Final Answers for P6 Essential Problem Solving Skills

Chapter 1 Recap of EPSS Primary 5

Unit 1.1 Repeated Items

Let's Practise 1.1

Qn 1) $480 Qn 2) 250 people

Qn 3) $46.50 Qn 4) 40 cm

Unit 1.2 One Item Unchanged

Let's Practise 1.2

Qn 1) 180 instruments Qn 2) 56 girls

Qn 3) 50 vanilla cakes Qn 4) 16 more

Unit 1.3 Difference Unchanged

Let's Practise 1.3

Qn 1) 187 cm^2 Qn 2) 108 years

Qn 3) 440 toy cars Qn 4) 42 years old

Unit 1.4 All Items Changed

Let's Practise 1.4

Qn 1) 20 figurines Qn 2) 100 ℓ

Qn 3) 15 goldfish Qn 4) 195 pens

Unit 1.5 Quantity × Value

Let's Practise 1.5

Qn 1) 32 ties, belts, and pairs of cufflinks

Qn 2) $7.70 Qn 3) 84 more

Qn 4) 87 teachers and girl students

Unit 1.6 Branching

Let's Practise 1.6

Qn 1) 330 mℓ Qn 2) 72 pieces

Qn 3) 1 kg 800 g Qn 4) $180

Unit 1.7 Numerators the Same

Let's Practise 1.7

Qn 1) 70 children Qn 2) 266 marks

Qn 3) 240 beef pies Qn 4) 168 beads

Chapter 2 Advanced Model Drawing

Chapter 2 Advanced Model Drawing (More Than / Less Than)

Let's Practise 2

Qn 1) 56 cars Qn 2) 193 students

Qn 3) 278 crossword puzzle books and jigsaw puzzles

Qn 4) 77 table lamps

Chapter 2 Advanced Model Drawing (Equal Stage At First)

Let's Practise 2

Qn 1) $591 Qn 2) 75 pins

Chapter 2 Advanced Model Drawing (Equal Stage End)

Let's Practise 2

Qn 1) 34 cards Qn 2) 1221 balloons

Chapter 2 Advanced Model Drawing (Repeated Items)

Let's Practise 2

Qn 1) 400 buns Qn 2) 26 rings

Chapter 2 Advanced Model Drawing (Internal Transfer)

Let's Practise 2

Qn 1) 123 people Qn 2) 120 children

Qn 3) $1518 Qn 4) 14 dumplings

Chapter 3 Number Patterns

Unit 3.1 Common Difference (Regular Gap)

Let's Practise 3.1

Qn 1)(a) 2, 10; 4, 14; 6, 18; 8, 22; 10, 26

(b) 166 triangles; (c) Figure 69

Qn 2)(a) b)(i) 19; (ii) 19; (iii) 59

Qn 3)(a) 26 matchesticks; (b) Figure 26

Qn 4)(a) (b) Figure 18; 5002 sides

Unit 3.2 Square Numbers

Let's Practise 3.2

Qn 1)(a) 25 dots; (b) Figure 9; (c) Figure 16

Qn 2)(a)

(b) 121 circles;

(c) Figure 20

Qn 3)(a) 145 shaded rectangles; (b) Figure 37;

(c) 2116 rectangles

Qn 4)(a) 225 unshaded squares; (b) 42 025 cm^2;

(c) 8 shaded squares; (d) 1300 cm

Qn 5)(a) 16 more; (b) 100 cubes; (c) 324 cubes

Qn 6)(a) 1943 fish; (b) Day 60; (c) Day 32

Unit 3.3 Triangle Numbers

Let's Practise 3.3

Qn 1)(a) 78 circles; (b) Figure 55

Qn 2)(a) 550 apples; (b) 17th day

Qn 3)(a) 484 triangles; (b) Figure 31;

(c) 66 shaded triangles; (d) Figure 71

Qn 4)(a) 11, 15; 7, 29, 36; (b) 435 crosses

(c) Figure 38; (d) 2017 unshaded crosses

Qn 5)(a) 133; (b) 4557; (c) Layer 36; (d) 2072

Chapter 4 Circles

Unit 4.1 Boomerang and Rugby

Let's Practise 4.1

Qn 1) 278 cm^2

Qn 2) A = 124 cm^2; P = 75 cm

Qn 3) A = 185.76 cm^2; P = 209.04 cm

Qn 4) 14 cm^2 Qn 5) 458 cm^2

Qn 6) P = 36π cm; A = 108π cm^2

Qn 7) 640π cm^2

Qn 8) A = $(50\pi - 100)$ cm^2; C = $(50\pi - 100)$ cm^2

Unit 4.2 Cut and Paste

Let's Practise 4.2

Qn 1) 648 cm^2 Qn 2) $51\frac{1}{3}$ cm^2

Qn 3) 314 cm^2

Qn 4) A = 192.5 cm^2, P = 69 cm

Qn 5) 82.24 cm Qn 6) 3213 cm^2

Review Questions on Chapter 4

Qn 1)(a) 18 cm; (b) 213.66 cm^2

Qn 2)(a) 65.96 cm; (b) 74 cm^2

Qn 3)(a) 3 cm; (b) 64.9 cm^2

Qn 4) 64 cm^2 Qn 5) 208.2 cm^2

Qn 6) 60 cm^2 Qn 7) 61.05 cm^2

Qn 8) 366.08 cm^2

Chapter 5 Ratio

Unit 5.1 Repeated Items

Let's Practise 5.1

Qn 1) 230 more Qn 2) \$740

Qn 3) 48 more Qn 4) \$84

Qn 5) 14 cm^2 Qn 6) 24 cm^2

Unit 5.2 Family of Change

Let's Practise 5.2

Qn 1) 16 dancers Qn 2) $200

Qn 3) 60 toys Qn 4) 120 more

Qn 5) 40 adults and children

Qn 6) $160

Unit 5.3 Branching

Let's Practise 5.3

Qn 1) 150 g

Qn 2)(a) $\frac{9}{35}$; (b) 70 pieces

Qn 3) 36 trick bikes Qn 4) 700 mℓ

Qn 5) 975 students Qn 6) 120 cheese buns

Unit 5.4 Quantity × Value

Let's Practise 5.4

Qn 1) $15 Qn 2) $389.50

Qn 3) 1600 pizzas

Qn 4)(a) 702 tickets; (b) 60 more

Qn 5)(a) 6 stickers; (b) 9 stickers

Qn 6) 4 mooncakes

Review Questions on Chapter 5

Qn 1) 210 coins Qn 2) $42

Qn 3) 6.72 kg Qn 4) $91

Qn 5) 108 fish Qn 6) $150

Qn 7)(a) 100 pairs of sandals; (b) $3500

Qn 8) $92 more

Chapter 6 Percentage

Unit 6 Percentage Change

Let's Practise 6

Qn 1) 180 more Qn 2) 45 dogs

Qn 3)(a) 2080 visitors; (b) 0% increase

Qn 4)(a) decrease; (b) 90 red candies

Qn 5) 270 buttons

Qn 6) 80 laptops and tablets

Qn 7)(a) 25 chocolate bars; (b) $2

Qn 8) 240 people

Chapter 7 Average

Unit 7.1 Average

Let's Practise 7.1

Qn 1) 68 marks Qn 2) 22 hotdogs

Qn 3) 6 pens Qn 4) 14 pages

Qn 5) 24 apples

Qn 6)(a) 75 marks; (b) 88.5 marks

Unit 7.2 Average with Unknown Items

Let's Practise 7.2

Qn 1) 50 students Qn 2) 14 days

Qn 3) 12 babies Qn 4) 6 pairs

Qn 5) 5 friends Qn 6) 5 friends

Unit 7.3 Average with Repeated Items

Let's Practise 7.3

Qn 1) D = 190 tags, C = 216 tags, E = 172 tags

Qn 2) S = 84 points, M = 70 points,
A = 65 points, R = 73 points

Qn 3) 4492 doorknobs

Qn 4) 20 perfume bottles

Chapter 8 Simultaneous

Unit 8 Simultaneous

Let's Practise 8

Qn 1) 120 fridge magnets Qn 2) 65 cupcakes

Qn 3) 2 more Qn 4) 5 more

Qn 5) \$28.80 Qn 6) \$26.95

Chapter 9 Algebra

Unit 9 Algebra

Let's Practise 9

Qn 1) $\left(\frac{10+4p}{3}\right)$ pencils Qn 2) $\left(\frac{10x+7}{2}\right)$ kg

Qn 3) A = 136 cookies, M = 120 cookies

Qn 4) $(18k + 8)$ plates

Qn 5)(a) $(7m + 8)$ stamps; (b) 71 stamps

Qn 6)(a) $(39y + 6)$ stickers; (b) 162 stickers

Qn 7)(a) $\left(\frac{1}{3}n - 4\right)$ years old;

(b) $\left(\frac{5}{3}n - 4\right)$ years old

Qn 8) $\frac{2}{5}h$ cm

Qn 9)(a) $(8h + 15)$ magnets; (b) 40 magnets

Qn 10)(a) $\left(\frac{3p+17}{4}\right)$ years old; (b) 41 years old

Chapter 10 Mixed Review Questions

Unit 10 Mixed Review Questions

Let's Practise 10

Qn 1) 440 pears Qn 2) \$1290

Qn 3) \$62 Qn 4) 123 jerseys

Qn 5) 80 stamps Qn 6) 3 questions

Qn 7)(a) 18 years old; (b) 12 years' time

Qn 8) 21 pizzas

Qn 9) 42 pink meringues

Qn 10) 12 platinum bracelets

Unit 10 Mixed Review Questions (Cont.)

Qn 11)(a) $\frac{1}{6}$; (b) 47.5%; (c) \$20 520

Qn 12) 140 muffins Qn 13) 456 muffins

Qn 14) \$129 Qn 15) 27 cm

Qn 16) 38 years old Qn 17) 210 marbles

Qn 18) 5 m Qn 19) 168 candies

Qn 20) 380 seconds

Qn 21) 330 red apples Qn 22) 78 marbles

Qn 23) G = 16 boxes, K = 30 boxes

Qn 24) \$5 Qn 25) 28 gumballs

Qn 26) 138 mini tarts Qn 27) \$3800

Qn 28) \$1716 Qn 29) \$440

Qn 30)(a) $\frac{9}{20}$; (b) 400 people; (c) 500 people

Qn 31) \$117 discount

Qn 32)(a) 328 parcels; (b) \$492

Qn 33) 144 items

Qn 34) 616 comic books

Qn 35)(a) 60 days; (b) \$847

Qn 36) 84 apple pies

Qn 37)(a) 120 students; (b) $\frac{1}{3}$

Qn 38)(a) 280 strawberry strudels;

(b) 68 strudels

Qn 39) 6 red pens

Qn 40)(a) 100 cm; (b) 1036 cm^2

Qn 41) \$91

Qn 42)(a) \$340; (b) \$335

Qn 43) \$150 Qn 44) 18 questions

Qn 45) 40 boxes Qn 46) 72 apples

Qn 47) 25 cm Qn 48) \$161

Qn 49) 16 more

Qn 50) $(75 + 2x)$ more

P6 Full Solutions

Note: In all solutions, u represent units and p represents parts.

Chapter 1 Recap of EPSS Primary 5

Answers to Unit 1.1 – Repeated Items

Let's Practise 1.1

Question 1

$A = 2u^{\times 5}$ (10u)
$B + C + D = 3u^{\times 5}$ (15u)

$B + C = 1u^{\times 3}$ (3u)
$D = 4u^{\times 3}$ (12u)
$B + C + D = 5u^{\times 3}$ (15u)

Summary
A = 10u
B + C = 3u
D = 12u

Total = 10u + 15u
= 25u
25u = 1000
1u = 1000 ÷ 25
= 40
12u = 12 × 40
= 480
Daniel's contribution was **$480**.

Question 2

$C = 2u^{\times 10}$ (20u)
$A = 3u^{\times 10}$ (30u)

$M = 1u^{\times 6}$ (6u)
$W = 4u^{\times 6}$ (24u)
$A = 5u^{\times 6}$ (30u)

B = 9u
G = 11u
C = 20u

Working
$20\% = \frac{20}{100}$
$= \frac{1}{5}$

Summary
M = 6u
W = 24u
B = 9u
G = 11u

Difference (W and B) = 24u – 9u
= 15u
15u = 75
1u = 75 ÷ 15
= 5
Total = 30u + 20u
= 50u
50u = 50 × 5
= 250
There are **250** people in the tour group.

Answers to Unit 1.1 – Repeated Items

Question 3

$O = 1u^{\times 2}$ (2u)
$L + M + N = 9u^{\times 2}$ (18u)

$L = 4u^{\times 2}$ (8u)
$M + N = 5u^{\times 2}$ (10u)
$L + M + N = 9u^{\times 2}$ (18u)

M = 3u
N = 7u
M + N = 10u

Summary
L = 8u
M = 3u
N = 7u
O = 2u

Total = 8u + 3u + 7u + 2u
= 20u
20u = 310
1u = 310 ÷ 20
= 15.5
3u = 3 × 15.5
= 46.5
Mary raised **$46.50**.

Question 4

$S = 3u^{\times 5}$ (15u)
$T = 7u^{\times 5}$ (35u)

$L = 4u^{\times 7}$ (28u)
$T = 5u^{\times 7}$ (35u)

Summary
S = 15u
L = 28u
T = 35u

Difference (L and S) = 28u – 15u
= 13u
13u = 26
1u = 26 ÷ 13
= 2
Difference (T and S) = 35u – 15u
= 20u
20u = 20 × 2
= 40
Tom is **40 cm** taller than Sam.

