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Branching Approac

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Essential Problem Solving Skills

- Lateral and vertical thinking enhanced by questions of varied types, level of difficulty and topic-to-strategy approach
- ✓ Pre-exercises designed to develop conceptual understanding
- Review section by mixed topics, combined problem solving concepts

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nge Strategies

Based on Latest MOE Syllabus

P4 Solutions

Note : In all solution, u represent units and p represent parts

Chapter 1 Whole Numbers

Answers to Unit 1.1 – Highest Common Factors

Let's Get Started 1.1

Exercise A

1.

Factors of 12: 1, 2, 3, 4, 6, 12

Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30

Common factors of 12 and 30: 1, 2, 3, 6

Highest common factor ('HCF'): 6

2.

Factors of 18: 1, 2, 3, 6, 9, 18

Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Common factors of 18 and 36: 1, 2, 3, 6, 9, 18

Highest common factor ('HCF'): 18

Exercise B

1.

3	54,	81	
3	18,	27	
3	6,	9	
	2,	3	

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

2.

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

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

3.

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

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

Answers to Unit 1.1 – Highest Common Factors

Let's Learn 1.1

Ask Yourself

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

Think Further

1. Number of rabbits in each cage $= 32 \div 8$

= 4Number of hare in each cage $= 48 \div 8$

Let's Practise 1.1

Question 1

Maximum number of necklaces $= 4 \times 3$

= 12

= 6

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

Question 2

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

= 15

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

Question 3

3	21,	63,	42	
7	7,	21,	14	
	1.	3.	5	

Number of staff $= 3 \times 7$

- (a) She has 21 staff.
- (b) Each staff received 1 cup, 3 coasters and 2 ball pens.

Question 4

2	48,	80,	96	
4	24,	40,	48	
2	6,	10,	12	
	3,	5,	6	

(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

3	24,	42	
2	8,	14	
	4,	7	

(a) $3 \times 2 = 6$

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

(b) $4 \times 7 = 28$ Peter needs **28 square coloured papers.**

Question 6

2	20,	36	
2	10,	18	
	5,	9	

(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 : <u>3, 6, 9, 12, 15, 18, 21, 24, 27, 30</u> First ten multiples of 5: <u>5, 10, 15, 20, 25, 30, 35, 40, 45, 50</u> First common multiple of 3 and 5: **15**

Answers to Unit 1.2 – First Common Multiple

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

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

First common multiple of 4 and 10 : 20

Exercise B

1.

3	9,	24	
3	З,	8	
8	1,	8	
	1.	1	

FCM of 9 and 24 =
$$3 \times 3 \times 8$$

= 72

2.

3	15,	27	
5	5,	9	
9	1,	9	
	1,	1	

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

3.

3	18,	48	
2	6,	16	
3	3,	8	
В	1,	8	
	1,	1	

FCM of 18 and 48 = $3 \times 2 \times 3 \times 8$ = 144

Let's Learn 1.2

Ask Yourself

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

Think Further

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

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

They will cycle again 84 days later.

Answers to Unit 1.2 – First Common Multiple

Let's Practise 1.2

Question 1



FCM of 5 and $10 = 5 \times 2 = 10$

Both lamps would flicker at 7.45 p.m.

Question 2

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

FCM of 4, 8 and 10 = $2 \times 2 \times 2 \times 5$

= 40

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

Question 3

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

FCM of 2, 6 and $15 = 2 \times 3 \times 5$

= 30

The shortest possible length is 30 cm.

Question 4

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

LCM of 5, 8 and 12 = $4 \times 5 \times 2 \times 3$

= Olivia has a minimum of **120 paper clips**. Answers to Unit 1.2 – First Common Multiple

Question 5

Multiples of 5	5	10	15	20	25	30	35	40	45	50
Add 3 sweets	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3
Actual sweets	9	13	18	23	28	33	38	(43)	48	53

Multiples of 6	6	12	18	24	30	36	42	48
Add 13	+13	+13	+13	+13	+13	+13	+13	+13
sweets					\sim			
Actual	19	25	31	37	(43)	49	55	61
sweets					\sim			

Julie has 43 sweets.

Question 6

Multiples of 4	4	8	12	16	20	24	28	32	36	40
Add 15	+15	+15	+15	+15	+15	+15	+15	+15	+15	+15
pens						\frown				
Actual pens	19	23	27	31	35	39	43	47	51	55

Multiples	7	14	21	28	35	42	49	56	63	
of 7										
Subtract	-17	-17	-17	-17	-17	-17	-17	-17	-17	
17 pens										
Actual	Ι	1	4	11	18	25	32	39	46	
pens								$\mathbf{)}$		

Minimum number of pens Kristine has is 39.

Answers to Unit 1.3 – More than / Less than

15

Let's Get Started 1.3

2.

3.





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.

Answers to Unit 1.3 – More than / Less than

Think Further

There would be more black chips left in the bag. 1.



Let's Practise 1.3

Question 1



9500 + 500 = 10 000

Irene picked 10 000 tea leaves.

9500 + 10 000 = 19 500

They picked 19 500 tea leaves in all.

Question 2



21 750 - 6050 = 15 700

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

Question 3



Answers to Unit 1.3 – More than / Less than

Question 3 (Cont.)

Sheila had 360 seashells in the end. 360 + 200 = 560 Sheila had 560 seashells at first.

Question 4

At first



In the end



2u = 12

1u = 12 ÷ 2

There were 6 girls at the library in the end.

 $6u + 18 = 6 \times 6 + 18$

There were 54 children at the library first.

Question 5



Answers to Unit 1.3 – More than / Less than

Question 6

At first



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.



At first



In the end



4.









Answers to Unit 1.4 – More than / Less than



In the end



Ask Yourself

- From 'At first' since it is given in the question that Sandy and Ella have the same amount of money at first.
- It would be easier to work on the 'in the end' model as the changes occurred after spending on the necklace. This also helps to make the comparison easier and to clearly see the "At First" model.

Let's Practise 1.4

Question 1

At first





2u = 6 $1u = 6 \div 2$ = 3 $3u = 3 \times 3$ = 9

Helen had 9 soft toys at first.



At first



In the end



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

х	
Y	

In the end



Question 4





Answers to Unit 1.4 – More than / Less than

96

8

Question 5

In the end





1u + 24 + 8 = 32 + 24 + 8

Geneve has 64 eggs at first.

Question 6



At first



2u = 30

1u = 30 ÷ 2

= 15

There were 15 women at the park at first.

$$1u + 6 = 15 + 6$$

There was a total of **42 men and women** in the park in the end.

Answers to Unit 1.5 – Internal Transfer

Let's Get Started 1.5

2.









3.

In the end



At first



4.





In the end



5.

In the end



At first

	◀	3u				
С	1u	200	200			
R	1u	200				

Answers to Unit 1.5 – Internal Transfer

Ask Yourself

 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

 The above solution would change. Sean decreases by 29 and Jovan increases by 58 toys cars.

Let's Practise 1.5

Question 1

<u>At first</u>







Seraphine had 14 vanilla wafers in the end.

$3u = 3 \times 14$

= 42

Tanya had 42 vanilla wafers in the end.

Question 2



In the end



Yvette has 710 bookmarks in the end.



Question 4

Morning



Evening

<u> vo</u>	<u>ining</u>		2u
A	1u	1800	
В	1u	1800	1800

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

2u = 3600

- $1u = 3600 \div 2$
 - = 1800

There were 1800 towels in Factory A in the evening. 1800 + 1800 = 3600

Each factory had 3600 towels in the morning.

Question 5

At first



In the end



Answers to Unit 1.5 – Internal Transfer

Question 5 (Cont.)

M gave to J =
$$47 - 17$$

= 30

1u = 35

Melvin had 35 cookies in the end.

1u + 5 = 35 + 5

= 40

Johnny had 40 cookies at first.

Question 6





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 above ad 2	What remained
what had changed?	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 	Volume of water in Tank A
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 	Number of men
 Difference between the 	
number of men and the	
number of women.	

Answers to Unit 1.6 – One Item Unchanged

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

 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



Question 2

<u>At first</u>



5u = 23 400 - 19 200= 4200 $1u = 4200 \div 5$ = 840

Answers to Unit 1.6 – One Item Unchanged

Question 2 (Cont.)

1u + 23 400 = 840 + 23 400

= 24 240

There were 24 240 ants in Farm A at first.

Question 3





Denise had 24 hair clips at first.

Question 4

At first



In the end



$$1u = 15 + 15 + 15$$

= 45 pens

Gillian had 45 pens in the end.

45 + 15 = 60

Gillian had 60 pens at first.

Question 5

At first





Question 5 (Cont.)

5u = 750 1u = 750 ÷ 5 = 150

There were 150 boys at the science fair in the end.

 $9u = 9 \times 150$

= 1350

There were 1350 children at the Science fair at first.

Question 6



Answers to Unit 1.7 – Difference Unchanged

Let's Get Started 1.7

2.

At first



In the end





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

 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?

