u\)
\(3u = 15 \text{ cm}\)
\(1u = 15 \text{ cm} \div 3\)
= \(5 \text{ cm}\)
Breadth of 1 rectangle = \(2u\)
\(2u = 5 \times 2\)
= \(10 \text{ cm}\)
Area of 1 rectangle = \(15 \text{ cm} \times 10 \text{ cm}\)
= \(150 \text{ cm}^2\)
Area of 1 big square = \(20 \times 20 \text{ cm}\)
= \(400 \text{ cm}^2\)
Area of figure = \(100 + 100 + 400 + 150 + 150\)
= \(900\)
The area of the figure is \(900 \text{ cm}^2\).

Question 5

\(5u \times 3u = 135\)
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 cm(^2)</td>
<td>45</td>
<td>3</td>
<td>✓</td>
</tr>
<tr>
<td>135 cm(^2)</td>
<td>27</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>135 cm(^2)</td>
<td>15</td>
<td>9</td>
<td>✓</td>
</tr>
</tbody>
</table>

Perimeter = \(15 \text{ cm} + 15 \text{ cm} + 9 \text{ cm} + 9 \text{ cm}\)
= 48 cm
The perimeter of the figure is \(48 \text{ cm}\).

Question 6

**ABCD**

\(B = 6u\)
\(L = 6u\)

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{A} & \text{B} & \text{C} & \text{D} & \text{E} \\
\hline
\text{B} = 2u & \text{B} = 2u & \text{B} = 2u & \text{B} = 4u & \text{B} = 1u \\
\text{L} = 2u & \text{L} = 4u & \text{L} = 4u & \text{L} = 4u & \text{L} = 1u \\
\hline
\end{array}
\]

Breadth \((C + D)\) = \(2u + 4u\) = \(6u\)
Length \((C + A)\) = \(4u + 2u\) = \(6u\)

Perimeter \(E\) = \(24 \text{ cm}\)

\(1u\) Breadth of \(E\) = \(24 \text{ cm} \div 4\) = \(6 \text{ cm}\)

\(a\)
\(1u = 6 \text{ cm}\)
\(6u = 6 \times 6 \text{ cm}\)
= \(36 \text{ cm}\)
The length of Square ABCD is \(36 \text{ cm}\).

\(b\)
Breadth of \(B\) \((2u)\) = \(2 \times 6 \text{ cm}\)
= \(12 \text{ cm}\)
Length of \(B\) \((4u)\) = \(4 \times 6 \text{ cm}\)
= \(24 \text{ cm}\)
Area of \(B\) = \(12 \times 24 \text{ cm}\)
= \(288 \text{ cm}^2\)
The area of \(B\) is \(288 \text{ cm}^2\).
Answers to Unit 6.5 – Area and Perimeter of Squares using Guess and Check

Question 3

<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>8 × 8 = 64</td>
<td>10 × 10 = 100</td>
<td>100 – 64 = 36</td>
<td>✗</td>
</tr>
<tr>
<td>9 × 9 = 81</td>
<td>11 × 11 = 121</td>
<td>121 – 81 = 40</td>
<td>✓</td>
</tr>
</tbody>
</table>

Perimeter of big square = 11 cm × 4
= 44 cm
The perimeter of the big square is 44 cm.

Question 4

Total area of Square A + Square B
= 176 cm² + 9 cm² + 9 cm²
= 194 cm²

<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 × 7 = 49</td>
<td>15 × 15 = 225</td>
<td>225 + 49 = 274</td>
<td>✗</td>
</tr>
<tr>
<td>6 × 6 = 36</td>
<td>14 × 14 = 196</td>
<td>196 + 36 = 232</td>
<td>✗</td>
</tr>
<tr>
<td>5 × 5 = 25</td>
<td>13 × 13 = 169</td>
<td>169 + 25 = 194</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>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 × 2 = 24</td>
<td>2 × 2 = 4</td>
<td>24 + 4 = 28</td>
<td>✗</td>
</tr>
<tr>
<td>8 × 2 = 16</td>
<td>3 × 2 = 6</td>
<td>16 + 6 = 22</td>
<td>✗</td>
</tr>
<tr>
<td>6 × 2 = 12</td>
<td>4 × 2 = 8</td>
<td>12 + 8 = 20</td>
<td>✓</td>
</tr>
</tbody>
</table>

4 squares wide
6 squares long

Answers to Review Questions on Chapter 6

Question 1

Area of rectangle = 20 cm × 16 cm
= 320 cm²
Area of the shaded part of the figure
= 320 cm² – 150 cm²
= 170 cm²

Question 2

Length of small square = 12 cm ÷ 3
= 4 cm
Perimeter
= 12 cm + 12 cm + 4 cm + 4 cm + 20 cm + 12 cm + 4 cm + 4 cm
= 72 cm

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