Let's Practise 1.2

Question 1

At first

G = $3u^{\times 7}$ (21u)

V + F = $5u^{\times 7}$ (35u)

End

G = $7u^{\times 3}$ (21u)

V + F = $13u^{\times 3}$ (39u)

Working

37.5% = $\frac{37.5}{100}$

= $\frac{3}{8}$

35% = $\frac{35}{100}$

= $\frac{7}{20}$

Change = 39u – 35u

= 4u

4u = 12

1u = 12 ÷ 4

= 3

Total (end) = 21u + 39u

= 60u

60u = 60 × 3

= 180

The music department had **180** instruments in the end.

Question 2

A = $3u^{\times 2}$ (6u)

C = $7u^{\times 2}$ (14u)

B = $1u^{\times 7}$ (7u)

G = $1u^{\times 7}$ (7u)

C = $2u^{\times 7}$ (14u)

Summary

A = 6u

B = 7u

G = 7u

Working

80% = $\frac{80}{100}$

= $\frac{4}{5}$

At first

A + B = $13u^{\times 4}$ (52u)

G = $7u^{\times 4}$ (28u)

End

A + B = $1u^{\times 7}$ (7u)

G = $4u^{\times 7}$ (28u)

Change = 52u – 7u

= 45u

45u = 90

1u = 90 ÷ 45

= 2

28u = 28 × 2

= 56

There were **56** girls in the swimming pool.

Question 3

At first

C = $3u^{\times 2}$ (6u)

V = $5u^{\times 2}$ (10u)

End

C = $1u^{\times 5}$ (5u)

V = $2u^{\times 5}$ (10u)

Change = 6u – 5u

= 1u

1u = 5

10u = 10 × 5

= 50

There were **50** vanilla cakes.

Question 4

At first

B = 3u

Y = 1u

End

B = $1u^{\times 3}$ (3u)

V = $1u^{\times 3}$ (3u)

Change = 3u – 1u

= 2u

2u = 16

Difference (B and Y) = 3u – 1u

= 2u

= 16

Jenny had **16** more blue stickers than yellow stickers at first.

Let's Practise 1.3

Question 1

A + B = $5u^{\times 2}$ (10u)

B + C = $7u^{\times 2}$ (14u)

Difference = $2u^{\times 2}$ (4u)

A = 3u

C = 7u

Difference = 4u

semicircle = A + B

triangle = B + C

Summary

A = 3u

B = 7u

C = 7u

7u = 77

1u = 77 ÷ 7

= 11

Total = 3u + 7u + 7u

= 17u

17u = 17 × 11

= 187

The total area of the figure is **187 cm²**.

+hinkingMath™

Answers to Unit 1.3 – Difference Unchanged

Question 2

6 years ago	In 6 year's time
E = 3u	E = $2u^{\times 2}$ (4u)
T = 5u	T = $3u^{\times 2}$ (6u)
Difference = 2u	Difference = $1u^{\times 2}$ (2u)

1u = 6 + 6
= 12

Total age (6 years' ago) = 3u + 5u
= 8u

Total age (now) = 8u + 12
= 8 × 12 + 12
= 108

The sum of their current ages is **108 years**.

Question 3

At first	End
C = 620	C = 1u
R = 980	R = 3u
Difference = 360	Difference = 2u

2u = 360
1u = 360 ÷ 2
= 180

Difference (C) = 620 – 180
= 440

440 toy cars were sold.

Question 4

Now

5 year's time

2u = 73 – 5 – 5 – 17
= 46

1u = 46 ÷ 2
= 23

Mother's current age = 1u + 17
= 23 + 17
= 40

Mother's age in 2 years' time = 40 + 2
= 42

Sarah's mother will be **42 years old** in 2 years' time.

Answers to Unit 1.4 – All Items Changed

Let's Practise 1.4

Question 1

(Actual)	S	C
At first	$4u^{\times 3}$	$9u^{\times 5}$
Change	$+ 30^{\times 3}$	$– 15^{\times 5}$
End	$5p^{\times 3}$	$3p^{\times 5}$

(Working)	S	C
At first	12u	45u
Change	+ 90	– 75
End	15p	15p

45u – 12u = 90 + 75
33u = 165
1u = 165 ÷ 33
= 5

4u = 4 × 5
= 20

Shelly had **20** figurines at first.

Question 2

(Actual)	P	Q
At first	$3u^{\times 2}$	$4u^{\times 3}$
Change	$– 30^{\times 2}$	$– 140^{\times 3}$
End	$3p^{\times 2}$	$2p^{\times 3}$

(Working)	P	Q
At first	6u	12u
Change	– 60	– 420
End	6p	6p

6u = 360
1u = 360 ÷ 6
= 60

4u – 140 = 4 × 60 – 140
= 100

There was **100 ℓ** of water in Tank Q in the end.

Answers to Unit 1.4 – All Items Changed

Question 3

(Actual)	G	K
At first	$1u^{\times 2}$	4u
Change	$+ 20^{\times 2}$	+ 10
End	$1p^{\times 2}$	2p

(Working)	G	K
At first	2u	4u
Change	+ 40	+ 10
End	2p	2p

G	2u	40	
K	2u	2u	10

2u = 40 – 10
= 30
1u = 30 ÷ 2
= 15

There were **15** goldfish in the pond at first.

Question 4

(Actual)	R	B
At first	$1u^{\times 5}$	3u
Change	$– 20^{\times 5}$	+ 30
End	$1p^{\times 5}$	5p

(Working)	R	B
At first	5u	3u
Change	– 100	+ 30
End	5p	5p

2u = 30 + 100
= 130
1u = 130 ÷ 2
= 65
3u = 3 × 65
= 195

There were **195** blue pens at first.

Answers to Unit 1.5 – Quantity × Value

Let's Practise 1.5

Question 1

B = 5u
T = 1u

C = $2u^{\times 5}$ (10u)
B = $1u^{\times 5}$ (5u)

Summary
B = 5u
T = 1u
C = 10u

Items	Quantity	×	Value ($)	Total value ($)
B	5u	×	22	110u
T	1u	×	12	12u
C	10u	×	32	320u
Total	16u			442u

442u = 884
1u = 884 ÷ 442
= 2
16u = 16 × 2
= 32

Mr Jackson bought a total of **32** ties, belts and pairs of cufflinks.

Question 2

Items	Quantity	×	Value ($)	Total value ($)
C	24	×	7u	168u
S	14	×	2u	28u
Total	38			196u

196u = 215.6
1u = 215.6 ÷ 196
= 1.1
7u = 7 × 1.1
= 7.7

A cup cost **$7.70**.

Question 3

Items	Quantity	×	Value (legs)	Total value (legs)
D	4u	×	2	8u
S	1u	×	4	4u
Total	5u			12u

12u = 336
1u = 336 ÷ 12
= 28
3u = 3 × 28
= 84

There are **84** more ducks than sheep on the farm.

Answers to Unit 1.5 – Quantity × Value

Question 4

B = 4u$^{\times 4}$ (16u)
G = 5u$^{\times 4}$ (20u)
S = 9u$^{\times 4}$ (36u)

T = 1u$^{\times 9}$ (9u)
S = 4u$^{\times 9}$ (36u)

Summary
B = 16u
G = 20u
T = 9u

Items	Quantity	×	Value ($)	Total value ($)
B	16u	×	2	32u
G	20u	×	3	60u
T	9u	×	8	72u
Total	45u			164u

Difference (T and B) = 72u – 32u
= 40u

40u = 120
1u = 120 ÷ 40
= 3

T and G = 9u + 20u
= 29u

29u = 29 × 3
= 87

A total of **87** teachers and girl students are at the event.

Answers to Unit 1.6 – Branching

Let's Practise 1.6

Question 1

1u = 210
6u = 6 × 210
= 1260

$\frac{7}{10}$ of bottle = 1260
$\frac{1}{10}$ of bottle = 1260 ÷ 7
= 180
$\frac{3}{10}$ of bottle = 3 ×180
= 540

540 – 210 = 330

Mrs Wong would need to prepare **330 mℓ** more to fill up the bottle completely.

Answers to Unit 1.6 – Branching

Question 2

$\frac{3}{4}$R = 3 + 15
= 18

$\frac{1}{4}$R = 18 ÷ 3
= 6

$\frac{4}{4}$R = 6 × 4
= 24

$\frac{3}{8}$T = 24 + 3
= 27

$\frac{1}{8}$T = 27 ÷ 3
= 9

$\frac{8}{8}$T = 8 × 9
= 72

Lina used a total of **72** pieces of origami paper.

Question 3

7.8 kg = 7800 g
65u = 7800
1u = 7800 ÷ 65
= 120
15u = 15 × 120
= 1800
1800 g = 1 kg 800 g

There was **1 kg 800 g** of flour left in the container.

Answers to Unit 1.6 – Branching

Question 4

4u = 80

1u = 80 ÷ 4

= 20

No. of loaves of bread sold in afternoon = 3u

= 3 × 20

= 60

Revenue = 60 × $3

= $180

Total revenue from the sale of bread in the afternoon was **$180**.

Answers to Unit 1.7 – Numerators the Same

Let's Practise 1.7

Question 1

$\frac{2}{3}$ M = $\frac{3}{5}$ F

$\frac{6}{9}$ M = $\frac{6}{10}$ F

M = 9u

W = 10u

Total = 9u + 10u

= 19u

19u = 190

1u = 190 ÷ 19

= 10

Total children = 3u + 4u

= 7u

7u = 7 × 10

= 70

There were **70** children at the engagement party.

Question 2

$\frac{9}{10}$ S = $\frac{3}{4}$ M

$\frac{9}{10}$ S = $\frac{9}{12}$ M

$\frac{9}{10}$ S = $\frac{4}{5}$ C

$\frac{36}{40}$ S = $\frac{36}{45}$ C

Answers to Unit 1.7 – Numerators the Same

Question 2 (Cont.)

S = 10u$^{\times 4}$ (40u)

M = 12u$^{\times 4}$ (48u)

S = 40u

C = 45u

Summary

S = 40u

M = 48u

C = 45u

48u = 96

1u = 96 ÷ 48

= 2

Total = 40u + 48u + 45u

= 133u

133u = 133 × 2

= 266

Karen's total score was **266** marks.

Question 3

$\frac{3}{5}$ B = $\frac{2}{3}$ C

$\frac{6}{10}$ B = $\frac{6}{9}$ C

B = 10u

C = 9u

Difference = 1u

= 60

No. of beef pies in the morning = 10u

= 10 × 60

= 600

No. of beef pies sold = $\frac{2}{5}$ × 600

= 240

Mr Tan sold **240** beef pies.

Question 4

$\frac{3}{4}$ L is 3 times of $\frac{1}{3}$ T

T = 3u

L = 4u

Difference = 1u

= 42

4u = 4 × 42

= 168

Lily had **168** beads.

Chapter 2 Advanced Model Drawing

Answers to Unit 2 – Advanced Model Drawing

Let's Get Started 2

2.

	At first	Sold	End (Left)
T	$\frac{2}{2}$ (10u + 32)	$\frac{1}{2}$ (5u + 16)	$\frac{1}{2}$ (5u + 16)
P	$\frac{10}{10}$ (10u)	$\frac{3}{10}$ (3u)	$\frac{7}{10}$ (7u)

3.

	End	Sold	At first
R	$\frac{1}{4}$ (3u + 15)	$\frac{3}{4}$ (9u + 45)	$\frac{4}{4}$ (12u + 60)
G	$\frac{3}{10}$ (3u)	$\frac{7}{10}$ (7u)	$\frac{10}{10}$ (10u)

4.

	At first	Spent	End (Left)
K	$\frac{8}{8}$ (40u)	$\frac{1}{8}$ (5u)	$\frac{7}{8}$ (35u)
L	$\frac{5}{5}$ (40u)	$\frac{2}{5}$ (16u)	$\frac{3}{5}$ (24u)

Answers to Unit 2 – Advanced Model Drawing

Let's Learn 2

Ask Yourself

1. Sufficient information is given at the beginning of the problem to form a relationship and solve the problem.
2. The problem can be solved using the Model-drawing approach because it involves the keywords 'more than / less than' as well as a whole number.

Answers to Unit 2 – Advanced Model Drawing (More Than / Less Than)

Let's Practise 2

Question 1

	At first	Cleared	End (Left)
C	$\frac{3}{3}$ (15u + 24)	$\frac{2}{3}$ (10u + 16)	$\frac{1}{3}$ (5u + 8)
L	$\frac{5}{5}$ (15u)	$\frac{1}{5}$ (3u)	$\frac{4}{5}$ (12u)

7u = 8 + 20

= 28

1u = 28 ÷ 7

= 4

10u + 16 = 10 × 4 + 16

= 56

56 cars cleared the gantry.

Question 2

	Total	Took part	Did not
B	$\frac{8}{8}$ (40u + 112)	$\frac{5}{8}$ (25u + 70)	$\frac{3}{8}$ (15u + 42)
G	$\frac{5}{5}$ (40u)	$\frac{2}{5}$ (16u)	$\frac{3}{5}$ (24u)

Question 2 (Cont.)

Did not

9u = 27

1u = 27 ÷ 9

= 3

Total (took part) = 25u + 70 + 16u

= 41u + 70

41u + 70 = 41 × 3 + 70

= 193

193 students took part in the performance.