Answers to Unit 1.7 – Difference Unchanged





Future



1u = 36 (nephew's age in the future)

36 + 36 = 72

Aunt Lisa will be **72 years old** when she is twice as old as her nephew.

Let's Practise 1.7

Question 1

Present



Difference = 21 years old

Past



Question 2

Age difference between Alicia and Mrs Fong = 12 years <u>Present</u>



Answers to Unit 1.7 – Difference Unchanged





Their age difference at present is 36 years.

Some years later



Question 4





Decrease = 4u - 3u

= 1u

1u = 16

There were 16 green chairs in the hall in the end. $4u = 4 \times 16$

$$u = 4 x$$

There were 64 chairs altogether in the hall in the end.

Answers to Unit 1.7 – Difference Unchanged

Question 5 At first В W Difference End В W Difference 5u = 20 $1u = 20 \div 5$ = 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



Answers to Unit 1.8 – Repeated Items Let's Get Started 1.8 2. S 1u 10 B 1u C 1u 10 18 3.

 N
 1u

 P
 1u
 300

 R
 1u
 300
 1u
 300

Answers to Unit 1.8 – Repeated Items

Ask yourself

- 1. The repeated item is the apricots.
- When drawing model, make the model representing the apricots in the middle as it makes it easier to make comparison.

Think Further



There were 1608 pineapples.

Let's Practise 1.8

Question 1



Question 2



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



25 × 4 = 100

= 175

= 35

There were 35 stalks of daisies.

= 4 × 35 + 75

= 215

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

Question 4



Difference between boys and girls = 3u - 1u

= 2u

= 1u

2u = 2300

1u = 2300 ÷ 2

= 1150

8u = 8 × 1150

= 9200

There were 9200 adults at the book fair.

Question 5



Difference between red and grey = 2u - 1u

1u = 10

Difference between black and red = 9u - 2u= 7u

Answers to Unit 1.8 – Repeated Items

Question 5 (Cont.)

7u = 7 × 10

= 70

Mrs. Wong has 70 more black than red shawls.

Question 6



Difference between Z and Y = 2u - 1u

1u = 42 $2u = 2 \times 42$

$$u = 2 \times 42$$

= 84

4u = 4 × 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.

Item	Quantity of Items	Value of each item (wheels)
С	1u	4
М	1u	2

3.

ltem	Quantity of Items	Value of each item (Drawer)
С	4	2u
R	9	1u

4.

ltem	Quantity of Items	Value of each item (Stationery)	
Pens	15	3u	
Pencils	10	1u	

Ask Yourself

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

Think Further

 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

Items	Quantit y of Items	×	Value of each unit (Wheels)	Total Value (Wheels)
В	2u	×	2	4u
G	1u	×	4	4u
Total	3u			8u

8u = 160

```
1u = 160 \div 8
```

There were 20 go-karts.

 $3u = 3 \times 20$

= 60

There were 60 vehicles altogether.

Question 2

Items	Quantity of Items	×	Value of each unit (\$)	Total Value (\$)
С	2u	×	1	2u
D	1u	×	8	8u
Total	3u			10u

10u = 80

 $1u = 80 \div 10$

She sold **8 more** coconuts than durians.

Question 3

Items	Quantity of Items	×	Value of each unit (candy)	Total Value (candy)
G	1u	×	2	2u
В	3u	×	1	3u
Total	4u			5u

5u = 150

 $1u = 150 \div 5$

= 30

There were 30 girls. $2u = 2 \times 30$ = 60

Answers to Unit 1.9 – Quantity x Value

Question 3 (Cont.)

There were 60 more boys than girls at the party.

Question 4

Items	Quantity of Items	×	Value of each unit (Treats)	Total Value (Treats)
G	3u	×	3	9u
S	1u	×	2	2u
Total	4u			11u

There were 5 sheep.

 $4u = 4 \times 5$

There were **20 animals** that received the treats from the children.

Question 5

Items	Quantity of Items	×	Value of each unit (chicken wings)	Total Value (chicken wings)
Girls	Зu	×	4	12u
Boys	1u	×	8	8u
Total	4u			20u

12u - 8u = 4u

$$20u = 20 \times 13$$

= 260

There were **260 chicken wings** that were eaten at the barbeque.

Question 6

Items	Quantit y of Items	×	Value of each unit strawberr y	Total Value (strawberry)
Adults	12	×	3u	36u
Children	30	×	1u	30u
Total	42			66u

36u - 30u = 6u

$$6u = 42$$

$$1u = 42 \div 6$$

$$= 7$$

Strawberry p

Strawberry picked = 66u $66u = 66 \times 7$

$$u = 00 x$$

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.



Gap = 18 - 6

= 12 (key chains)

Difference = 6 - 3

= 3 (key chains per friend)



Ask yourself

 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

 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



Answers to Unit 1.10 – Gap & Difference

Question 1 (Cont.)

Difference between Case 1 and Case 2 = 5 - 3

= 2

- (a) $14 \div 2 = 7$ She shared the tarts with **7 neighbours.**
- (b) Number of tarts made:
 Using Case 1 : 7 × 3 + 19 = 40
 Using Case 2 : 7 × 5 + 5 = 40 (Checked)
 She made 40 tarts.

Question 2



$$Gap = 21 - 3$$

= 18

(a) $18 \div 2 = 9$

Difference between Case 1 and Case 2 = 6 - 4

= 2

The stamps fill **9 pages** of the album.

(b) Number of stamps:
 Using Case 1 : 4 × 9 + 21 = 57
 Using Case 2 : 6 × 9 + 3 = 57 (Checked)
 Amos had 57 stamps.



Gap = 8 - 2

= 6

Difference between Case1 and Case 2 = 11 - 8= 3

(a) 6÷3=2

Shawn has 2 friends.

(b) Number of pens:
 Using Case 1: 2 × 8 - 2 = 14
 Using Case 2: 2 × 11 - 8 = 14 (Checked)
 Shawn has 14 pens.



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.



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 : $15 \times 6 - 8 = 82$ (Checked)

There were **82 volunteers** at the event.



```
= 96
Difference = 10 - 6
= 4
```