Question 3

At first

	At first	Sold	End (Left)
C	$\frac{9}{9}$ (36u + 45)	$\frac{5}{9}$ (20u + 25)	$\frac{4}{9}$ (16u + 20)
J	$\frac{4}{4}$ (36u)	$\frac{1}{4}$ (9u)	$\frac{3}{4}$ (27u)

Sold

20u – 9u = 11u

11u = 66

1u = 66 ÷ 11

= 6

Total (end) = 16u + 20 + 27u

= 43u + 20

43u + 20 = 43 × 6 + 20

= 278

There were a total of **278** crossword puzzle books and jigsaw puzzles that remained.

Answers to Unit 2 – Advanced Model Drawing
(More Than / Less Than)

Question 4

		At first
T	$\frac{3}{5}$ (12u + 30)	$\frac{5}{5}$ (20u + 50)
S	$\frac{4}{5}$ (12u)	$\frac{5}{5}$ (15u)

At first

15u + 15u + 5u = 155 – 50

35u = 105

1u = 105 ÷ 35

= 3

T (at first) = 20u + 50

= 20 × 3 + 50

= 110

T (left) = $\frac{7}{10}$ × 110

= 77

77 table lamps remained.

Answers to Unit 2 – Advanced Model Drawing
(Equal Stage At First)

Let's Practise 2

Question 1

At first

End

2u = 300 – 74

= 226

1u = 226 ÷ 2

= 113

7u – 200 = 7 × 113 – 200

= 591

Deanna had **$591** in the end.

Answers to Unit 2 – Advanced Model Drawing (Equal Stage At First)

Question 2

At first

End

10u + 7u + 25u = 78 + 48

42u = 126

1u = 126 ÷ 42

= 3

25u = 25 × 3

= 75

Each of them received **75** pins at first.

Answers to Unit 2 – Advanced Model Drawing (Equal Stage End)

Let's Practise 2

Question 1

End

At first

15u + 15u + 15u + 5u + 9u = 298 + 56

59u = 354

1u = 354 ÷ 59

= 6

15u – 56 = 15 × 6 – 56

= 34

Davis had **34** cards at first.

Answers to Unit 2 – Advanced Model Drawing (Equal Stage End)

Question 2

End

At first

28u = 252

1u = 252 ÷ 28

= 9

Total (at first) = 20u + 252 + 252 + 222 + 35u

= 20 × 9 + 726 + 35 × 9

= 1221

They made **1221** balloons altogether at first.

Answers to Unit 2 – Advanced Model Drawing (Repeated Items)

Let's Practise 2

Question 1

$\frac{3}{25}$ Total = 3u

$\frac{1}{25}$ Total = 1u

$\frac{25}{25}$ Total = 25u

25u – 3u – 3u – 1u = 216 + 72

18u = 288

1u = 288 ÷ 18

= 16

25u = 25 × 16

= 400

There are **400** buns in the bakery shop.

Question 2

Question 2 (Cont.)

5u = 6 + 15 + 6 + 23

= 50

1u = 50 ÷ 5

= 10

2u + 6 = 2 × 10 + 6

= 26

There are **26** rings in the shop.

Let's Practise 2

Question 1

At first

B	10u	200
K	10u	

	At first	Change	End
B	$\frac{10}{10}$ (10u + 200)	– $\frac{3}{10}$ (3u + 60)	$\frac{7}{10}$ (7u + 140)
K	10u	+ (3u + 60)	13u + 60

End

B	7u	126	14	
K	13u		14	46

13u – 7u = 126

6u = 126

1u = 126 ÷ 6

= 21

3u + 60 = 3 × 21 + 60

= 123

123 people had moved to Kusu Beach.

Question 2

At first

A	12u	
B	12u	48

	At first	Change	End
A	12u	+ (5u + 20)	17u + 20
B	$\frac{12}{12}$ (12u + 48)	– $\frac{5}{12}$ (5u + 20)	$\frac{7}{12}$ (7u + 28)

End

17u

A	7u	28	2	20
B	7u	28		

Question 2 (Cont.)

17u – 7u = 28 + 2

10u = 30

1u = 30 ÷ 10

= 3

24u + 48 = 24 × 3 + 48

= 120

There are **120** children altogether at both campsites.

Question 3

At first

L	5u	2400
M	5u	

1st change

	At first	Change	
L	$\frac{5}{5}$ (5u + 2400)	– $\frac{3}{5}$ (3u + 1440)	$\frac{2}{5}$ (2u + 960)
M	5u	+ (3u + 1440)	8u + 1440

2nd change

		Change	End
L	2u + 960	+ (2u + 360)	4u + 1320
M	$\frac{4}{4}$ (8u + 1440)	– $\frac{1}{4}$ (2u + 360)	$\frac{3}{4}$ (6u + 1080)

End

L	4u	52	1080	188
M	4u	2u	1080	

2u = 52

1u = 52 ÷ 2

= 26

3u + 1440 = 3 × 26 + 1440

= 1518

Lynette transferred **$1518** to Michelle.

Question 4

At first

H	5u	45
L	5u	

1st change

	At first	Change	
H	$\frac{5}{5}$ (5u + 45)	– $\frac{1}{5}$ (1u + 9)	$\frac{4}{5}$ (4u + 36)
L	5u	+ (1u + 9)	6u + 9

Question 4 (Cont.)

2nd change

		Change	End
H	4u + 36	+ (4u + 6)	8u + 42
L	$\frac{3}{3}$ (6u + 9)	$-\frac{2}{3}$ (4u + 6)	$\frac{1}{3}$ (2u + 3)

End

8u – 2u = 3 + 27

6u = 30

1u = 30 ÷ 6

= 5

1u + 9 = 5 + 9

= 14

Mrs Hagen gave Letilia **14** dumplings.

Chapter 3 Number Patterns

Let's Get Started 3.1

1.

Figure no.	1	2	3	4	5	6	…	18
No. of dots	2	5	8	11	14			

+3 +3 +3 +3

(a) Difference is **3**.

(b) Test (Figure 1): 1 × 3 – 1 = 2

Test (Figure 2): 2 × 3 – 1 = 5

Unique term (No. of dots) = Figure no. × 3 – 1

(c) No. of dots in Figure 6 = 6 × 3 – 1

= **17**

No. of dots in Figure 18 = 18 × 3 – 1

= **53**

2. (a) Difference = 7 – 3

= **4**

(b) Unique term (No. of dots) = Figure no. × 4 – 1

(c) No. of dots in Figure 6 = 6 × 4 – 1

= **23**

No. of dots in Figure 15 = 15 × 4 – 1

= **59**

Let's Learn 3.1

Ask Yourself

1. There is an increase of 1 in the number of squares. This number pattern has a common difference.

2. The number of squares corresponds to the figure no.

Think Further

(a)

Figure no.	Pattern to find no. of squares	Pattern to find no. of circles
1	1 × 2	1 × 4 + 2
2	2 × 2	2 × 4 + 2
3	3 × 2	3 × 4 + 2
4	4 × 2	4 × 4 + 2 = 18
5	5 × 2	5 × 4 + 2 = 22

(b) Unique term (No. of circles) = Figure no. × 4 + 2

Let's Practise 3.1

Question 1

(a)

Figure no.	No. of triangles	Total no. of dots
1	**2**	**10**
2	**4**	**14**
3	**6**	**18**
4	**8**	**22**
5	**10**	**26**

(b) Unique term (No. of triangles) = Figure no. × 2

No. of triangles in Figure 83 = 83 × 2

= 166

166 triangles were used in Figure 83.

(c) Unique term (Total no. of dots) = Figure no. × 4 + 6

Working backwards:

Figure no. × 4 = 282 – 6

= 276

Figure no. = 276 ÷ 4

= 69

There will be 282 dots in Figure **69**.

Answers to Unit 3.1 – Common Difference (Regular Gap)

Question 2

(a)

(b)(i) Unique term (No. of shaded coins)

= Figure no. × 2 + 2

Working backwards:

A × 2 = 40 – 2

= 38

A = 38 ÷ 2

= **19**

(ii) Unique term (No. of unshaded coins) = Figure no.

B = **19**

(iii) Unique term (Total no. of coins) = Figure no. × 3 + 2

C = 19 × 3 + 2

= **59**

Question 3

(a) Unique term (No. of matchsticks) = Figure no. × 5 + 1

No. of matchsticks in Figure 5 = 5 × 5 + 1

= 26

26 matchsticks were used in Figure 5.

(b) Working backwards:

Figure no. × 5 = 131 – 1

= 130

Figure no. = 130 ÷ 5

= 26

The figure number formed was Figure **26**.

Question 4

(a)

(b) Unique term (No. of sides) = Figure no. × 10 + 2

Working backwards:

Figure no. × 10 = 182 – 2

= 180

Figure no. = 180 ÷ 10

= **18**

No. of sides in Figure 500 = 500 × 10 + 2

= **5002**

Answers to Unit 3.2 – Square Numbers

Let's Get Started 3.2

1 (a) $\sqrt{1}$ = **1**; $\sqrt{4}$ = **2**; $\sqrt{9}$ = **3**; $\sqrt{16}$ = **4**

(b) Figure 1: 1 × 1 = 1

Figure 2: 2 × 2 = 4

Figure 3: 3 × 3 = 9

The number of dots in each figure is the square of its figure number or it can be represented as (Figure no. × Figure no.).

(c) No. of dots in Figure 5 = 5 × 5

= **25**

No. of dots in Figure 6 = 6 × 6

= **36**

No. of dots in Figure 13 = 13 × 13

= **169**

2. (a) Figure 1: 1 × 1 = 1

Figure 2: 2 × 2 = 4

Figure 3: 3 × 3 = 9

Figure 4: 4 × 4 = 16

The number of squares in each figure is the square of its figure number.

(b) Unique term (No. of squares)

= Figure no. × Figure no.

Let's Learn 3.2

Ask Yourself

1. The number of circles in each figure is the square of its figure number. This type of number pattern is known as square numbers.

2. Unique term (No. of circles) = Figure no. × Figure no.

Think Further

(a)

Figure no.	No. of circles	Pattern to find no. of circles
1	2	$\mathbf{1}^2 + 1$
2	5	$\mathbf{2}^2 + 1$
3	10	$\mathbf{3}^2 + 1$
4	17	$\mathbf{4}^2 + 1$
5	26	$\mathbf{5}^2 + 1$

(b) Unique term (No. of circles)

= Figure no. × Figure no. + 1

Let's Practise 3.2

Question 1

(a) No. of dots in Figure 5 = 5 × 5
= **25**

(b) Figure no. = $\sqrt{81}$
= **9**

(c) Figure no. = $\sqrt{256}$
= **16**
There will be 256 dots in Figure **16**.

Question 2

(a)

(b) Unique term (No. of circles) = Figure no. × Figure no.
No. of circles = 11 × 11
= 121
There is a total of **121** circles in Figure 11.

(c) No. of triangles = 2
No. of circles = 402 – 2
= 400
Working backwards:
Figure no. = $\sqrt{400}$
= 20
There will be 402 circles and triangles in Figure **20**.

Question 3

Figure no.	No. of shaded rectangles	No. of unshaded rectangles	Total no. of rectangles
1	2	2	4
2	5	4	9
3	8	8	16
4	13	12	25

Total no. of rectangles = (Figure no. + 1) × (Figure no. + 1)

<u>Odd no. figures</u>
No. of shaded rectangles = No. of unshaded rectangles
= Total no. of rectangles ÷ 2

Answers to Unit 3.2 – Square Numbers

Question 3 (Cont.)

<u>Even no. figures</u>
No. of shaded rectangles = (Total no. of rectangles + 1) ÷ 2
No. of unshaded rectangles = No. of shaded rectangles – 1

(a) <u>Figure 16 (even no. figure)</u>
Total no. of rectangles = (16 + 1) × (16 + 1)
= 289
No. of shaded rectangles = (289 + 1) ÷ 2
= 145
There are **145** shaded rectangles in Figure 16.

(b) <u>Check</u>
722 + 722 = 1444 (Square no.? Yes. $\sqrt{1444}$ = 38)
Hence, it is an odd no. figure.
Figure no. = 38 – 1
= 37
There will be 722 shaded rectangles in Figure **37**.

(c) 1058 + 1058 = 2116 (Square no.? Yes. $\sqrt{2116}$ = 46)
Hence, the total number of rectangles is **2116**.

Question 4

(a) Unique term (No. of unshaded squares)
= (Figure no. – 1) × (Figure no. – 1)
No. of unshaded squares in Figure 16 = 15 × 15
= 225
There are **225** unshaded squares in Figure 16.

(b) No. of unshaded squares in Figure 42 = 41 × 41
= 1681
Area of 1 square = 5 cm × 5 cm
= 25 cm^2
Area of unshaded squares = 1681 × 25 cm^2
= 42 025 cm^2
The area of unshaded squares is **42 025 cm^2**

(c) Unique term (No. of shaded squares) = Figure no.
Working backwards:
No. of unshaded squares = 1225 ÷ 25
= 49
= 7^2
No. of shaded squares = 7 + 1
= **8**
There are **8** shaded squares.

Question 4 (Cont.)

(d) No. of shaded squares = 65

No. of unshaded squares = $(65 - 1)^2$

= 4096

Perimeter = (65 × 4) × 5 cm

= 1300 cm

The perimeter of the figure in Figure 65 is **1300 cm**.