Answers to Unit 1.10 – Gap & Difference

Question 6 (Cont.)

```
(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

Items	Quantity	×	Value	Total
			(legs)	value
				(legs)
Chicken	2u	×	2	4u
Cow	1u	×	4	4u
Total	3u			8u

8u = 64

 $1u = 64 \div 8$ = 8

 $2u = 2 \times 8$

= 16

There are 16 chickens on the farm.

Let's Practise 1.11

Question 1

No. of	No. of	No. of	No. of	Total no.	Check
hamsters	hamsters'	birds	birds'	of legs	
	legs		legs	-	
32	32 × 4 =	0	0	128	х
	128				
31	31 × 4 =	1	1 × 2 = 2	124 + 2	х
	124			= 126	
32 – 11 =	32 × 4 =	11	11 × 2 =	84 + 22	~
21	84		22	= 106	

Difference = 128 - 106

= 22

Answers to Unit 1.11 – Guess and Check

Question 1 (Cont.)

Gap = 128 - 126 = 2 No. of birds = $22 \div 2$ = 11

There are **11 birds** in the shop.

Question 2

No. of	Total cost	No. of	Total cost	Total cost	Check
white	of white	black	of black	of all	
marbles	marbles	marbles	marbles	marbles	
40	40 × 0.5	0	0	20	х
	= 20				
39	39 × 0.5	1	1 × 0.2 =	19.5 + 0.2	х
	= 19.5		0.2	= 19.7	
40 - 18 =	22 × 0.5	18	18 × 0.2 =	11 + 3.6 =	1
22	= 11		3.6	14.6	•
Difference	= 20 - 14.	6			
	= 5.4				
0 00	40.7				

Gap = 20 - 19.7

No. of birds = $5.4 \div 0.3$

= 54 ÷ 3

There are 18 black marbles in the box.

Question 3

No. of motor- cycles	No. of motor- cycles wheels	No. of cars	No. of cars' wheels	Total no. of wheels	Check
54	54 × 2 = 108	0	0	108	x
53	53 × 2 = 106	1	1 × 4 = 4	106 + 4 = 110	x
54 – 29 = 25	25 × 2 = 50	29	29 × 4 = 116	50 + 116 = 166	\checkmark

Difference = 166 - 108

= 58

Gap = 110 - 108

= 2

No. of cars = $58 \div 2$

= 29

There are 29 cars.

Question 4

No. of bottles of water	Total cost of bottles of water	No. of bottles of fruit juice	Total cost of bottles of fruit juice	Total amount collected	Check
30	30 × 1 = 30	0	0	30	x
29	29 × 1 = 29	1	1 × 2 = 2	29 + 2 = 31	x
30 – 8 = 22	22 × 1 = 22	8	8 × 2 = 16	22 + 16 = 38	\checkmark

Difference = 38 - 30

= 8

Answers to Unit 1.11 – Guess and Check

Question 4 (Cont.)

Gap = 31 - 30

= 1

No. of bottles of fruit juice in one day = $8 \div 1$

= 56

No. of bottles of fruit juice sold in one week = 7×8

Aunt Susie sold 56 bottles of fruit juice in a week.

Question 5

No. of shirts without defect	Amount earned	No. of shirts with defect	Amount earned	Total amount reduced	Check
20	20 × 10 = 200	0	0	200	x
19	19 × 10 = 190	1	1 × 2 = 2	190 – 2 = 188	x
20 – 3 = 17	17 × 10 = 170	3	3 × 2 = 6	170 – 6 = 164	\checkmark

Difference = 200 - 164

$$Gap = 200 - 188$$

No. of shirts with defects = $36 \div 12$

3 shirts had a defect on that particular week.

Question 6

No. of	Point	No. of	Points	Total	Check
correct	received	incorrect	deducted	points	
answers		answers		awarded	
45	45 × 2 =	0	0	90	х
	90				
44	44 × 2 =	1	1 × 1 = 1	88 – 1 =	х
	88			87	
39	39 × 2 =	6	6 × 1 = 6	78 – 6 =	1
	78			72	

Difference = 90 - 72

= 18

Gap = 90 - 87

= 3

No. of incorrect answers = $18 \div 3$

6

No. of correct answers = 45 - 6

He answered 39 questions correctly.

Answers to Review Questions on Chapter 1

Question 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



Question 3

In the end



There were 24 women at the session at first.

Answers to Review Questions on Chapter 1

Question 4

In the end



At first

G	1u	70	20	20		٦
Н	1u	70	20	70)	360
I	1u	70	20			

(a) 3u = 360 1u = 360 ÷ 3

= 120

- Each of them had 120 cards in the end.
- (b) 120 70 20 = 30
 - lan had 30 cards at first.

Question 5

At first н 80 J In the end Зu 80 Н 1u 24 24 J 1u 2u 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



In the end



Question 6 (Cont.) 2u = 40 $1u = 40 \div 2$ = 20Fred had \$20 left in the end. 80 - 20 = 60Each set of game cards cost **\$60**.

Question 7



Louisa collected 115 seashells.

Question 8 Quantity Items × Value of Total Of items each unit value (\$) (\$) С 4u + 24 4 × 1u + 6 W 6 1u 6u × Total 10 10u + 24 10u = 124 - 24= 100 $1u = 100 \div 10$ = 10 Each walnut cake cost \$10. 10 + 6 = 16Each cheesecake cost \$16. Actual **Question 9** number of lollipops



= 3 lollipops per child

(a) $30 \div 3 = 10$

There were **10 children** altogether.

Answers to Review Questions on Chapter 1

Question 9 (Cont.)

(b) Number of Iollipops: Case 1: $10 \times 11 - 5 = 105$ Case 2: $10 \times 8 + 25 = 105$ (Checked) There were **105 Iollipops.**

Question 10



135 g of sand must be transferred from Bag X to Bag Y.

Question 11

At first



In the end



Veronica had 44 stalks of roses in the end.

44 + 88 = 132

Nisa had 132 stalks of roses at first.

Question 12

Difference between Emma's age and Fatima's age

= 29 - 17

= 12

Now



? years ago (Past)



1u = 12

17 - 12 = 5

Fatima was twice as old as Fatima 5 years ago.

Question 13



Total = 3u + 3u + 3u + 1u

= 10u 10u = 200 $1u = 200 \div 10$ = 20 $6u = 6 \times 20$ = 120 2 such dresses cost **\$120**.

Question 14



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**.

Answers to Review Questions on Chapter 1

Question 16



Question 17



Question 18

4T + 5S = 56 2T + 3S = 30 $4T + 6S = 2 \times 30$ = 60 1S = 60 - 56 = 4 $10S = 10 \times 4$ = 4010 such pairs of shorts cost \$40.

Question 19

6u = 36781u = 3678 ÷ 6 = 613 Shiro (at first) = 613 - 34 = 579 Shiro had **\$579** at first.

Question 20

No. of	Total cost	No. of	Total cost	Total cost	Check
adult	of adult	child	of child		
tickets	tickets	tickets	tickets		
35	35 × 12 =	0	0	420	х
	128				
34	34 × 12 =	1	1 × 5 = 5	408 + 5 =	х
	408			413	
35 – 15 =	20 × 12 =	15	15 x 5 =	240 + 75	\checkmark
20	240		75	= 315	•

Difference = 420 - 315

= 105
Gap = 420 - 413
= 7
No. of child tickets =
$$105 \div 7$$

= 15
Alison bought **15 child tickets.**

Chapter 2 Fractions

Answers to Unit 2.1 – Fractions Basics

Let's Get Started 2.1

1. $\frac{2}{3} = \frac{14}{21} \qquad \frac{1}{7} = \frac{3}{21}$ $\frac{14}{21} + \frac{3}{21} = \frac{17}{21}$ 2. $1 - \frac{3}{21} = \frac{18}{21}$ $1 - \frac{14}{21} = \frac{7}{21}$ Unpainted = $1 - \frac{17}{21}$ $= \frac{4}{21}$ 3. $\frac{1}{3} = \frac{7}{21} \qquad \frac{1}{7} = \frac{3}{21}$ Bryan painted $= \frac{7}{21} + \frac{3}{21}$ $= \frac{10}{21}$

Answers to Unit 2.1 – Fractions Basics

Total poles painted =
$$\frac{7}{21} + \frac{10}{21}$$

= $\frac{17}{21}$
 $\frac{2}{3} = \frac{14}{21}$
 $\frac{2}{7} = \frac{6}{21}$
Total painted = $\frac{14}{21} + \frac{6}{21}$
= $\frac{20}{21}$
Poles unpainted = $\frac{21}{21} - \frac{20}{21}$
= $\frac{1}{21}$
1u = 57 cm
21u = 1197 cm

Think Further

4.

 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)
$$7u = 56$$

$$1u = 56 \div 7$$

$$= 8$$

$$15u = 8 \times 15$$

$$= 120$$

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)

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

Answers to Unit 2.1 – Fractions Basics

Question 2 (Cont.) $1 - \frac{7}{9} = \frac{2}{9}$ (America) 7u = 84 $1u = 84 \div 7$ = 12 $2u = 2 \times 12$ = 2424 stamps are from America.

Question 3

(a)
$$\frac{3}{4} = \frac{21}{28}$$
 (Participants)
 $\frac{1}{7} = \frac{4}{28}$ (Non-participants)
 $\frac{21}{78} + \frac{4}{28} = \frac{25}{28}$
 $1 - \frac{25}{28} = \frac{3}{28}$ (Organisers)
28u of the people = 2800
1u of the people = 2800 ÷ 28
 $= 100$
3u of the people = 3 × 100
 $= 300$
There were **300 organisers**.
(b) 4u of the people = 300
1u of the people = 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 = $\frac{16}{40} - \frac{15}{40}$ = $\frac{1}{40}$ 1u of the lemonade = 80 40u of the lemonade = 80 × 40 = 3200

Mrs Jones made 3200 m^ℓ of lemonade.

Answers to Unit 2.1 – Fractions Basics

Question 5

 $\frac{2}{3} = \frac{8}{12} \text{ (Cushion)}$ $\frac{1}{4} = \frac{3}{12} \text{ (Patchwork)}$ Total used for cushions and patchwork = $\frac{8}{12} + \frac{3}{12}$ = $\frac{11}{12}$ (a) 11u of fabric = 22 1u of fabric = 22 ÷ 11 = 2 12u of fabric = 12 × 2 = 24 Selina bought **24 m** of fabric. (b) 4u of fabric = 24 1u of fabric = 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 mSelina would need to buy another **4 m** of the fabric.

Question 6

 $\frac{1}{2} = \frac{5}{10} \text{ (Nuts)}$ $\frac{1}{5} = \frac{2}{10} \text{ (Fruit)}$ Fruit + Nut = $\frac{2}{10} + \frac{5}{10}$ = $\frac{7}{10}$ Original = $1 - \frac{7}{10}$ = $\frac{3}{10}$ (a) 3u of the total = 270 1u of the total = 270 ÷ 3 = 90 10u of the total = 90 × 10 = 900 There were **900 muffins.** (b) 6p of total = 900 1p of total = 900 ÷ 6 = 150

There were 150 muffins left.

Answers to Unit 2.2 – Numerators the Same

Let's Get Started 2.2 3.

Model-drawing approach



Unitary approach

$$\frac{3}{4}C = \frac{2}{5}D$$

$$\frac{6}{8}C = \frac{6}{15}D$$

$$Total C = 8u$$

$$Total D = 15u$$

$$Total = 8u + 15u$$

$$= 23u$$

4.

Unitary approach



Ask Yourself

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

Think Further



= 1u

1u = 15 19u = 19 × 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 C = 4u Total = 6u + 4u = 10u 10u = 60 $1u = 60 \div 10$ = 6

Answers to Unit 2.2 – Numerators the Same

Question 1 (Cont.)

(a) 6u = 6 × 6

 = 36
 There are **36 storybooks.** (b) 2u = 2 × 6

= 12

Question 2



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					
$\frac{1}{3}O = \frac{3}{4}B$ Total O = 9u					
3 - 0 - 3 = 0 Total B = 4u					
$9^{\circ} - 4^{\circ}$ Total = 9u + 4u					
= 13u					
13u = 130					
1u = 130 ÷ 13					
= 10					
3u = 3 × 10					
= 30					
Chu Kang had 30 orange tiles in the end.					

Question 4

Chickens $\frac{3}{8} (Sold) \qquad \frac{5}{8} (Left) \qquad \frac{8}{8} (At first)$ Ducks $\frac{3}{5} (Sold) \qquad \frac{2}{5} (Left) \qquad \frac{5}{5} (At first)$ Left $\frac{5}{8} C = \frac{2}{5} D$ $\frac{10}{16} C = \frac{10}{25} D$

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

Answers to Unit 2.2 – Numerators the Same

Question 4 (Cont.)				
Total	<u>Sold</u>			
C = 16u	C = 16u - 10u			
	= 6u			
D = 25u	D = 25u - 10u			
	= 15u			
	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

$$\frac{1}{5} J = \frac{3}{4} K = \frac{2}{5} L$$
Total J = 30u
$$\frac{6}{30} J = \frac{6}{8} K = \frac{6}{15} L$$
Total K = 8u
$$Total L = 15u$$

$$Total L = 15u$$

$$Total = 30u + 8u + 15u$$

$$= 53u$$
Difference = 15u - 8u
$$= 7u$$

$$7u = 7$$

$$1u = 1$$

$$53u = 53$$
The boys received **\$53** from their uncle.

Question 6

$$\frac{3}{4} L = \frac{3}{7} E = \frac{4}{5} G$$
Total L = 16u
Total L = 28u
Total C = 15u
Total C = 28u
Total C = 15u
Total C = 28u
Total C = 15u
Total C = 28u
Total C = 15u

Lucia, Eliza and Grace collected **32**, **56** and **30 leaves** respectively.

Answers to Unit 2.3 – Repeated Items

Let's Get Started 2.3



Ask Yourself

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

Think Further



 $1u = 40 \div 20$ = 2 Number of files Charmaine bought more than Sylvia = 15u - 6u= 9u $9u = 9 \times 2$ = 18Charmaine bought **18 more** files than Sylvia.

Answers to Unit 2.3 – Repeated Items

Let's Practise 2.3 Question 1 Case 1 Summary A = 1uA = 1uP = 3u P = 3uCase 2 O = 2uA = 1uTotal = 1u + 2u + 3uO = 2u= 6u 6u = 60 $1u = 60 \div 6$ = 10 $3u = 3 \times 10$

= 30 There are **30 pears.**

Question 2



Difference between Nathaniel and Michael

= 6u - 2u= 4u 4u = 44 $1u = 44 \div 4$ = 11 $11u = 11 \times 11$ = 121They have a total of **121 cards.**

Question 3

Case 1	\sum	
$P = 3u^{x^2}$ (6u)		Summary
$S = 5u^{x^2} (10u)$		P = 6u
		≻ S = 10u
Case 2		T = 15u
$S = 2u^{x5} (10u)$		Total = 6u + 10u + 15u
$T = 3u^{x5} (15u)$	Σ	= 31u

Difference between Tess and Patrick = 15u - 6u= 9u

9u = 63 1u = 63 ÷ 9 = 7

Answers to Unit 2.3 – Repeated Items

Question 3 (Cont.) 31u = 31 x 7 = 217 The children were given **217 sweets.**

Question 4

 $\begin{array}{rcl} \underline{Case 1} \\ Red &= 4u^{x3}(12u) \\ Yellow &= 7u^{x3}(21u) \\ \hline \\ Red &= 3u^{x4}(12u) \\ Green &= 5u^{x4}(20u) \\ \hline \\ 53u &= 106 \end{array}$

$$1u = 106 \div 53$$

= 2
 $21u = 21 \times 2$
= 42

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

Question 5

Case 1 $C = 2u^{x5}(10u)$ $M = 3u^{x5}(15u)$ Case 2 $C = 5u^{x2}(10u)$ $I = 4u^{x2}(8u)$ Summary C = 10u M = 15u I = 8uTotal = 10u + 15u + 8u = 33u

Malay and Indian = 15u + 8u= 23uDifference between Chinese students and the Malay and Indian students combined = 23u - 10u= 13u

13u = 104 $1u = 104 \div 13$ = 8 $33u = 33 \times 8$ = 264A total of **264 students** enrolled in the school.

Question 6

 $\frac{2}{3} \mathsf{M} = \frac{1}{4} \mathsf{K}$ $\frac{2}{3} \mathsf{M} = \frac{2}{8} \mathsf{K}$

Answers to Unit 2.3 – Repeated Items Question 6 (Cont.) Case 1 $M = 3u^{x4} (12u)$ Summary $K = 8u^{x4} (32u)$ M = 12uK = 32u Case 2 L = 21u $M = 4u^{x3}(12u)$ Total = 12u + 32u + 21u $L = 7u^{x3} (21u)$ = 65u Kelvin and Marvin = 12u + 32u = 44u Difference of Kelvin and Marvin with Lionel = 44u – 21u = 23u 23u = 115 1u = 115 ÷ 23 = 5 $21u = 21 \times 5$ = 105 Lionel has 105 bullets.

Answers to Unit 2.4 – Branching

Let's Get Started 2.4



A▲ (4u)



Left

(4u)

Answers to Unit 2.4 – Branching

Question 2



Question 3



Answers to Unit 2.4 – Branching

Question 4



Question 5







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



End



Answers to Unit 2.5 – One Item Unchanged

Unitary approach

<u>At first</u>

 $\begin{array}{l} B = 3u^{x2} \ (6u) \\ C = 5u^{x2} \ (10u) \\ \hline \\ \underline{End} \\ B = 6u \\ C = 7u \\ \hline \\ Change in the number of cakes = 10u - 7u \\ = 3u \\ 3u \\ 1u \\ = 12 \\ 1u \\ = 12 \div 3 \\ = 4 \end{array}$

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

Model-drawing approach At first



Answers to Unit 2.5 – One Item Unchanged

Unitary approach

<u>At first</u> $J = 3u^{x5} (15u)$ $K = 7u^{x5} (35u)$ <u>End</u> $J = 1u^{x7} (7u)$ $K = 5u^{x7} (35u)$ 8u = 24

$$1u = 24 \div 8$$

= 3

Ask Yourself

1.

 $\frac{\text{Increase in number of wine glasses}}{\text{Number of wine glasses at first}} = \frac{12}{3}$ = 4

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 = 1uEnd $D = 1u^{x^2} (2u)$ $C = 6u^{x^2}$ (12u) Changes in C = 12u - 1u = 11u 11u = 22 1u = 22 ÷ 11 = 2 Total in the end = 12u + 2u= 14u $14u = 14 \times 2$ = 28 There are 28 cakes in the end.

Question 2

 $\frac{\text{At first}}{M = 4u}$ F = 5u $\frac{\text{End}}{M = 1u^{x^2} (4u)}$ $F = 3u^{x^2} (12u)$

Answers to Unit 2.5 – One Item Unchanged

Question 2 (Cont.) Difference = 12u - 5u= 7u 7u = 28 $1u = 28 \div 7$ = 4 $12u = 12 \times 4$ = 48There were **48 female dancers** in the CCA in the end.

Question 3

<u>At first</u> $P = 2u^{x^7} (14u)$ $M = 3u^{x^7} (21u)$ <u>End</u> $P = 3u^{x^3} (9u)$ $M = 7u^{x^3} (21u)$ Difference = 14u - 9u

= 5u 5u = 25 $1u = 25 \div 5$ = 5 $14u = 14 \times 5$ = 70 (P at first) $21u = 21 \times 5$ = 105 (M at first) 70 + 105 = 175Heidi has **175 stamps** altogether in both boxes at first.

Question 4

At first

A = $1u^{x4}$ (4u) C = $3u^{x4}$ (12u) <u>End</u> A = $1u^{x3}$ (3u) C = $4u^{x3}$ (12u) Difference = 4u - 3u= 1u 1u = 28Difference (end) = 12u - 3u= 9u $9u = 9 \times 28$ = 252

There were 252 more children than adults in the end.

Answers to Unit 2.5 – One Item Unchanged

Question 5