Question 5

(a) No. of cubes in Figure 3 = 1 + 4 + 9

= 14

No. of cubes in Figure 4 = 1 + 4 + 9 + 16

= 30

Difference = 30 – 14

= 16

16 more cubes are needed to make Figure 4.

(b) Difference = 10 × 10

= 100

The difference in the total number of cubes is **100**.

(c) No. of cubes in Layer 18 = 18 × 18

= 324

There are **324** cubes in Layer 18 of Figure 90.

Question 6

(a) Unique term (No. of fish)

= (Day no. – 1) × (Day no. – 1) + 7

No. of fish on Day 45 = 44 × 44 + 7

= 1943

The total number of fish on Day 45 is **1943**.

(b) Working backwards:

3488 – 7 = 3481

$\sqrt{3481} = 59$

Day no. = 59 + 1

= 60

On Day **60**, there will be 3488 fish in the pond.

(c) No. of sets = 1573 ÷ 6.5

= 242

No. of fish = 4 × 242

= 968

Question 6 (Cont.)

Working backwards:

968 – 7 = 961

$\sqrt{961} = 31$

Day no. = 31 + 1

= 32

Berlin's father will have earned $1573 on Day **32**.

Answers to Unit 3.3 – Triangle Numbers

Let's Get Started 3.3

1. (a) There is a consecutive increase in the number of dots, where the increase itself goes up by 1 each time (an increase of 2, then 3, then 4, and so on).

(b) No. of dots in Figure 1 = $\frac{1 \times 2}{2}$

= 1

No. of dots in Figure 2 = $\frac{2 \times 3}{2}$

= 3

The number of dots in the consecutive figures follows the rule of triangle numbers where $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$.

2. (a) There is a consecutive increase in the number of squares, where the increase itself goes up by 1 each time.

(b) No. of squares in Figure 1 = $\frac{1 \times 2}{2}$

= 1

No. of squares in Figure 2 = $\frac{2 \times 3}{2}$

= 3

The number of squares in the consecutive figures follows the rule of triangle numbers where $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$.

Unique term = $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$.

Let's Practise 3.3

Question 1

(a) Unique term (No. of circles) = $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$

No. of circles in Figure 12 = $\frac{12 \times 13}{2}$

= 78

There are a total of **78** circles in Figure 12.

(b) Working backwards

1540 × 2 = 3080

$\sqrt{3080} \approx 55$

Test 1: 54 × 55 = 2970

Test 2: 55 × 56 = 3080

There are 1540 circles in Figure **55**.

Question 2

(a) Unique term (No. of circles) = $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$

Total no. of apples on 10th day = $\frac{10 \times 11}{2} \times 10$

= 550

There are **550** apples harvested on the 10th day.

(b) 1530 ÷ 10 = 153

$\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2} = 153$

Figure no. × (Figure no. + 1) = 306

$\sqrt{306} \approx 17$

Test: 17 × 18 = 306

1530 apples are harvested on the **17th** day.

Question 3

(a) Unique term (Total no. of triangles)

= Figure no. × Figure no.

Total no. of triangles in Figure 22 = 22 × 22

= 484

There are **484** triangles in Figure 22.

(b) Working backwards:

$\sqrt{961} = 31$

There will be a total of 961 triangles in Figure **31**.

Answers to Unit 3.3 – Triangle Numbers

Question 3 (Cont.)

(c) Working backwards

Figure no. = $\sqrt{121}$

= 11

Unique term (No. of shaded triangles)

= $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$

No. of shaded triangles in Figure 11 = $\frac{11 \times 12}{2}$

= 66

There are **66** shaded triangles.

(d) Unique term (No. of unshaded triangles)

= $\frac{(\text{Figure no.} - 1) \times \text{Figure no.}}{2}$

Working backwards

2485 × 2 = 4970

$\sqrt{4970} \approx 70$

Test: 70 × 71 = 4970

There will be 2485 unshaded triangles in Figure **71**.

Question 4

(a) Unique term (Total no. of crosses)

= $\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2}$

Total no. of crosses (Figure 5) = $\frac{5 \times 6}{2}$

= **15**

No. of unshaded crosses = 15 – 4

= **11**

Unique term (No. of shaded crosses) = Figure no. – 1

No. of shaded crosses (Figure 8) = 8 – 1

= **7**

Total no. of crosses (Figure 8) = $\frac{8 \times 9}{2}$

= **36**

No. of unshaded crosses = 36 – 7

= **29**

(b) Total no. of crosses (Figure 29) = $\frac{29 \times 30}{2}$

= 435

There is a total of **435** crosses in Figure 29.

(c) Working backwards:

741 × 2 = 1482

$\sqrt{1482} \approx 38$

Test: 38 × 39 = 1482

There will be a total of 741 crosses in Figure **38**.

Question 4 (Cont.)

(d) Working backwards:

2080 × 2 = 4160

$\sqrt{4160} \approx 64$

Test 1: 63 × 64 = 4032

Test 2: 64 × 65 = 4160

No. of shaded crosses (Figure 64) = 64 – 1

= 63

No. of unshaded crosses = 2080 – 63

= 2017

There are **2017** unshaded crosses.

Question 5

(a) No. of blocks at Layer 12 = (12 – 1) × 2

= 22

No. on the extreme right of Layer 12

= 1 + (2 + 4 + 6 + … + 22)

= 1+ 2 × (1 + 2 + 3 + … + 11)

$= 1 + 2 \times \left[\frac{11 \times (11 + 1)}{2}\right]$

= 133

The number on the extreme right of Layer 12 is **133**.

(b) No. of blocks at Layer 68 = (68 – 1) × 2

= 134

No. on the extreme right of Layer 68

= 1 + (2 + 4 + 6 + …+ 134)

= 1 + 2 × (1 + 2 + 3 +…+ 67)

$= 1 + 2 \times \left[\frac{67 \times (67 + 1)}{2}\right]$

= 4557

The number on the extreme right of Layer 68 is **4557**.

(c) Working backwards:

1261 – 1 = 1260

1260 ÷ 2 = 630

$\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2} = 630$

Figure no. × (Figure no. + 1) = 1260

$\sqrt{1260} \approx 35$

Test: 35 × 36 = 1260

Layer: 35 + 1 = 36

In Layer **36**, the number 1261 will be on the extreme right of the layer.

Answers to Unit 3.3 – Triangle Numbers

Question 5 (Cont.)

(d) Working backwards:

2163 – 1 = 2162

2162 ÷ 2 = 1081

$\frac{\text{Figure no.} \times (\text{Figure no.} + 1)}{2} = 1081$

Figure no. × (Figure no. + 1) = 2162

$\sqrt{2162} \approx 46$

Test: 46 × 47 = 2162

Layer: 46 + 1 = 47

No. on the extreme right of Layer 46

$= 1 + 2 \times \left[\frac{45 \times (45 + 1)}{2}\right]$

= 2071

No. on the extreme left of Layer 47

= 2071 + 1

= 2072

The number on the extreme left of the layer is **2072**.

Chapter 4 Circles

Answers to Unit 4.1 – Boomerang and Rugby

Let's Get Started 4.1

1. Area of shaded part

$= 25 \text{ cm} \times 25 \text{ cm} - \frac{1}{4} \times \pi \times 25 \text{ cm} \times 25 \text{ cm}$

≈ **134 cm²** (nearest whole number)

2. Area of shaded part

$= \frac{1}{4} \times \pi \times 5 \text{ cm} \times 5 \text{ cm} - \frac{1}{2} \times 5 \text{ cm} \times 5 \text{ cm}$

≈ **7 cm²** (nearest whole number)

Let's Learn 4.1

Ask Yourself

There are 1 large quadrant of radius 20 cm, 1 small quadrant of radius 8 cm, and a rectangle measuring 8 cm by 20 cm.

Let's Practise 4.1

Question 1

Area of shaded parts

$= 4 \times \left(18 \text{ cm} \times 18 \text{ cm} - \frac{1}{4} \times \pi \times 18 \text{ cm} \times 18 \text{ cm}\right)$

$\approx 278 \text{ cm}^2$ (nearest whole number)

The area of the shaded parts is **278 cm²**.

Question 2

Area of unshaded Region Q

$= 4 \times \left(12 \text{ cm} \times 12 \text{ cm} - \frac{1}{4} \times \pi \times 12 \text{ cm} \times 12 \text{ cm}\right)$

$\approx 124 \text{ cm}^2$ (nearest whole number)

The area of unshaded Region Q is **124 cm²**.

Perimeter of unshaded Region Q

$= 2 \times \pi \times 12 \text{ cm}$

≈ 75 cm (nearest whole number)

The perimeter of the unshaded Region Q is **75 cm**.

Question 3

Area of shaded region

$= 6 \times \left(12 \text{ cm} \times 12 \text{ cm} - \frac{1}{4} \times 3.14 \times 12 \text{ cm} \times 12 \text{ cm}\right)$

$= 185.76 \text{ cm}^2$

The area of the shaded region is **185.76 cm²**.

Perimeter of shaded region

$= \frac{3}{2} \times 2 \times 3.14 \times 12 \text{ cm} + 36 \text{ cm} + 24 \text{ cm} + 36 \text{ cm}$

$= 209.04$ cm

The perimeter of the shaded region is **209.04 cm**.

Question 4

Area of shaded part

$= 2 \times \left(\frac{1}{4} \times \pi \times 5 \text{ cm} \times 5 \text{ cm} - \frac{1}{2} \times 5 \text{ cm} \times 5 \text{ cm}\right)$

$\approx 14 \text{ cm}^2$ (nearest whole number)

The area of the shaded part is **14 cm²**.

Question 5

Area of shaded region

$= 7 \times \left(\frac{1}{4} \times \pi \times 20 \text{ cm} \times 20 \text{ cm} - \frac{1}{2} \times 20 \text{ cm} \times 20 \text{ cm}\right)$

$= (700\pi - 1400) \text{ cm}^2$

Area of unshaded regions

$= \pi \times 20 \text{ cm} \times 20 \text{ cm} - (700\pi - 1400) \text{ cm}^2$

$\approx 458 \text{ cm}^2$ (nearest whole number)

The area of the unshaded region is **458 cm²**.

Question 6

Perimeter of shaded region

$= \frac{1}{2} \times \pi \times 36 \text{ cm} + \frac{3}{2} \times \pi \times 12 \text{ cm}$

$= 36\pi$ cm

The perimeter of the shaded region is **36π cm**.

Area of shaded region

$= \frac{1}{2} \times \pi \times 18 \text{ cm} \times 18 \text{ cm} - \frac{3}{2} \times \pi \times 6 \text{ cm} \times 6 \text{ cm}$

$= 108\pi \text{ cm}^2$

The area of the shaded region is **108π cm²**.

Question 7

Diameter of small circle = 16 cm

Diameter of medium circle = 32 cm

Area of unshaded region

$= 2 \times \pi \times 8 \text{ cm} \times 8 \text{ cm} + \pi \times 16 \text{ cm} \times 16 \text{ cm}$

$= 384\pi \text{ cm}^2$

Area of shaded region $= \pi \times 32 \text{ cm} \times 32 \text{ cm} - 384\pi \text{ cm}^2$

$= 640\pi \text{ cm}^2$

The area of the shaded region is **640π cm²**.

Question 8

Area of A

$= 2 \times \left(\frac{1}{4} \times \pi \times 10 \text{ cm} \times 10 \text{ cm} - \frac{1}{2} \times 10 \text{ cm} \times 10 \text{ cm}\right)$

$= 2 \times (25\pi - 50) \text{ cm}^2$

$= (50\pi - 100) \text{ cm}^2$

The area of Part A is **(50π – 100) cm²**.

Area of C

$= \frac{1}{4} \times \pi \times 20 \text{ cm} \times 20 \text{ cm} - \frac{1}{2} \times \pi \times 10 \text{ cm} \times 10 \text{ cm}$

$- 10 \text{ cm} \times 10 \text{ cm}$

$= (100\pi - 50\pi - 100) \text{ cm}^2$

$= (50\pi - 100) \text{ cm}^2$

The area of Part C is **(50π – 100) cm²**.

Let's Learn 4.2

Ask Yourself

1. Yes, the figure is made up of 1 semicircle of diameter 20 cm and 1 quadrant of radius 10 cm, enclosed in a square of side 20 cm.

2. Yes, adding lines would help to better distinguish the individual shapes.

Let's Practise 4.2

Question 1

Area of the shaded parts

$= 2 \times \frac{1}{2} \times 36 \text{ cm} \times 18 \text{ cm}$

$= 648 \text{ cm}^2$

The area of the shaded parts is **648 cm²**.

Question 2

Diameter of big circle = 3 × 14 cm

= 42 cm

Area of the big circle = $\pi \times 21 \text{ cm} \times 21 \text{ cm}$

$= \frac{22}{7} \times 21 \text{ cm} \times 21 \text{ cm}$

$= 1386 \text{ cm}^2$

Area of 7 small circles = $7 \times \left(\frac{22}{7} \times 7 \text{ cm} \times 7 \text{ cm}\right)$

$= 1078 \text{ cm}^2$

Area of shaded parts = $\frac{1386 - 1078}{6} \text{ cm}^2$

$= 51\frac{1}{3} \text{ cm}^2$

The area of the shaded parts is **$51\frac{1}{3}$ cm².**

Question 3

Area of the shaded parts = 3.14 × 10 cm × 10 cm

= 314 cm²

The area of the shaded parts is **314 cm²**.