```
At first

C = 2u

R = 3u

End

C = 1u^{x^2} (2u)

R = 4u^{x^2} (8u)

Difference = 8u - 3u

= 5u

5u = 35

1u = 35 \div 5

= 7

8u = 8 \times 7
```

There were 56 stalks of roses in the basket.

Answers to Unit 2.5 – One Item Unchanged

Question 6

= 56

<u>At first</u> $T = 2u^{x5} (10u)$ $S = 5u^{x5} (25u)$ <u>End</u> $T = 5u^{x2} (10u)$ $S = 4u^{x2} (8u)$

Change in S = 25u - 8u= 17u17u = 51 $1u = 51 \div 17$ = 3 $10u = 10 \times 3$ = 30There were **30 teachers** at the hall. Answers to Unit 2.6 – Difference Unchanged

Let's Get Started 2.6

3. What remained the same? <u>The age difference between Ethan and his</u> <u>mother.</u>

Model-drawing approach

 12 years ago

E

M

Now

_		Difference
L		
М		

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

Answers to Unit 2.6 – Difference Unchanged

Unitary approach

 $\frac{12 \text{ years ago}}{E = 2u}$ M = 3uDifference =1u $\frac{Now}{E = 3u}$ M = 4uDifference = 1u 1u = 12

4. What remained the same? Difference between Basket A and Basket B

Answers to Unit 2.6 – Difference Unchanged

Model-drawing approach

At First





Unitary approach

At first

$$\begin{split} A &= 5u^{x5} \ (25u) \\ B &= 7u^{x5} \ (35u) \\ \text{Difference} &= 2u^{x5} \ (10u) \end{split}$$

End

$$\begin{split} A &= 3u^{x2} \mbox{ (6u)} \\ B &= 8u^{x2} \mbox{ (16u)} \\ Difference &= 5u^{x2} \mbox{ (10u)} \end{split}$$

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.

Answers to Unit 2.6 – Difference Unchanged

Think Further

J = 2u D = 1uDifference = 1u 1u = 12 12 - 3 = 9In **9 years' time**, Jonathan will be twice as old as Diana.

Let's Practise 2.6

Question 1

<u>34 years ago</u>	Now
$W = 2u^{x^2} (4u)$	$W = 3u^{x7} (21u)$
$R = 9u^{x^2}$ (18u)	$R = 5u^{x7}$ (35u)
Difference = $7u^{x^2}$ (14u)	Difference = $2u^{x7}$ (14u)

17u = 34 $1u = 34 \div 17$ = 2 $35u = 35 \times 2$ = 70Uncle Roy is **70 years old** now.

Question 2

<u>15 years ago</u>	Now
S = 1u	$S = 1u^{x4} (4u)$
E = 5u	$E = 2u^{x4}$ (8u)
Difference = 4u	Difference = $1u^{x4}$ (4u)

3u = 15 $1u = 15 \div 3$ = 5 $4u = 4 \times 5$ = 20 31 + 20 = 51Eileen would be **51 years old** when Samuel was 31

years old.

Question 3

 $\frac{Now}{R = 3u^{x3} (9u)}$ F = 7u^{x3} (21u) Difference = 4u^{x3} (12u) <u>Future</u> $R = 5u^{x4}$ (20u) $F = 8u^{x4}$ (32u) Difference = $3u^{x4}$ (12u)

12u = 24 $1u = 24 \div 12$ = 2Number of years later = 20u - 9u= 11u

Answers to Unit 2.6 – Difference Unchanged

Question 3 (Cont.)

 $11u = 11 \times 2$

= 22

In **22 years' time**, Roger will be $\frac{5}{8}$ as old as his father.

Question 4

At first		End	
Tin	= 3u ^{x3} (9u)	Tin	$= 2u^{x^2} (4u)$
Plastic	= 5u ^{x3} (15u)	Plastic	= 5u ^{x2} (10u)
Difference	= 2u ^{x3} (6u)	Difference	$= 3u^{x^2}$ (6u)
5u = 150			
1u = 150 -	÷ 5		
= 30			
15u = 15 ×	30		
= 450			
The mass of	of the plastic bottle	at first is 45	50 g.

Question 5

<u>At first</u>	End
B = 5u ^{x5} (25u)	$B = 4u^{x3}$ (12u)
$C = 8u^{x5} (40u)$	$C = 9u^{x3} (27u)$
Difference = $3u^{x5}$ (15u)	Difference = $5u^{x3}$ (15u)

Difference in the button pins at first and at the end = 13u Jennifer gave away $\frac{13}{25}$ of the button pins.

Question 6

<u>Clint</u>		<u>Emma</u>	
At first	= 6u ^{x4} (24u)	At first	= 7u ^{x5} (35u)
End	$= 1u^{x4} (4u)$	End	= 3u ^{x5} (15u)
Difference	= 5u ^{x4} (20u)	Difference	= 4u ^{x5} (20u)
End Difference	= 1u ^{x4} (4u) = 5u ^{x4} (20u)	End Difference	= 3u ^{x5} (15u = 4u ^{x5} (20u

20u = 40

 $1u = 40 \div 20$ = 2 $24u = 24 \times 2$

= 48 (Clint at first)

= 70 (Emma at first)

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

Answers to Review Questions in Chapter 2

(a)	
Total muffins sold	= 15 + 20 + 25 = 60
Fraction $=\frac{15}{60}$ $=\frac{1}{4}$	
(b)	
$\frac{2}{3}$ of choc muffins	$=\frac{2}{3} \times 15$
5	= 10
10 choc muffins	= \$18
1 choc muffins	= \$1.80
Each chocolate mu	ffins cost \$1.80 .

Question 2

End		
В	3u	
G	3u	

At first



Question 3



Question 4

Fraction spent $=\frac{1}{4} + \frac{1}{6}$ $=\frac{5}{12}$ Fraction of money left $=1 - \frac{5}{12}$ $=\frac{7}{12}$ 7u = 637 + 63 =7001u = 700 ÷ 7 =1002u = 2 × 100 =200The pair of jeans cost **\$200**.

Question 5

End

С	3u
М	3u

At first

 $\begin{array}{c|c} C & 3u & 1u \\ M & 3u & 14 \end{array}$ $\begin{array}{c|c} 7u = 77 - 14 \\ = 63 \\ 1u = 63 \div 7 \\ = 9 \\ Difference = 14 - 9 \\ = 5 \\ There were 5 more motorcycles than cars at first. \end{array}$

Question 6

S = 1uD = 1uC = 3u

3u = 39 $1u = 39 \div 3$ = 13 $5u = 5 \times 13$ = 65There were **65 animals** in the farm altogether.

Question 7

Savings = $1 - \frac{1}{4} - \frac{1}{12} - \frac{1}{3}$ = $\frac{1}{3}$ $\frac{1}{3}$ Earnings = 2250 Earnings = 2250 × 3 = 6750 Mother = $\frac{1}{4} \times 6750$ = 1687.50 He gave his mother **\$1687.50**.

Question 8

Kalisa's $= 1 - \frac{1}{4} - \frac{1}{12}$ $= \frac{2}{3}$ Difference $= \frac{2}{3} - \frac{1}{12}$ $= \frac{7}{12}$ $\frac{7}{12}$ Total = 602 $\frac{1}{12}$ Total $= 602 \times 7$ = 86Total $= 12 \times 86$ = 1032They shared **\$1032**.

Question 9



Answers to Review Questions on Chapter 2

Question 9 (Cont.)

5u = 55 – 7.5
= 47.5
1u = 47.5 ÷ 5
= 9.5
H = 9.5 + 7.5
= 17
Hamid's book cost \$17

Question 10

End	
Y	4u
G	4u

At first



He had 115 yellow baskets for sale at first.

Question 11

 $\frac{\frac{4}{5} \times 150}{= 120}$ Difference = 120 - 80 = 40 He gave **40 more** erasers to his friends than his neighbour.

Question 12

Aminah = $1 - \frac{3}{8}$ = $\frac{5}{8}$ $\frac{5}{8} \times 168 = 105$ Sharon have **105 seashells** to Aminah.

Question 13

Read $=\frac{1}{4} + \frac{1}{8}$ $=\frac{3}{8}$ Unread $= 1 - \frac{3}{8}$ $=\frac{5}{8}$ Total = 95 $\frac{5}{8}$ Total $= 95 \div 5$ = 19Total $= 8 \times 19$ = 152There 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 $= 890 \div 5$ = 178

Question 14(Cont.)

Salary = 178 × 12 = 2136 Aslam's salary was **\$2136**.

Question 15

Fraction of money spent = $\frac{1}{4} + \frac{5}{12}$ = $\frac{2}{3}$ Amount of money left = 10 - 2 = 8 $\frac{1}{3}$ of Total = 8 Total = 3 x 8

= 24

She had **\$24** at first.

Question 16



9u = 510 - 123= 387 1u = 387 ÷ 9 = 43 3u = 3 × 43 = 129 Difference = 129 + 123 = 252

There were **252 more** boxes of love letters than cookies at first.

Chapter Geometry

Answers to Unit 3.1– Angles



Question 1



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

Answers to Unit 3.1– Angles



Question 6



Let's Get Started



- 2. North
- 3. South
- 4. $\frac{3}{8}$
- 5. East
- 6. 135°

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) lan
- (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

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.

Answers to Unit 4.3 – Multiplication and Division of Decimals

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 (e) 27.5	(b) 7.1 (f) 22.6	(c) 4.7	(d) 12.5
4. (a) 0.5 (e) 2.6	(b) 1.1 (f) 1.4	(c) 0.6	(d) 3.1

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 \div 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**.

Question 1



7.46 + 3.7 = 11.16 The tank can hold 11.16 litres of water. 11.16 + 7.46 = $18.62 \approx 18.6$ ℓ Both containers can hold **18.6ℓ** of water.

Question 2

Case 1	
T = 4u ^{x4} (16u)	Summary
$B = 5u^{x4}$ (20u)	T = 16u
	B = 20u
	P = 5u
Case Z	Total = 16u + 20u + 5u
$P = 1u^{x5} (5u)$	= 41u
B = 4u ^{x5} (20u)	

Difference between batteries and tissue pack

= 20u - 16u= 4u 4u = 24 $1u = 24 \div 4$ = 6 $5u = 5 \times 6$ = 30Heidi bought **30 paper clips.**

Question 3

Case 1

 $T = 2u^{x3} (6u)$ $C = 5u^{x3} (15u)$ $C = 5u^{x3} (15u)$ Case 2 $T = 3u^{x2} (6u)$ $K = 10u^{x2} (20u)$ T = 6u C = 15u K = 20u Total = 6u + 15u + 20u = 41u $K = 10u^{x2} (20u)$ Total = 6u + 15u - 6u = 9u

 $1u = 54 \div 9$ = 6 $20u = 20 \times 6$ = 120 **120 books** on the shelf belonged to Kristine.

Answers to Review Questions on Chapter 4

Question 4



Difference between Pouch B and Pouch C

= 21u - 20u= 1u1u = 160 $71u = 71 \times 160$ = $11 \ 360$ The mass of the bag of seeds is **11 kg 360 g**.

Question 5



There were 5.4 litres of sauce left.



 $10u = 10 \times 1.3$ = 13

He	had	13	ka	of	rice	at	first

Question 7



Difference between computer game and board game

= 12u – 5u = 7u 7u = 41.65 1u = 41.65 ÷ 7 = 5.95 $3u = 5.95 \times 3$ = 17.85 Caleb had \$17.85 left.

Question 8 Salary 5u^{x5} (25u) 3u^{x5} (15u) 2u^{x5} (10u) W Remainder 5u^{x3} (15u) * В Left 1u^{x3} (3u) 4u^{x3} (12u)

Answers to Review Questions on Decimals

Question 8 (Cont.)

10u = 1840 1u = 1840 ÷ 10 = 184 $3u = 3 \times 184$ = 552

Mr Imran spent \$552 on his bills.

Question 9

2u

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



Question 11

ltem	Quantity of units	×	Value of each unit (\$)	Total Value (\$)
E	4u	×	1.5	6u
F	1u	×	1	1u
Total	5u			7u

7u = 14 $1u = 14 \div 7$

= 2

 $6u = 6 \times 2$

= 12

She paid \$12 for the egg tarts.

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

Answers to Review Questions on Decimals

Question 12

Item	Quantity of units	×	Value of each unit (items)	Total Value (items)
S	3u	×	25	75u
Р	4u	×	20	80u
Total	7u			155u

Difference = 80u - 75u

= 5u 5u = 160 $1u = 160 \div 5$ = 32 $3u = 3 \times 32$ = 96

There are 96 boxes of screws.

Question 13

Item	Quantity of units	×	Value of each item (\$)	Total Value (\$)
R	3u	×	2.5	7.5u
G	2u	×	1.20	2.4u
Total	5u			9.9u

9.9u = 198

1u = 198 ÷ 9.9 = 20 Difference = 3u - 2u = 1u

The customer bought **20 more** boxes of red than green lamp bulbs.

Question 14

Item	Quantity of units	Quantity × Value of each of units × unit (m)		Total (m)
S	5u	×	0.2	1u
L	1u	×	2.0	2u
Total	6u			Зu

3u = 12

1u = 12 ÷ 3

= 4

 $6u = 4 \times 6$

= 24

Joash used 24 tubes in all.

Answers to Review Questions on Decimals

Question 15

1S	+	4N	=	33.3
1S	+	1N	=	15.75

3N = 33.3 - 15.75

= 17.55

1N = 17.55 ÷ 3 = 5.85

One notebook cost \$5.85.

Question 16

In the end

А		
в		

At first

А	1u	8.34	1u	8.34	1u	8.34	8.34
В	1u	8.34					

4 × 8.34 = 33.36
4u = 50.4 - 33.36
= 17.04
$1u = 17.04 \div 4$
= 4.26
$3u = 3 \times 4.26$
= 12.78
A (at first) = 12.78 + 33.36
= 46.14
The mass of Bag A was 46.14 kg at first.

Question 17

Mass of 6 packets of figs = 6×0.35 = 2.1 Mass of 6 packets of cranberries = 4.35 - 2.1= 2.25 Mass of 1 packet of cranberries = $2.25 \div 6$ = 0.375The mass of each packet of cranberries is **0.375 kg**.

Question 18

Rope B = 4.68 + 2.95 = 7.63 Rope C = 7.63 + 7.63 = 15.26

Answers to Review Questions on Decimals

Question 18 (Cont.) 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 = 3×2.05 = 6.15 2 notebooks = 2×2.25 = 4.5 Total cost = 6.15 + 4.50 = 10.65 Change = 50 - 10.65= 39.35He would receive **\$39.35** change.

Question 20

Distance between 2 flag poles = $3.06 \div 2$ = 1.53 Distance between the 1st and 6th pole = 1.53×5 = 7.65

The distance between the 1^{st} and 6^{th} pole is **7.65 m**.

Chapter 5 Graphs

Answers to Unit 5.1 – Interpreting Graphs

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

Answers to Unit 5.1 – Interpreting Graphs

Question 1 (Cont.)

```
Stall B = 212 + 78
= 290
Stall C = 112 + 67
= 179
Stall D = 178 + 61
= 239
(d) $262
56 + 78 + 67 + 61 = 262
All the shops sold a total of 262 cups of orange
```

juice.

 $262 \times 1 = 262$

Question 2

(a) **\$2140**

450 + 420 + 420 + 430 + 420 = 2140

- (b) **\$30**
 - Total amount (Max) = 450Total amount (Min) = 420Difference = 450 - 420

= 30

- (c) **210 plates** 420 ÷ 2 = 210
- (d) 70 plates

Number of plates of curry rice sold = 1uNumber of plates of duck noodles sold = 2uTotal plates sold = 3u $210 \div 3 = 70$

Question 3

(a) **\$8**

Using Monday data, total tickets sold = 1300 + 650 = 1950

Cost of a ticket = $15600 \div 1950$

- = 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 = $32\ 000 \div 8$ = $4\ 000$ 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 = Total amount collected Total mass = 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 $= 1750 \div 5$ = 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 $\frac{2}{2} \times 150 = 100$

Answers to Unit 5.1 – Interpreting Graphs

Question 4 (Cont.)

(d) \$15 675

 $(100 + 150 + 150 + 15) \times 5 = 2075$ 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 $6 \times 0.30 + 2 \times 0.50$ + Amount spent on files = 23.8023.80 - 1.80 - 1.00 = 21\$21 was spent on the files. $21 \div 7 = 3$

- (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 = 17.9017.90 - 2.40 - 0.50 = 15She spent 15 on files. $15 \div 3 = 5$

(d) Brian Number of files (Brian) = 14 - 11 - 2= 1 Brian = $11 \times 0.30 + 2 \times 0.50 + 1 \times 3$ = 7.30 Cathy = $8 \times 0.30 + 1 \times 0.50 + 5 \times 3$ = 17.90 (e) \$98.10 Abel = $17 \times 0.30 + 3 \times 0.50 + 3 \times 3$ = 15.60 15.60 + 7.30 + 17.90 + 33.50 + 23.80 = 98.10

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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
 - = 5 200
- (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.

Answers to Unit 5.2 – Line Graphs

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 x 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 \rightarrow 8 seconds Ball increases height to 7.5 m \rightarrow 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 10m 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						
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)

<u></u>		
Month	Sale	Amount
		collected (\$)
Nov	250	250 × 29 = 7250
Dec	300	300 × 29 = 8700
Jan	200	200 × 29 = 5850
Feb	150	$150 \times 29 = 4300$
Mar	100	100 × 29 = 2900
Apr	50	50 × 29 = 1450

Total amount collected

= 7250 + 8700 + 5850 + 4300 + 2900 + 1450

= 30 450

The total amount collected is \$30 450.

Question 3

(b)

(a) Difference = 700 - 325

= 375

Ahmad spent \$375 more than Bernard.

```
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
Мау	75
Jun	200
Jul	125
Aug	225

Difference = 150 - 75

75 more bedsheets 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	No. of children
	clothings donated	
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.