Answers to Unit 4.2 – Cut and Paste

Question 4

Area of figure = $\frac{5}{4} \times \frac{22}{7} \times 7 \text{ cm} \times 7 \text{ cm}$

$= 192.5 \text{ cm}^2$

The area of the figure is **192.5 cm²**.

Perimeter of figure = $\frac{5}{4} \times 2 \times \frac{22}{7} \times 7 \text{ cm} + 2 \times 7 \text{ cm}$

= 69 cm

The perimeter of the figure is **69 cm**.

Question 5

Area of shaded figure (3 small squares) = 192 cm²

Area of 1 small square = 192 cm² ÷ 3

= 64 cm²

Side of square = $\sqrt{64}$ cm

= 8 cm

Radius of quadrant = 2 × 8 cm

= 16 cm

Perimeter of shaded part

$= \frac{1}{2} \times 2 \times 3.14 \times 16 \text{ cm} + 4 \times 8 \text{ cm}$

= 82.24 cm

The perimeter of the shaded part is **82.24 cm**.

Question 6

Area of quadrant = $\frac{1}{4} \times \frac{22}{7} \times 42 \text{ cm} \times 42 \text{ cm}$

$= 1386 \text{ cm}^2$

Area of square = 21 cm × 21 cm

$= 441 \text{ cm}^2$

Area of the figure

$= 2 \times (1386 - 441) \text{ cm}^2 + 3 \times 441 \text{ cm}^2$

$= 3213 \text{ cm}^2$

The area of the figure is **3213 cm²**.

Question 1

(a) BN = 1u, BC = 3u and AB = 3u + 1u
= 4u

Perimeter = 4u + 3u + 4u + 3u
= 14u

14u = 84 cm
1u = 84 cm ÷ 14
= 6 cm
3u = 3 × 6 cm
= 18 cm

The length of each small rectangle is **18 cm**.

(b) BN = 6 cm, BC = 18 cm and AB = 4 × 6 cm
= 24 cm

Area of ABCD = 24 cm × 18 cm
= 432 cm^2

Area of shaded portions

$= 432\ cm^2 - \left(\frac{1}{4} \times 3.14 \times 18\ cm \times 18\ cm\right) + 6\ cm \times 6\ cm$

= 213.66 cm^2

The total area of the shaded portions is **213.66 cm^2**.

Question 2

(a) Circumference of ABC = $\frac{1}{2} \times 2 \times 3.14 \times 3$ cm
= 9.42 cm

Circumference of CDE = $\frac{1}{2} \times 2 \times 3.14 \times 4$ cm
= 12.56 cm

Circumference of ACE = $\frac{1}{2} \times 2 \times 3.14 \times 5$ cm
= 15.7 cm

Area of square PQRS = $2 \times \frac{1}{2} \times 10\ cm \times 5\ cm$
= 50 cm^2

Length PQ = $\sqrt{50}$ cm

Perimeter of PQRS = $4 \times \sqrt{50}$ cm

Perimeter of the shaded regions

= 9.42 cm + 12.56 cm + 15.7 cm + $4 \times \sqrt{50}$ cm

≈ 65.96 cm

The total perimeter of the 3 shaded regions is **65.96 cm**.

Answers to Review Questions on Chapter 4

Question 2 (Cont.)

(b) Area of PQRS = 50 cm^2

Area of unshaded part in semicircle ACE not covered by triangle ACE

$= \frac{1}{2} \times 3.14 \times 5\ cm \times 5\ cm - \frac{1}{2} \times 6\ cm \times 8\ cm$

= 15.25 cm^2

Area of shaded parts in semicircles ABC and CDE

$= \frac{1}{2} \times 3.14 \times 3\ cm \times 3\ cm + \frac{1}{2} \times 3.14 \times 4\ cm \times 4\ cm$
$- 15.25\ cm^2$

= 24 cm^2

Area of shaded parts = 50 cm^2 + 24 cm^2
= 74 cm^2

The total area of the 3 shaded regions is **74 cm^2**.

Question 3

(a) OMNL is a rectangle, ON = LM = 5 cm

OA = ON = 5 cm (radius of circle)

OL = 5 cm – 2 cm
= 3 cm

The length of OL is **3 cm**.

(b) Area of shaded triangle = $\frac{1}{2} \times 4\ cm \times 3\ cm$
= 6 cm^2

Area of shaded $\frac{3}{4}$ - circle = $\frac{3}{4} \times \pi \times 5\ cm \times 5\ cm$
= 18.75π cm^2

Area of shaded parts = 6 cm^2 + 18.75π cm^2
≈ 64.9 cm^2 (to 1 decimal place)

The area of the shaded parts is **64.9 cm^2**.

Question 4

Area of 4 half-rugby

$= 4 \times \left(\frac{1}{4} \times \pi \times 4\ cm \times 4\ cm - \frac{1}{2} \times 4\ cm \times 4\ cm\right)$

= $4 \times (4\pi - 8)$ cm^2

= $(16\pi - 32)$ cm^2

Area of shaded parts in the square

$= 2 \times \left(\frac{1}{2} \times 16\ cm \times 8\ cm\right) - 2 \times \left(\frac{1}{2} \times \pi \times 4\ cm \times 4\ cm\right)$
$- 2 \times \left(\frac{1}{2} \times 8\ cm \times 4\ cm\right)$

= $(96 - 16\pi)$ cm^2

Area of shaded parts = $(16\pi - 32)$ cm^2 + $(96 - 16\pi)$ cm^2
= 64 cm^2

The total area of the shaded parts is **64 cm^2.**

Answers to Review Questions on Chapter 4

Question 5

Area of the shaded parts

= Area of 2 quadrants + 2 triangles

= Area of 1 semicircle + 1 square

$= \frac{1}{2} \times \pi \times 9 \text{ cm} \times 9 \text{ cm} + 9 \text{ cm} \times 9 \text{ cm}$

$\approx 208.2 \text{ cm}^2$ (to 1 decimal place)

The area of shaded parts is **208.2 cm²**.

Question 6

A + B = 110

A + B + C = 180

C = 180 – 110

= 70

B + C + D = 130

B + D = 130 – 70

= 60

The combined area of regions B and D is **60 cm².**

Question 7

EC = 7.5 cm

Area of the shaded part

= Area of triangle BCD + half-ruby

$= \frac{1}{2} \times 12 \text{ cm} \times 7.5 \text{ cm}$

$+ \left(\frac{1}{4} \times \pi \times 7.5 \text{ cm} \times 7.5 \text{ cm} - \frac{1}{2} \times 7.5 \text{ cm} \times 7.5 \text{ cm}\right)$

$= 45 \text{ cm}^2 + 16.0536 \text{ cm}^2$

$\approx 61.05 \text{ cm}^2$ (to 2 decimal places)

The area of shaded parts is **61.05 cm²**.

Question 8

Area of the shaded parts

= Area of square – 8 half-rugby

$= 2 \times \left(\frac{1}{2} \times 32 \text{ cm} \times 16 \text{ cm}\right)$

$- 8 \times \left(\frac{1}{4} \times 3.14 \times 8 \text{ cm} \times 8 \text{ cm} - \frac{1}{2} \times 8 \text{ cm} \times 8 \text{ cm}\right)$

$= 512 \text{ cm}^2 - 145.92 \text{ cm}^2$

$= 336.08 \text{ cm}^2$

The total area of shaded parts is **336.08 cm²**.

Chapter 5 Ratio

Answers to Unit 5.1 – Repeated Items

Let's Get Started 5.1

Step1	What item(s) is / are repeated?	Step 2
S : H **P : S** $1^{\times 4} : 6^{\times 4}$ 9 : 4 4 : 24	S	**S : H : P** 4 : 24 : 9
C : D **A : C + D** 5 : 9 $2^{\times 2} : 7^{\times 2}$ 4 : 14	C + D	**A : C : D** 4 : 5 : 9
X : Y : Z $9^{\times 2} : 2^{\times 2} : 4^{\times 2}$ 18 : 4 : 8 **W : X + Y** $5^{\times 11} : 2^{\times 11}$ 55 : 22	X + Y	**W : X : Y : Z** 55 : 18 : 4 : 8

Let's Learn 5.1

Ask Yourself

1. The girls shared biscuits, and their quantities are given in sets of ratio among them.
2. Since Hannah is the Repeated Item, the number of units representing Hannah in both ratios must be made the same using the principle of the First Common Multiple (FCM) of 5 and 4, which is 20.

Let's Practise 5.1

Question 1

J : D J : K

$1^{\times 3} : 8^{\times 3}$ 3 : 1

3 : 24

Summary

J : D : K

3 : 24 : 1

Total = 3u + 24u + 1u

= 28u

Question 1 (Cont.)

28u = 280
1u = 280 ÷ 28
= 10
Difference = 24u – 1u
= 23u
23u = 23 × 10
= 230
Duncan had **230** more coins than Keith.

Question 2

B : A	A : C
$3^{\times 4} : 5^{\times 4}$	$4^{\times 5} : 1^{\times 5}$
12 : 20	20 : 5

Summary
A : B : C : Total
20 : 12 : 5 : 37

Difference = 20u – 12u
= 8u
8u = 160
1u = 160 ÷ 8
= 20
37u = 37 × 20
= 740
The sum of money was **$740**.

Question 3

J : E + G : Total	E : J + G : Total
$1^{\times 13} : 4^{\times 13} : 5^{\times 13}$	$3^{\times 5} : 10^{\times 5} : 13^{\times 5}$
13 : 52 : 65	15 : 50 : 65

Summary
E : G : J
15 : 37 : 13

65u = 130
1u = 130 ÷ 65
= 2
Difference = 37u – 13u
= 24u
24u = 24 × 2
= 48
Grace has **48** more playing cards than Jason.

Answers to Unit 5.1 – Repeated Items

Question 4

G : C + J : Total	J : G + C : Total
$2^{\times 4} : 3^{\times 4} : 5^{\times 4}$	$1^{\times 5} : 3^{\times 5} : 4^{\times 5}$
8 : 12 : 20	5 : 15 : 20

Summary
C : G : J
7 : 8 : 5

Total = 7u + 8u + 5u
= 20u
20u = 560
1u = 560 ÷ 20
= 28
Difference = 8u – 5u
= 3u
3u = 3 × 28
= 84
Gillian contributed **$84** more than Joan.

Question 5

A : B : A + B	A + B : B + C
$2^{\times 2} : 1^{\times 2} : 3^{\times 2}$	$2^{\times 3} : 1^{\times 3}$
4 : 2 : 6	6 : 3

Summary
A : B : C
4 : 2 : 1

7u = 49
1u = 49 ÷ 7
= 7
Shaded B = 2u
2u = 2 × 7
= 14
The area of the shaded part of the figure is **14 cm²**.

Question 6

B : C	B : A
$6^{\times 2} : 5^{\times 2}$	$4^{\times 3} : 3^{\times 3}$
12 : 10	12 : 9

Summary
A : B : C
9 : 12 : 10

Answers to Unit 5.1 – Repeated Items

Question 6 (Cont.)

Unshaded = 9u + 10u
= 19u
19u = 38
1u = 38 ÷ 19
= 2
Shaded part B = 12u
12u = 12 × 2
= 24
The area of the shaded part is **24 cm²**.

Answers to Unit 5.2 – Family of Change

Let's Get Started 5.2

At first	End (As a result)	What has not changed?	Find the value of 1 unit.
C : D 2^{x3} : 5^{x3} 6 : 15	C : D 6 : 17	C	17u – 15u = 2u 2u = 4 1u = 2
E : F 4^{x3} : 7^{x3} 12 : 21	E : F 2^{x7} : 3^{x7} 14 : 21	F	14u – 12u = 2u 2u = 22 1u = 11
H : K : Total 3^{x15} : 5^{x15} : 8^{x15} 45 : 75 : 120	H : K : Total 8^{x8} : 7^{x8} : 15^{x8} 64 : 56 : 120	Total (H + K)	64u – 45u = 19 19u = 95 1u = 5
A : O + P 5^{x2} : 3^{x2} 10 : 6	A : O + P 1^{x3} : 2^{x3} 3 : 6	O + P	10u – 3u = 7u 7u = 21 1u = 3

Answers to Unit 5.2 – Family of Change

Let's Learn 5.2

Ask Yourself

1. The change is the removal of 54 $1 coins. To establish the relationship based on this change, we write out the 'At first' and 'End' ratios.
2. There is a change in the ratio because the total number of coins changed after some $1 coins were removed.
3. Since the number of 10-cent coins remained the same, their units must be made consistent in the 'At first' and 'End' ratios using the First Common Multiple (FCM).

Think Further

(10 × 2 × 0.1) + (8 × 2 × 1) = 18
Patrick had **$18** in the end.

Let's Practise 5.2

Question 1

At first	End
G : B	G : B
$2^{\times3}$: $3^{\times3}$	$3^{\times2}$: $1^{\times2}$
6 : 9	6 : 2

7u

7u = 14
1u = 14 ÷ 7
= 2
8u = 8 × 2
= 16
There were **16** dancers in the dance studio.

Question 2

At first	End
F : B	F : B
$4^{\times3}$: $1^{\times3}$	$3^{\times4}$: $2^{\times4}$
12 : 3	12 : 8

5u

Total (end) = 12u + 8u
= 20u

Question 2 (Cont.)