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 \text{ cm} \times 9 \text{ cm}
= 81 \text{ cm}^2
Perimeter of Square A = 4 \times 9 \text{ cm}
= 36 \text{ cm}
```

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

- (b) Area of Rectangle B = $8 \text{ m} \times 4 \text{ m}$ = 32 m^2 Perimeter of Rectangle B = 8 m + 4 m + 8 m + 4m = 24 m
- (c) Area of Rectangle C = $17 \text{ m} \times 9 \text{ m}$ = 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 × 6 cm
		=	= 12 cm
	Perimeter of Square	e A =	= 4 × 12 cm
		=	= 48 cm
	Area of Square A	=	= 12 cm × 12 cm
		=	= 144 cm²
(b)	Length of Rectangle	вB	= 2 × 11 cm
			= 22 cm
	Breadth of Rectang	le B	= 2×2 cm
			= 4 cm
Peri	meter of Rectangle E	3	
= 22	cm + 4 cm + 22 cm	+ 4	cm
= 52	cm		
Area	a of Rectangle B = 2	22 cr	$m \times 4 cm$
	= 8	38 ci	m²

Question 3

Area of the unpaved region = $14 \text{ m} \times 14 \text{ m}$ = **196 m**² Perimeter of pavement = 16 m + 16 m + 2 m + 2 m + 14 m + 14 m= **64 m**

Question 4

(a) $2 \times \text{length of field} = 20 \text{ m} + 20 \text{ m}$ = 40 m $2 \times \text{breadth of field} = 64 \text{ m} - 40 \text{ m}$ = 24 m Breadth of field = 24 m ÷ 2 = 12 m The breadth of the field is **12 m**.

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

Question 4 (Cont.)

(b)	Perimeter of garden = 64 m ÷ 2		
		= 32 m	
	Length of garden	= 32 m ÷ 4	
		= 8 m	
	Area of garden	= 8 m × 8 m	
		= 64 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 $2u = 2 \times 7.5$ = 15The length of the paper is 15 cm.

- (a) $15 \text{ cm} \times 15 \text{ cm} = 225 \text{ cm}^2$ The area of the paper is **225 cm**².
- (b) $4 \times 15 \text{ cm} = 60 \text{ cm}$

The perimeter of the paper is 60 cm.

Question 6

Let the length of each square be 1u. Total length of wire = 1u + 3u + 1u + 3u= 8u

8u = 96 1u = 96 ÷ 8 = 12

(a) Length of line AD is **12 cm**.

(b) $3u = 3 \times 12$ = 36 $36 \text{ cm} \times 12 \text{ cm} = 432 \text{ cm}^2$ The area of Rectangle ABCD is **432 cm**². Answers to Unit 6.2 – Finding Sides with Given Area or Perimeter

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 = 4×7 cm = 28 cm (b) Length of Rectangle B = $84 \text{ m}^2 \div 8 \text{ m}$ = 10.5 m Perimeter of Rectangle B = $(10.5 \text{ m} \times 2) + (8 \text{ m} \times 2)$ = 37 m (c) Area of Square C = $1u \times 1u$ $1u \times 1u = 25 (5 \times 5)$ 1u = 5 Length of Square C = 5 cm Perimeter of Square C = 4×5 cm = 20 cm

Question 2

(a) $2 \times \text{breadth} = 2 \times 14 \text{ cm}$ = 28 cm = 78 cm - 28 cm $2 \times length$ = 50 cm Length of Rectangle D = $50 \text{ cm} \div 2$ = 25 cm Area of Rectangle D = 25 cm × 14 cm $= 350 \text{ cm}^2$ (b) Length of Square E = $24 \text{ cm} \div 4$ = 6 cm Area of Square E = $6 \text{ cm} \times 6 \text{ cm}$ = 36 cm² (c) $2 \times breadth = 2 \times 17 cm$ = 34 cm $2 \times \text{Length} = 92 \text{ cm} - 34 \text{ cm}$ = 58 cm Length of Rectangle F = $58 \text{ cm} \div 2$ = 29 cm = 29 cm × 17 cm Area of Rectangle F = 493 cm²

Answers to Unit 6.2 – Finding Sides with Given Area or Perimeter

Question 3

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

Question 4

Area of one square = $80 \text{ cm}^2 \div 5$

= 16 cm²

Length of each square = 4 cm



12 cm + 12 cm + 8 cm + 8 cm = 40 cmThe perimeter of the figure is **40 cm**.

Question 5

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

Length of each identical square = 3 cm



15 cm + 15 cm + 9 cm + 9 cm = 48 cmThe perimeter of Figure B is **48 cm**.

Question 6



Answers to Unit 6.2 – Finding Sides with Given Area or Perimeter

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 = 9×16 cm² = 144 cm² Length of Square C = 12 cm Area of Square D = 16×16 cm² $= 256 \text{ cm}^2$ Length of Square D = 16 cm Perimeter of Square A = 4×4 cm = 16 cm Perimeter of Square B = 4×8 cm = 32 cm Perimeter of Square C = 4×12 cm = 48 cm Perimeter of Square D = 4×16 cm = 64 cm 16 cm + 32 cm + 48 cm + 64 cm = 160 cm The length of wire is 160 cm.

Answers to Unit 6.3 – Area and Perimeter of Composite Figures

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 m31 m + 41 m + 31 m + 41 m = 144 mJohan walked a total distance of **144 m**.

Question 2

Length of figure = 10 cm + 16 cm + 26 cm + 12 cm + 8 cm = 72 cm

Breadth of figure = 26 cm

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

Answers to Unit 6.3 – Area and Perimeter of Composite Figures

Question 2 (cont.)

A B	с	D E t8 cm		
	26 cm			
(from left)				
Area of Square A	= 10 cm × 10 cn	n		
	= 100 cm ²			
Area of Square B	= 16 cm × 16 cn	n		
	= 256 cm ²			
Area of Square C	= 26 cm × 26 cm	n		
	= 676 cm ²			
Area of Square D	= 12 cm \times 12 cm	n		
	= 144 cm ²			
Area of Square E	= 8 cm × 8 cm			
	= 64 cm ²			
Total area of figur	e			
$= 100 \text{ cm}^2 + 256 \text{ cm}^2$	$cm^{2} + 676 cm^{2} +$	144 cm ² + 64 cm ²		
= 1240 cm ²				
The area of the fig	gure is 1240 cm²	2		

Question 3

Area of land used for strawberries = 9 m × 18 m = 162 m² Area of land used for herbs = 5 m × 5 m = 25 m² Total area of land used = 162 m² + 25 m² = 187 m² Area of plot of land = 28 m × 25 m = 700 m² Area of plot of land still not used = 700 m² - 187 m² = 513 m²

513 m² of the plot of land is still unused.

Question 4

Area of 1 rectangle = $600 \text{ cm}^2 \div 8$ = 75 cm²

	= 10 011		
Length	Breadth	Area	Check
3 cm	1 cm	3 cm ²	Х
6 cm	2 cm	12 cm ²	Х
9 cm	3 cm	27 cm ²	Х
12 cm	4 cm	48 cm ²	Х
15 cm	5 cm	75 cm ²	\checkmark

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Answers to Unit 6.3 – Area and Perimeter of Composite Figures

Question 4 (Cont.)

Length of each rect	angle = 15 cm
Breadth of each rec	ctangle = 5 cm
Length of figure	= 6 x 5 cm
	= 30 cm
Breadth of figure	= 5 cm + 15 cm
	= 20 cm
Perimeter of figure	= 30 cm + 30 cm + 20 cm + 20 cm
	= 100 cm
The perimeter of the	e fiaure is 100 cm .

Question 5

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

= **200** m²

Question 6

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

Question 7

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

Area of pond	Length	Breadth	Check
72 cm ²	36	2	х
72 cm ²	18	4	х
72 cm ²	12	6	\checkmark

Length of park	= 2 m + 10 m + 12 m	
	= 24 m	
Breadth of park	= 6 m + 2 m + 2 m	
	= 10 m	
Area of park	= 24 m × 10 m	
	= 240 m ²	
Area of shaded region = 240 $m^2 - 72 m^2$		
	= 168 m ²	
The area of shaded region is 168 m² .		

Answers to Unit 6.3 – Area and Perimeter of Composite Figures

Question 8

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

Area	Length	Breadth	Difference	Check
of park				
63 m ²	63	1	62	х
63 m ²	21	3	18	х
63 m ²	9	7	2	\checkmark

Length of park with pavement = 9 m + 2 m + 2 m

Breadth of park with pavement

= 7 m + 2 m + 2 m = 11 m Area of park with pavement = 13 m × 11 m = 143 m² Area of pavement = 143 m² - 63 m² = 80 m² The area of the pavement is **80 m²**.

Question 9

Area of shaded region = 3 shaded squares 3 squares = 48 1 square = 48 \div 3 = 16 Length of square A = 4 cm Length of square B = 2 x 4 cm = 8 cm