20u = 1000

1u = 1000 ÷ 20

= 50

5u = 5 × 50

= 250

Cost for the packets of beancurd ordered = 250 × \$0.80

= \$200

The cost of the packets of beancurd added was **\$200**.

Question 3

At first	End
P : C : Total	P : C : Total
$3^{\times 3}$: $7^{\times 3}$: $10^{\times 3}$	$1^{\times 10}$: $2^{\times 10}$: $3^{\times 10}$
9 : 21 : 30	10 : 20 : 30

1u

1u

1u = 2

30u = 30 × 2

= 60

There was a total of **60** toys on the display shelves.

Question 4

At first	End
A : M : Total	A : M : Total
$2^{\times 4}$: $3^{\times 4}$: $5^{\times 4}$	$3^{\times 5}$: $1^{\times 5}$: $4^{\times 5}$
8 : 12 : 20	15 : 5 : 20

7u

7u

7u = 84

1u = 84 ÷ 7

= 12

10u = 10 × 12

= 120

Alan had **120** more stamps than May in the end.

Question 5

At first	End
A : C : Difference	A : C : Difference
90 : 300 : 210	1u : 4u : 3u

3u = 210

1u = 210 ÷ 3

= 70

Question 5 (Cont.)

Total (end) = 5u

= 5 × 70

= 350

Total (at first) = 90 + 300

= 390

Total left = 390 – 350

= 40

40 adults and children left the exhibition hall in total.

Question 6

At first	End
R : L : Difference	R : L : Difference
320 : 260 : 60	3u : 4u : 1u

1u = 60

Total (end) = 7u

= 7 × 60

= 420

Total (at first) = 320 + 260

= 580

Total spent = 580 – 420

= 160

Richard and Larvy spent **\$160** altogether.

Let's Get Started 5.3

2.

14u = 42

1u = 42 ÷ 14

= 3

Total no. of students = 30u

= 30 × 3

= **90**

Let's Learn 5.3

Ask Yourself

The keywords are 'the remaining amount'. I can use the Branching approach to solve this problem sum.

Let's Practise 5.3

Question 1

$\frac{2}{9}$ Total = 4u

$\frac{1}{9}$ Total = 4u ÷ 2

= 2u

$\frac{9}{9}$ Total = 9 × 2u

= 18u

Noodles = 18u – 7u

= 11u

11u = 550

1u = 550 ÷ 11

= 50

3u = 3 × 50

= 150

Larissa used **150 g** of flour to bake the cupcakes.

Question 2

(a) $\frac{9}{35}$ of Derrick's laundry was made of cotton.

Answers to Unit 5.3 – Branching

Question 2 (Cont.)

(b) 12u = 24

1u = 24 ÷ 12

= 2

35u = 35 × 2

= 70

Derrick had **70** pieces of clothing in his laundry.

Question 3

30u – 26u = 4u

4u = 16

1u = 16 ÷ 4

= 4

9u = 9 × 4

= 36

There were **36** trick bikes.

Question 4

Difference between exterior and dashboard = 15u − 6u

= 9u

9u = 0.18

1u = 0.18 ÷ 9

= 0.02

Amount of polish = 35u

= 35 × 0.02

= 0.7

0.7 ℓ = 700 mℓ

The bottle contained **700 mℓ** of polishing liquid at first.

+hinkingMath™

Answers to Unit 5.3 – Branching

Question 5

Difference = 25u – 9u

= 16u

16u = 208

1u = 208 ÷ 16

= 13

75u = 75 × 13

= 975

There were **975** students at the school fun fair.

Queston 6

5u = 25 tuna buns

1u = 25 ÷ 5

= 5 tuna buns

8u = 8 × 5 tuna buns

= 40 tuna buns

= 40 × 3 cheese buns

= 120 cheese buns

Donald bought **120** cheese buns.

Answers to Unit 5.4 – Quantity × Value

Let's Learn 5.4

Think Further

The approach will still be the same, but the answer will be different.

Difference = 2.5u – 1.8u

= 0.7u

0.7u = 301

1u = 301 ÷ 0.7

= 430

2.5u = 2.5 × 430

= 1075

The total value of Julie's 50-cent coins is **$1075**.

Let's Practise 5.4

Question 1

Items	Quantity	×	Value ($)	Total value ($)
50¢	3u	×	0.5	1.5u
20¢	2u	×	0.2	0.4u
Total	5u			1.9u

1.9u = 19

1u = 19 ÷ 1.9

= 10

1.5u = 1.5 × 10

= 15

The value of the 50-cent coins is **$15**.

Question 2

Items	Quantity	×	Value ($)	Total value ($)
X	4u	×	1.2	4.8u
Y	2u	×	0.85	1.7u
Z	5u	×	0.6	3u
Total	11u			9.5u

11u = 451

1u = 451 ÷ 11

= 41

9.5u = 9.5 × 41

= 389.5

Sally collected **$389.50** from the sales of all her seashells.

Question 3

Items	Quantity	×	Value ($)	Total value ($)
L	1u	×	3.25	3.25u
O	4u	×	5.25	21u
Total	5u			24.25u

24.25u = 9700

1u = 9700 ÷ 24.25

= 400

4u = 4 × 400

= 1600

1600 pizzas were delivered on time last month.

Question 4

Items	Quantity	×	Value ($)	Total value ($)
$158-tickets	1u	×	158	158u
$88-tickets	2u	×	88	176u
Total	3u			334u

334u = 78 156

1u = 78 156 ÷ 334

= 234

(a) 3u = 3 × 234

= 702

702 tickets were sold in all.

(b) Difference = 87 636 − 78 156

= 9480

No. of $158-tickets = 9480 ÷ 158

= 60

60 more $158-tickets needed to be sold to meet the targeted amount.

Question 5

Items	Quantity	×	Value (stickers)	Total value (stickers)
C	485	×	2u	970u
T	520	×	3u	1560u
Total	1005			2530u

2530u = 7590

1u = 7590 ÷ 2530

= 3

(a) 2u = 2 × 3

= 6

6 stickers were stamped on each cap.

Question 5 (Cont.)

(b) 3u = 3 × 3

= 9

9 stickers were stamped on each T-shirt.

Question 6

Items	Quantity	×	Value (mooncakes)	Total value (mooncakes)
A	121	×	2u	242u
C	96	×	1u	96u
Total	217			338u

338u = 676

1u = 676 ÷ 338

= 2

2u = 2 × 2

= 4

Each adult received **4** mooncakes.

Question 1

L : E + S

$3^{\times 9}$: $7^{\times 9}$

27 : 63

E : S : E + S

$4^{\times 7}$: $5^{\times 7}$: $9^{\times 7}$

28 : 35 : 63

Summary

L : E : S

27 : 28 : 35

At first	End
L : E	L : E
27 : 28	$5^{\times 7}$: $4^{\times 7}$
	35 : 28

8u

Total (end) = 35u + 28u + 35u

= 98u

98u = 588

1u = 588 ÷ 98

= 6

35u = 35 × 6

= 210

Lynette had **210** coins.

Question 2

H : S + L : Total (H + S + L)

5 : 3 : 8

Combining the model of S and L,

2u = 48

1u = 48 ÷ 2

= 24

S = 5u – 78

= 5 × 24 – 78

= 120 – 78

= 42

The cost of the pair of shoes is **$42**.

Question 3

T : C T : O

$2^{\times 3}$: $3^{\times 3}$ 6 : 5

6 : 9

Summary

T : C : O

6 : 9 : 5

<u>At first</u> <u>End</u>

T + C : O T + C : O

15 : 5 3 : 5

12u

Total mass = 6u + 9u + 5u

= 20u

20u = 11.2

1u = 11.2 ÷ 20

= 0.56

12u = 12 × 0.56

= 6.72

6.72 kg of vegetables were used to make beef stew.

Answers to Review Questions on Chapter 5

Question 4

G : F + W F : W : F + W

$2^{\times 5}$: $3^{\times 5}$ $1^{\times 3}$: $4^{\times 3}$: $5^{\times 3}$

10 : 15 3 : 12 : 15

Summary

G : F : W

10 : 3 : 12

Geetha spent = 10u – 3u

= 7u

Total (end) = 3u + 3u + 12u

= 18u

18u = 234

1u = 234 ÷ 18

= 13

7u = 7 × 13

= 91

Geetha spent **$91**.

Question 5

<u>At first</u> <u>End</u>

A : C A : C

$5^{\times 4}$: $4^{\times 4}$ $4^{\times 5}$: $3^{\times 5}$

20 : 16 20 : 15

1u

1u = 3

Total (at first) = 20u + 16u

= 36u

36u = 36 × 3

= 108

The total number of angel fish and clown fish in the aquarium at first was **108**.

Question 6

Question 6 (Cont.)

Before receiving $120	After receiving $120
End : At first	End : At first
9 : 20	$5^{\times 5}$: $4^{\times 5}$
	25 : 20

16u

16u = 120

1u = 120 ÷ 16

= 7.5

20u = 20 × 7.5

= 150

John had **$150** at first.

Question 7

(a) Profit per pair = $12 – $7

= $5

Profit (1 set of 5 pairs) = (4 × $12) – (5 × $7)

= $13

Profit (80 sets of 5 pairs) = 80 × $13

= $1040

Remaining earnings = $1540 – $1040

= $500

No. of pairs sold singly = $500 ÷ $5

= 100

100 pairs of sandals were not sold in sets of 5.

(b) Total no. of pairs = 100 + (80 × 5)

= 500

Total cost = 500 × $7

= $3500

Daniel paid **$3500** for all the pairs of sandals.

Question 8

L : K	K : A	Summary
$4^{\times 3}$: $5^{\times 3}$	$3^{\times 5}$: $5^{\times 5}$	L : K : A
12 : 15	15 : 25	12 : 15 : 25

At first	End
L : K : Total	L : K : Total
$12^{\times 2}$: $15^{\times 2}$: $27^{\times 2}$	$1^{\times 27}$: $1^{\times 27}$: $2^{\times 27}$
24 : 30 : 54	27 : 27 : 54

3u

3u

Answers to Review Questions on Chapter 5

Question 8 (Cont.)

3u = 12

1u = 12 ÷ 3

= 4

Alexis = $25^{\times 2}$ (50u)

Difference between Alexis and Kyra (end) = 50u – 27u

= 23u

23u = 23 × 4

= 92

Alexis had **$92** more than Kyra in the end.

Chapter 6 Percentage

Answers to Unit 6 – Percentage Change

Let's Practise 6

Question 1

28% = 210

1% = 210 ÷ 28

= 7.5

Caleb (at first):100% = 100 × 7.5

= 750

Gorden (at first) = 750 ÷ 5

= 150

Caleb (end) = 750 – 210

= 540

Gorden (end) = 150 + 210

= 360

540 – 360 = 180

Caleb had **180** stamps more than Gordon.

Question 2

At first	End
Dog = $3u^{\times 2}$ (6u)	Dog = 3u
Others = $1u^{\times 2}$ (2u)	Others = 2u
Total = $4u^{\times 2}$ (8u)	

8u = 120

1u = 120 ÷ 8

= 15

Dogs adopted = 6u – 3u

= 3u

3u = 3 × 15

= 45

45 dogs were adopted.

Question 3

(a) 125% = 800

1% = 800 ÷ 125

= 6.4

July: 100% = 100 × 6.4

= 640

No. of visitors in September = 80% × 800

= 640

640 + 800 + 640 = 2080

There were **2080** visitors from July to September.

(b) Increase from July to September = 650 – 650

= 0

Percentage increase = 0%

There was **0%** increase in the number of visitors.

Question 4

(a) Percentage of red candies at first = $\frac{4}{4+1}$ × 100%

= 80%

Percentage of red candies in the end = $\frac{3}{3+1}$ × 100%

= 75%

Percentage of red candies **decreased**.

(b)

	R	B	Difference
At first	$4u^{\times 2}$ (8u)	$1u^{\times 2}$ (2u)	$3u^{\times 2}$ (6u)
Change	+ 10	+ 10	no change
End	$3u^{\times 3}$ (9u)	$1u^{\times 3}$ (3u)	$2u^{\times 3}$ (6u)

1u = 10

9u = 9 × 10

= 90

There were **90** red candies.

Question 5

10% = 120 – 105

= 15

100% = 10 × 15

= 150

Tom received 150 buttons at first.

120 + 150 = 270

They shared a total of **270** buttons.

Answers to Unit 6 – Percentage Change

Question 6

First week

	At first	Change	
L	100u	– 30% (30u)	70u
T	100u	No change	100u

Second week

	At first	Change	End
L	70u	+ 50% (35u)	105u
T	100u	– 20% (20u)	80u

Difference (end) = 105u – 80u

= 25u

25u = 10

1u = 10 ÷ 25

= 0.4

200u = 200 × 0.4

= 80

There were **80** laptops and tablets altogether at first.

Question 7

(a) 20% = 5

1% = 5 ÷ 20

= 0.25

100% = 100 × 0.25

= 25

Sarah bought **25** chocolate bars.

(b) Original no. of chocolate bars = 25 – 5

= 20

40 ÷ 20 = 2

The price of each chocolate bars before the price deduction was **$2**.

Question 8

	At first	Change	End
A	$2u^{\times 10}$ (20u)	+ 25% (5u)	25u
B	$3u^{\times 10}$ (30u)	No change	30u
G	$1u^{\times 10}$ (10u)	– 20% (2u)	8u

B + G (second day) = 30u + 8u

= 38u

38u = 152

1u = 152 ÷ 38

= 4

Question 8 (Cont.)

A + B + G (first day) = 20u + 30u + 10u
= 60u

60u = 60 × 4
= 240

There were **240** people at the carnival on the first day.

Chapter 7 Average

Let's Get Started 7.1

1. Average = $\frac{115 + 36 + 280 + 41 + 9 + 1001}{6}$
   = $\frac{1482}{6}$
   = **247**

2. Average marks scored per student
   = $\frac{(60 \times 3) + (75 \times 12) + (85 \times 8) + (90 \times 4)}{3 + 12 + 8 + 4}$
   = $\frac{2120}{27}$
   = **78.5** (1 d.p.)

3. Average amount of water used per household
   = $\frac{(480 \times 5) + (495 \times 10) + (510 \times 11) + (570 \times 6) + (595 \times 2)}{5 + 10 + 11 + 6 + 2}$
   = $\frac{17570}{34}$
   = **516.76 litres** (2 d.p.)

Let's Learn 7.1

Ask Yourself

Given the average mass, the total mass of the 3rd and 4th sculptures can be calculated after subtracting the mass of the 1st and 2nd sculptures from the total mass of the 4 sculptures.

Let's Practise 7.1

Question 1

Total marks (4 subjects) = 65 × 4
= 260

Total marks (English + Science) = 65 + 64
= 129

Total marks (Math + Chinese) = 260 –129
= 131

2u = 131 – 5
= 126

1u = 126 ÷ 2
= 63

1u + 5 = 63 + 5
= 68

John scored **68** marks for his Mathematics.

Question 2

No. of hotdogs sold from 1st to 4th June = 50 × 4
= 200

No. of hotdogs sold from 5th to 9th June = 5 × 24
= 120

No. of hotdogs sold from 10th to 20th June = 240 ÷ 2
= 120

Total no. of hotdogs from 1st to 20th June
= 200 + 120 + 120
= 440

Average no. of hotdogs in 20 days = 440 ÷ 20
= 22

An average of **22** hotdogs were sold from 1st of to 20th of June.

Question 3

Total no. of pens bought
= (3 × 5) + (5 × 20) + (7 × 5) + (9 × 10)
= 240

Total no. of children = 5 + 20 + 5 + 10
= 40

Average no. of pens = 240 ÷ 40
= 6

Each child bought an average of **6** pens.

Question 4

At first (Mon)	End (Fri)
R : L : Total	R : L : Total
$3^{\times 11} : 4^{\times 11} : 7^{\times 11}$	$9^{\times 7} : 2^{\times 7} : 11^{\times 7}$
33 : 44 : 77	63 : 14 : 77

30u

No. of pages read from Monday to Friday = 63u – 33u
= 30u

30u = 60
1u = 60 ÷ 30
= 2

Pages left = 14u
= 14 × 2
= 28

Days remaining = 2

Average = 28 ÷ 2
= 14

John would need to read an average of **14** pages each day for the remaining days of the week.

Question 5

At first	End
S : L : Total	S : L : Total
$3^{\times 9} : 5^{\times 9} : 8^{\times 9}$	$8^{\times 8} : 1^{\times 8} : 9^{\times 8}$
27 : 45 : 72	64 : 8 : 72

37u

Apples sold in the next 3 days = 64u – 27u
= 37u

37u = 111
1u = 111 ÷ 37
= 3

72u = 72 × 3
= 216

Average = 216 ÷ 9
= 24

Belle sold an average of **24** apples each day.

Question 6

(a) Total score of 23 students = 76.5 × 23
= 1759.5

Total score of next 2 highest scores = 82.25 × 2
= 164.5

Total score of 20 students = 1759.5 – 95 – 164.5
= 1500

Average score of the remaining students
= 1500 ÷ 20
= 75

The average score of the remaining students is **75** marks.

(b) New average score = 76.5 + 0.5
= 77

New total score = 24 × 77
= 1848

New score = 1848 – 1759.5
= 88.5

The new student's score is **88.5** marks.

Answers to Unit 7.2 – Average with Unknown Items

Let's Get Started 7.2

(a)

	No. of girls	Average	Total
Before	6	8	6 × 8 = 48
After	7	9	7 × 9 = 63

(b) The increase in the number of girls by 1.

Let's Learn 7.2

Ask Yourself

In this problem sum, the number of girls in the group is unknown.

Let's Practise 7.2

Question 1

	No. of students	Average amount collected ($)	Total amount collected ($)
Before	1u	125	125u
After	1u + 15	113	113u + 1695

Question 1 (Cont.)

12u = 1695 – 1275

= 420

1u = 420 ÷ 12

= 35

1u + 15 = 35 + 15

= 50

There were **50** students in a group in the end.

Question 2

	No. of days	Average no. of pages read	Total no. of pages read
Before	1u	15	15u
After	1u + 4	17	17u + 68

2u = 88 – 68

= 20

1u = 20 ÷ 2

= 10

Days read in all = 1u + 4

= 10 + 4

= 14

John read for **14** days in all altogether.

Question 3

Method 1

	No. of babies	Average mass (kg)	Total mass (kg)
Before	1u	3.2	3.2u
After	1u + 1	3.4	3.4u + 3.4

0.2u = 5.8 – 3.4

= 2.4

1u = 2.4 ÷ 0.2

= 12

There were **12** babies in the nursery.

Answers to Unit 7.2 – Average with Unknown Items

Question 3 (Cont.)

Method 2

Difference in mass of the new baby = 5.8 – 3.4

= 2.4

Average change with the new baby = 3.4 – 3.2

= 0.2

No. of babies = 2.4 ÷ 0.2

= 12

There were **12** babies in the nursery.

Question 4

Method 1

	No. of pairs of chopsticks	Average price ($)	Total price ($)
Before	1u	12.5	12.5u
After	1u + 2	15.75	15.75u + 31.5

3.25u = 51 – 31.5

= 19.5

1u = 19.5 ÷ 3.25

= 6

Nisa bought **6** pairs of stainless-steel chopsticks for her friends.

Method 2

Difference in the cost of 1 pair of silver and 1 pair of gold-plated chopsticks = (16 + 35) – (15.75 × 2)

= 19.50

Average change = 15.75 – 12.50

= 3.25

Pairs of stainless-steel chopsticks bought

= 19.50 ÷ 3.25

= 6

Nisa bought **6** pairs of stainless-steel chopsticks for her friends.

Answers to Unit 7.2 – Average with Unknown Items

Question 5

	No. of people	Average points	Total points
C1	1u + 1	38	38u + 38
C2	1u	36	36u

2u = 48 – 38

= 10

1u = 10 ÷ 2

= 5

5 of Jennifer's friends took part in the test.

Question 6

	No. of people	Average marks	Total marks
C1	1u	90	90u
C2	1u	87	87u

3u = 5 + 13

= 18

1u = 18 ÷ 3

= 6

6 – 1 = 5

Harith had **5** friends**.**

Answers to Unit 7.3 – Average with Repeated Items

Let's Get Started 7.3

1. Total seashells of M and K = 8 × 2

= 16

(a) 16 – 12 = 4

Kim had **4** more seashells than Lisa.

(b) 7 + 4 = 11

Kim had **11** seashells.

Answers to Unit 7.3 – Average with Repeated Items

2. (a) Total no. of cars of D + M = 20 × 2

= 40

Total no. of cars of D + M + K = 19 × 3

= 57

No. of cars K had = 57 – 40

= 17

Keith had **17** toy cars.

(b)

2u = 40 – 4

= 36

1u = 36 ÷ 2

= 18

Danny had **18** toy cars.

Let's Learn 7.3

Ask Yourself

The repeated items are Louisa and Fanny.

Let's Practise 7.3

Question 1

Total tags (D + C) = 203 × 2

= 406

Total tags (C + E) = 194 × 2

= 388

Total tags (E + D) = 181 × 2

= 362

Total tags (2D + 2C + 2E) = 406 + 388 + 362

= 1156

Total tags (D + C + E) = 1156 ÷ 2

= 578

E = 578 – 406

= 172

C = 388 – 172

= 216

D = 362 – 172

= 190

Dave, Cherrie and Elaine had **190** tags**, 216** tags and **172** tags respectively.

Question 2

	Average score (points)	Total score (points)
S + M	77	77 × 2 = 154
M + R	71.5	71.5 × 2 = 143
S + M + A	73	73 × 3 = 219
A + R	69	69 × 2 = 138

A = 219 – 154
= 65
R = 138 – 65
= 73
M = 143 – 73
= 70
S = 154 – 70
= 84

Sally, Mayo, Ada and Risa scored **84** points, **70** points, **65** points and **73** points respectively.

Question 3

Total no. of doorknobs (A + B) = 3486 × 2
= 6972
Total no. of doorknobs (A + C) = 6586 × 2
= 13 172
Difference in the no. of doorknobs (C – B)
= 13 172 – 6972
= 6200
Difference in units (C – B) = 7u – 2u
= 5u
5u = 6200
1u = 6200 ÷ 5
= 1240
2u = 2 × 1240
= 2480 (Factory B)
Factory A = 6972 – 2480
= 4492

Factory A produces **4492** doorknobs weekly.

Question 4

Total no. of perfume bottles collected = 25 × 4
= 100

Question 4 (Cont.)

(3 × 3) + (2 × 8) + 15 = 40
4u = 100 – 40
= 60
1u = 60 ÷ 4
= 15
Total no. of perfume bottles (R + E + H) = 3u + 14
= 3 × 15 + 14
= 59
Average no. of perfume bottles (R + E + H)
= 59 ÷ 3
= $19\frac{2}{3}$
≈ 20 (nearest whole number)

The average number of perfume bottles collected by Rachel, Eileen and Henna is **20**.

Chapter 8 Simultaneous

Let's Get Started 8

2. $\frac{1}{4}C + \frac{1}{10}L = 26$
   $\frac{4}{4}C + \frac{10}{10}L = 140$
3. $\frac{1}{2}S1 + \frac{1}{4}S2 = 130$
   $\frac{2}{2}S1 + \frac{4}{4}S2 = 360$

Let's Learn 8

Ask Yourself

The fraction or relationship between the unknown items can be formed.

Let's Practise 8

Question 1

$\frac{1}{5}B + \frac{1}{4}F = 32$ …(1)
$\frac{5}{5}B + \frac{4}{4}F = 130$ …(2)
Multiply (1) by 5,
$\frac{5}{5}B + \frac{5}{4}F = 160$ …(3)

Question 1 (Cont.)

(3) – (2),

$\frac{1}{4}$ F = 160 – 130

= 30

$\frac{4}{4}$ F = 4 × 30

= 120

There are **120** fridge magnets in the box.

Question 2

$\frac{2}{7}$ C + $\frac{3}{10}$ S = 68 … (1)

$\frac{7}{7}$ C + $\frac{10}{10}$ S = 231…(2)

Multiply (1) by 10 and (2) by 3,

$\frac{20}{7}$ C + $\frac{30}{10}$ S = 680 …(3)

$\frac{21}{7}$ C + $\frac{30}{10}$ S = 693… (4)

(4) – (3),

$\frac{1}{7}$ C = 693 – 680

= 13

$\frac{5}{7}$ C = 5 × 13

= 65

65 cupcakes were eaten.

Question 3

40P = 25N

8P = 5N

32P = 20N

Total items in the box (based on N) = 20 + 3

= 23

Max no. of N to be added = 25 – 23

= 2

2 more nail-clippers can be added to the box.

Question 4

52P = 38B

26P = 19B

Total items bought (based on B) = 19 + 14

= 33

Additional bookmarks she can buy = 38 – 33

= 5

Jennifer can buy **5** more bookmarks with her remaining money.

Answers to Unit 8 – Simultaneous

Question 5

7B + 2C = 10.3 …(1)

6B + 5C = 13.1 …(2)

Multiply (1) by 5 and (2) by 2,

35B + 10C = 51.5 …(3)

12B + 10C = 26.2 …(4)

(3) – (4),

23B = 25.3

1B = 25.3 ÷ 23

= 1.1

12B = 12 × 1.1

= 13.2

10C = 26.2 – 13.2

= 13

1C = 13 ÷ 10

= 1.3

12C = 12 × 1.3

= 15.6

12B + 12C = 13.2 + 15.6

= 28.8

1 dozen bottles of soft drink and 1 dozen cartons of milk cost **$28.80**.

Question 6

6S = 8P ……. (1)

2S + 5P = 12.65 …... (2)

Multiply (2) by 3,

6S + 15P = 37.95 ….. (3)

Combine (1) and (3),

8P + 15P = 37.95

23P = 37.95

1P = 37.95 ÷ 23

= 1.65

5P = 5 × 1.65

= 8.25

2S = 12.65 – 8.25

= 4.4

1S = 4.4 ÷ 2

= 2.2

1 GB = 1S + 1P

= 2.2 + 1.65

= 3.85

7GB = 7 × 3.85

= 26.95

Ali spent **$26.95** on the goodie bags.

Chapter 9 Algebra

Answers to Unit 9 – Algebra

Let's Get Started 9

1.

Value of x	Value of 68 + x
1	68 + 1 = 69
2	68 + 2 = 70
3	68 + 3 = 71
4	68 + 4 = 72

2.

Value of a	Value of b	Value of $\frac{a+b}{2}$
12	10	$\frac{12+10}{2}$ = 11
21	11	$\frac{21+11}{2}$ = 16
28	12	$\frac{28+12}{2}$ = 20
35	13	$\frac{35+13}{2}$ = 24
40	0	$\frac{40+0}{2}$ = 20

3.