The length of square A and square B is **4 cm** and **8 cm** respectively.

Question 10

a) Total	distance	travelled	
----------	----------	-----------	--

= 4 cm + 2 cm + 2 cm + 2 cm + 4 cm + 2 cm + 4 cm + 2 cm + 2 cm = 22 cm

The marble travelled a distance of 22 cm.

(b) Area of 1^{st} step = 14 cm \times 2 cm

 $= 28 \text{ cm}^2$ Area of 2nd step = 10 cm × 2 cm $= 20 \text{ cm}^2$ Area of 3rd step = 6 cm × 2 cm $= 12 \text{ cm}^2$ Area of 4th step = 4 cm × 2 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 cm².

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

 $= (30 \text{ cm} \times 14 \text{ cm}) + (6 \text{ cm} \times 5 \text{ cm}) + (7 \text{ cm} \times 6 \text{ cm})$ $= 492 \text{ cm}^2$ 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 = $(25 \text{ cm} - 15 \text{ cm}) \div 2$ = 5 cm Length of 3 strokes = 30 cm ÷ 3 = 10 cm Area of the figure

= $(25 \text{ cm} \times 10 \text{ cm})+(10 \text{ cm} \times 10 \text{ cm})+(10 \text{ cm} \times 5 \text{ cm})$ = 400 cm² The area of the figure is 400 cm².

Question 13

The area of the furniture departme	ent is 7800 m ².
	= 7800 m ²
Area of furniture department	= 260 m × 30 m
Length of UV = 290 m $-$ 30 m	= 260 m

Question 14

(a) Length of Square D = 3 cm Length of Square F = $15 \text{ cm}^2 \div 3 \text{ cm}$ = 5 cm The length of Square F is 5 cm.

(b) Area of E = $3 \text{ cm} \times 5 \text{ cm}$ $= 15 \text{ cm}^2$ The area of E is 15 cm².

Answers to Unit 6.4 – Area and Perimeter with **Proportional Sides**

Let's Practise 6.4

Question 1

Unitary approach

L = 3uL = 3uB = 1uB = 1u

Total = 8u

8u = 128



(B) $1u = 128 \div 8$ = 16 (L) $3u = 16 \times 3$ = 48 Area of rectangle = 16×48 = 768

The area of the rectangle is 768 cm².

Question 2

Let the length of Square A = 1u1u = 2 cmLength of Rectangle B = 8u $= 8 \times 2 \text{ cm}$ = 16 cm Breadth of Rectangle B = 4u $= 4 \times 2 \text{ cm}$ = 8 cmPerimeter of Rectangle B = 16 + 16 + 8 + 8= 48The perimeter of Rectangle B is 48 cm.

Question 3

Perimeter	Rectangle
Sq = $2u^{\times 2}$ (4u)	B = 3u
Rec = $7u^{\times 2}$ (14u)	L = 4u
	Total Perimeter = 7u + 7u
	= 14u
Area of sq = 100 cm^2	
1 side of sq = 10 cm	
Perimeter of sq $(4u) = 10$	+ 10 + 10 + 10
= 40	
$1u = 40 \div 4$	

= 10

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Answers to Unit 6.4 – Area and Perimeter with Proportional Sides

2u

Question 3 (Cont.)

Breadth of rectangle (3u) = 3×10

= 30

The breadth of rectangle is 30 cm.

3u



2u

3u

Area of 1 small square = 100 cm² Length of 1 small square = 10 cm = 10 cm + 10 cm Length of 1 big square = 20 cm Length of figure = 10 cm + 20 cm = 30 cm Length of 1 rectangle = 30 cm ÷ 2 = 15 cm Length of 1 rectangle = 3u 3u = 15 cm $1u = 15 \text{ cm} \div 3$ = 5 cm Breadth of 1 rectangle = 2u $2u = 5 \text{ cm} \times 2$ = 10 cm Area of 1 rectangle = $15 \text{ cm} \times 10 \text{ cm}$ $= 150 \text{ cm}^2$ Area of 1 big square = $20 \text{ cm} \times 20 \text{ cm}$ $= 400 \text{ cm}^2$ Area of figure = 100 + 100 + 400 + 150 + 150= 900 The area of the figure is 900 cm².

Question 5

5u × 3u = 135

Factors of 135, Guess & Check

Area of Rectangle	L	В	Check
135 cm ²	45	3	×
135 cm ²	27	5	×
135 cm ²	15	9	\checkmark

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

= 48 cm

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

Answers to Unit 6.4 – Area and Perimeter with Proportional Sides

Question 6

ABCD B = 6uL = 6u A B = 2uB = 2uB = 2uB = 4uB = L = 2u L = 4uL = 4u L = 4u L = 1uBreadth (C + D) = 2u + 4u= 6u Length (C + A) = 4u + 2u= 6u Perimeter E = 24 cm (1u) Breadth of E = 24 cm \div 4 = 6 cm (a) 1u = 6 cm $6u = 6 \times 6 \text{ cm}$ = 36 cmThe length of Square ABCD is 36 cm. (b) Breadth of B (2u) = 2×6 cm = 12 cm Length of B $(4u) = 4 \times 6$ cm = 24 cm Area of B = 12 cm \times 24 cm = 288 cm² The area of B is 288 cm².

Answers to Unit 6.5 – Area and Perimeter of Squares using Guess and Check

Let's Practise 6.5

Question 1

А	В	Total	Check
7 × 7 = 49	10 × 10 = 100	49 + 100 = 149	×
8 × 8 = 64	11 × 11 = 121	64 + 121 = 185	×
9 × 9 = 81	12 × 12 = 144	81 + 144 = 225	~

Perimeter

= 9 + 9 + 9 + 3 + 12 + 12 + 12 + 6

= 27 + 3 + 36 + 6

= 72

The perimeter is 72 cm.

Question 2

Area of small sq	Area of big sq	Difference (Shaded area)	Chec k
6 × 6 = 36	8 × 8 = 64	64 - 36 = 28	×
4 × 4 = 16	6 × 6 = 36	36 - 16 = 20	~

The area of the smaller square is 16 cm².

Answers to Unit 6.5 – Area and Perimeter of Squares using Guess and Check

Question 3

Area of small sq	Area of big sq	Difference (Shaded area)	Check
8 × 8 = 64	10 × 10 = 100	100 - 64 = 36	×
9 × 9 = 81	11 × 11 = 121	121 - 81 = 40	~

Perimeter of big square = $11 \text{ cm} \times 4$

= 44 cm

The perimeter of the big square is 44 cm.

Question 4

Total area of Square A + Square B

 $= 176 \text{ cm}^2 + 9 \text{ cm}^2 + 9 \text{ cm}^2$

= 194 cm²

Area of A	Area of B	Unshaded region	Check
7 × 7 = 49	15 × 15 =	225 + 49 = 274	×
	225	274 - 9 - 9 = 256	
6 × 6 = 36	14 × 14 =	196 + 36 = 232	×
	196	232 - 9 - 9 = 214	
5 × 5 = 25	13 × 13 =	169 + 25 = 194	~
	169	194 - 9 - 9 = 176	

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

Question 5

Guess & Check, Factors of 24

Length	Breadth	Total Perimeter	Check
12 × 2 = 24	2 × 2 = 4	24 + 4 = 28	×
		28 × 2 = 56	
8 × 2 = 16	3 × 2 = 6	16 + 6 = 22	×
		22 × 2 = 44	
6 × 2 = 12	4 × 2 = 8	12 + 8 = 20	√
		20 × 2 = 40	

4 squares wide

6 squares long

Answers to Review Questions on Chapter 6

Question 1

Area of rectangle = $20 \text{ cm} \times 16 \text{ cm}$ = 320 cm^2

Area of the shaded part of the figure

- $= 320 \text{ cm}^2 150 \text{ cm}^2$
- = 170 cm²

Question 2

Length of small square = $12 \text{ cm} \div 3$ = 4 cm

Perimeter

= 12 cm + 12 cm + 4 cm + 4 cm + 20 cm + 12 cm + 4 cm + 4 cm

= 72 cm

Answers to Review Questions on Chapter 6

Question 3

Area of square C = 8 cm × 8 cm = 64 cm^2 Area of rectangle B = 2 × 64 cm^2 = 128 cm^2 Area of rectangle A = 3 × 128 cm^2 = 384 cm^2 Total area of figure = $64 \text{ cm}^2 + 128 \text{ cm}^2 + 384 \text{ cm}^2$ = 576 cm^2

Question 4

Length of each square = $36 \text{ cm} \div 3$ = 12 cmArea of rectangle = $12 \text{ cm} \times 10 \text{ cm}$ = 120 cm^2

Question 5

Area of big rectangle = 15 cm × 12 cm = 180 cm² Area of shaded rectangle = 6 cm × 2 cm = 12 cm² Area of the unshaded part = 180 cm² - 12 cm² = **168 cm²**

Question 6

Area of square = 7 cm × 7 cm = 49 cm² Area of rectangle = 2 × 49 cm² = 98 cm² Area of the whole figure = 49 cm² + 98 cm² = 147 cm²

Question 7

Area of rectangle after 1^{st} fold = 2 x 25 cm² = 50 cm2 Area of square before fold = 2 x 50 cm² = 100 cm² 100 = 10 x 10 Length of paper unfolded = 10 cm Perimeter of paper = 4 x 10 cm = **40 cm**

Question 8

Area of 1 square = $256 \text{ cm}^2 \div 4$ = 64 cm^2 $64 = 8 \times 8$ Length of each square = 8 cm Perimeter of figure = 16 cm + 24 cm + 16 cm + 24 cm= **80 cm**