	Algebraic expression
(a)	x + 12
(b)	y – 12
(c)	$\frac{a+2a+7a}{2}$ = 5a
(d)	4m
(e)	5x + 4

Let's Learn 9

Ask Yourself

1. Add the values.
2. Add all the values and then divide the total value by the quantity that makes up the total value.

Think Further

The solution changes to the following:

Michelle = 8m sweets

Total no. of sweets eaten = 4m + 8m

= 12m

Average = $\frac{12m}{2}$

= 6m

Both girls ate an average of **6m** sweets.

Answers to Unit 9 – Algebra

Let's Practise 9

Question 1

Total no. of pencils = 10 + p + 3p

= 10 + 4p

Average = $\frac{10+4p}{3}$

The girls bought an average of $\left(\frac{10+4p}{3}\right)$ pencils.

Question 2

Total mass = 5x kg + (5x + 7) kg

= (10x + 7) kg

Average mass = $\left(\frac{10x+7}{2}\right)$ kg

Their average mass was $\left(\frac{10x+7}{2}\right)$ **kg**.

Question 3

Anita's cookies = 8 × 17

= 136

Mia's cookies = 136 – 16

= 120

Anita and Mia had **136** and **120** cookies respectively.

Question 4

No. of plates sold on Tue = (4k + 2) + 2k

= 6k + 2

No. of plates sold on Wed = 2 × (4k + 2)

= 8k + 4

Total no. of plates sold = (6k + 2) + (8k + 4) + (4k + 2)

= 18k + 8

Lena sold a total of **(18k + 8)** plates of chicken rice over the 3 days.

Question 5

(a) Keith's stamp = 3m

Calissa's stamp = 3m + 8

Total stamps = m + 3m + (3m + 8)

= 7m + 8

They had **(7m + 8)** stamps.

+hinkingMath™

Question 5 (Cont.)

(b) $7m + 8 = 7 \times 9 + 8$

$= 71$

They had **71** stamps altogether.

Question 6

(a) Total (at first) = $39y + 6$

Mr Lee had **($39y + 6$)** stickers at first.

(b) $39y + 6 = 39 \times 4 + 6$

$= 162$

Mr Lee had **162** stickers at first.

Question 7

(a) Weiqi's age = $\frac{1}{3}n$

Natalie's age = $\frac{1}{3}n - 4$

Natalie is $\left(\frac{1}{3}n - 4\right)$ **years old**.

(b) Total age = $n + \frac{1}{3}n + \left(\frac{1}{3}n - 4\right)$

$= \frac{5}{3}n - 4$

Their total age is $\left(\frac{5}{3}n - 4\right)$ **years old**.

Question 8

Perimeter (units) = 3u + 2u + 3u + 2u

= 10u

10u = $2h$

2u = $2h \div 5$

$= \frac{2}{5}h$

The breadth of the rectangle is $\frac{2}{5}h$ **cm**.

Question 9

(a) Peter's magnets = $2 \times 4h$

$= 8h$

Raymond's magnets = $8h + 15$

Raymond has **($8h + 15$)** magnets.

(b) Total no. of magnets = $4h + 8h + (8h + 15)$

$= 20h + 15$

$20h + 15 = 115$

$20h = 115 - 15$

$= 100$

Question 9 (Cont.)

$h = 100 \div 20$

$= 5$

$8h = 8 \times 5$

$= 40$

Peter has **40** magnets.

Question 10

(a) Saleha's age now = $3p + 5$

Melanie's age now = $\frac{3p + 5}{4}$

Melanie's age in 3 years' time = $\frac{3p + 5}{4} + 3$

$= \frac{3p + 5}{4} + \frac{12}{4}$

$= \frac{3p + 5 + 12}{4}$

$= \frac{3p + 17}{4}$

Melanie will be $\left(\frac{3p + 17}{4}\right)$ **years old** in 3 years' time.

(b) Melanie's age in 8 years' time = $\frac{3p + 5}{4} + 8$

Saleha's age in 8 years' time = $3p + 13$

Total age = $\left(\frac{3p + 5}{4} + 8\right) + (3p + 13)$

$= \frac{3p + 5}{4} + \frac{32}{4} + \frac{12p}{4} + \frac{52}{4}$

$= \frac{15p + 89}{4}$

$= \frac{15 \times 5 + 89}{4}$

$= 41$

Their total age in 8 years' time is **41 years old**.

Chapter 10 Mixed Review Questions

Let's Practise 10

Question 1

Case 1: 80 pears left	Case 2: 400 pears left
A : P	A : P
20 : 60	60 : 20
$1^{\times 3} : 3^{\times 3}$	3 : 1
3 : 9	

Decrease of 8u

Question 1 (Cont.)

8u = 400 – 80
= 320
1u = 320 ÷ 8
= 40
9u + 80 = 9 × 40 + 80
= 440
There are **440** pears at the stall.

Question 2

At first	End
C : J : A	C : J : A
$2^{\times 2} : 6^{\times 2} : 9^{\times 2}$	7 : 15 : 21
4 : 12 : 18	8 6
8 6	

Difference = 7u – 4u
= 3u
3u = 90
1u = 90 ÷ 3
= 30
Total (end) = 7u + 15u + 21u
= 43u
43u = 43 × 30
= 1290
The 3 girls had **$1290** in the end.

Question 3

Case 1: S $\xrightarrow{16}$ O	Case 2: O $\xrightarrow{23}$ S
S : O : Total	S : O : Total
$1^{\times 2} : 3^{\times 2} : 4^{\times 2}$	5 : 3 : 8
2 : 6 : 8	

3u = 39
1u = 39 ÷ 3
= 13
Case 1: 6u – 16 = 6 × 13 – 16
= 62
Omera has **$62.**

Answers to Unit 10 – Mixed Review Questions

Question 4

Commission received for first 100 jerseys = 100 × $20
= $2000
Commission earned from the remaining jerseys sold
= $2828 – $2000
= $828
No. of jerseys sold for the $828 commission = $828 ÷ $36
= 23
Total jerseys sold = 100 + 23
= 123
Fred sold **123** jerseys.

Question 5

Items	Quantity	×	Value ($)	Total value ($)
$5-stamps (A)	1u	×	5	5u
$2-samps (K)	1u + 30	×	2	2u + 60
Total	2u + 30			7u + 60

3u = 60 + 180
= 240
1u = 240 ÷ 3
= 80
Arun has **80** stamps.

Question 6

2-mark : 3-mark	2-mark : Incorrect
$1^{\times 2}$: $3^{\times 2}$	2 : 1
2 : 6	

Items (correct answer)	Quantity	×	Value (marks)	Total value (marks)
2-mark	2u	×	2	4u
3-mark	6u	×	3	18u
Total	8u			22u

22u = 176
1u = 176 ÷ 22
= 8
Total no. of correct questions = 8u
= 8 × 8
= 64
Incorrect + Unanswered questions = 75 – 64
= 11
Unanswered questions = 11 – 8
= 3
3 questions were left unanswered.

+hinkingMath™

Question 7

(a) A (now) : R (before) : Total

3 : 1 : 4

A (before) : R (now) : Total

$1^{\times 2}$: $1^{\times 2}$: $2^{\times 2}$

2 : 2 : 4

Total current age = 3u + 2u

= 5u

5u = 30

1u = 30 ÷ 5

= 6

A (now) = 3u

= 3 × 6

= 18

Alda is **18 years old** now.

(b)

Now	Future
A : R : Difference	A : R : Difference
3 : 2 : 1	5 : 4 : 1

2u

2u = 2 × 6

= 12

In **12 years'** time, Rena's age will be $\frac{4}{5}$ of Alda's age.

Question 8

$\frac{1}{4}$R2 = $\frac{1}{4}$

$\frac{4}{4}$R2 = 4 × $\frac{1}{4}$

= 1

$\frac{1}{4}$R1 = 1 + $\frac{1}{4}$

= $\frac{5}{4}$

$\frac{4}{4}$R1 = 4 × $\frac{5}{4}$

= 5

Question 8 (Cont.)

$\frac{1}{4}$T = 5 + $\frac{1}{4}$

= $\frac{21}{4}$

$\frac{4}{4}$T = 4 × $\frac{21}{4}$

= 21

Althea bought **21** pizzas.

Question 9

(Actual)	P	W
At first	$3u^{\times 5}$	$4u^{\times 3}$
Change	$-18^{\times 5}$	$-10^{\times 3}$
End	$3p^{\times 5}$	$5p^{\times 3}$

(Working)	P	W
At first	15u	12u
Change	– 90	– 30
End	15p	15p

3u = 60

1u = 60 ÷ 3

= 20

No. of pink meringues if added 18 pink meringues:

3u = 3 × 20

= 60

No. of pink meringues in the jar = 60 – 18

= 42

There are **42** pink meringues in the jar.

Question 10

At first	Silver	Platinum	Total
A	$\frac{2}{5}$ (32)	$\frac{3}{5}$ (48)	$\frac{5}{5}$ (80)
B	$\frac{3}{10}$ (36)	$\frac{7}{10}$ (84)	$\frac{10}{10}$ (120)
Total	68	132	200

End	Silver	Platinum	Total
A	$\frac{2}{5}$A	$\frac{3}{5}$A	$\frac{5}{5}$A
B	$\frac{7}{25}$B	$\frac{18}{25}$B	$\frac{25}{25}$B
Total	68	132	200

Question 10 (Cont.)

$\frac{2}{5}$ A + $\frac{7}{25}$ B = 68 ……. (1)

$\frac{3}{5}$ A + $\frac{18}{25}$ B = 132 ….. (2)

Multiply (1) by 3 and (2) by 2,

$\frac{6}{5}$ A + $\frac{21}{25}$ B = 204 …… (3)

$\frac{6}{5}$ A + $\frac{36}{25}$ B = 264 …… (4)

(4) – (3),

$\frac{15}{25}$ B = 60

$\frac{1}{25}$ B = 60 ÷ 15

= 4

$\frac{18}{25}$ B = 18 × 4

= 72

Difference = 84 – 72

= 12

The owner of Shop B passed **12** platinum bracelets to Shop A.

Question 11

(a) Shopping = 25%

= $\frac{1}{4}$

Rent = $\frac{1}{2} - \frac{1}{4} - \frac{1}{12}$

= $\frac{1}{6}$

$\frac{1}{6}$ of Mrs Lee's income is allocated to rent.

(b) 50% – 2.5% = 47.5%

47.5% of Mrs Lee's income goes towards savings.

(c) $\frac{1}{6}$ T = 1200

$\frac{6}{6}$ T = 6 × 1200

= 7200

Monthly savings = 47.5% × \$7200

= \$3420

Savings in half a year = 6 × \$3420

= \$20 520

Mrs Lee saves **\$20 520** in half a year.

Answers to Unit 10 – Mixed Review Questions

Question 12

$\frac{1}{5}$ T = 4u

$\frac{5}{5}$ T = 5 × 4u

= 20u

20u – 11u = 63

9u = 63

1u = 63 ÷ 9

= 7

20u = 20 × 7

= 140

There were **140** muffins in the box altogether.

Question 13

C1: Sarah 360 muffins left	C2: Sarah 72 muffins left
S : J	S : J
25 : 50	50 : 25
1 : 2	$2^{\times 2}$: $1^{\times 2}$
	4 : 2

3u

3u = 360 – 72

= 288

1u = 288 ÷ 3

= 96

C1: Sarah = 1u + 360

= 96 + 360

= 456

<u>Check (C2)</u>

Sarah = 4u + 72

= 4 × 96 + 72

= 456 (Checked)

Sarah had **456** muffins.

Question 14

Total cost of boots = \$(10 570 – 266) ÷ 2

= \$5152

Total cost of sneakers = \$5152 + \$266

= \$5418

Question 14 (Cont.)

Items	Quantity	×	Value ($)	Total value ($)
Boots	2u	×	?	5152
Sneakers	3u	×	?	5418
Total	5u			10 570

Cost of 3u of sneakers = $5418

Cost of 1u of sneakers = $5418 ÷ 3

= $1806

Cost of 2u of boots = $5152

Cost of 1u of boots = $5152 ÷ 2

= $2576

B	1806	770
S	1806	

1u = 770 ÷ 55

= 14

No. of pairs of sneakers = 3u

= 3 × 14

= 42

Cost of 1 pair of sneakers = 5418 ÷ 42

= 129

The cost of 1 pair of sneakers was **$129.**

Question 15

Candle A (07 30 to 13 30) = 6 hours

Candle B (09 00 to 13 00) = 4 hours

Rate of burning in 1 hour, Candle A = $\frac{1}{6}$

Candle B = $\frac{1}{4}$

Fraction of Candle A left unburnt at 11 30 (11 30 to 13 30)

= 2 × $\frac{1}{6}$

= $\frac{1}{3}$

Fraction of Candle B left unburnt at 11 30 (11 30 to 13 00)

= 1.5 × $\frac{1}{4}$

= $\frac{3}{8}$

$\frac{1}{3}$A = $\frac{3}{8}$B

$\frac{3}{9}$A = $\frac{3}{8}$B

A : B = 9 : 8

1u = 3

Length of Candle A = 9u

= 9 × 3

= 27

The original length of Candle A was **27 cm** respectively.

Answers to Unit 10 – Mixed Review Questions

Question 16

In 2021

L	1u	
A	1u	3u

In 6 years' time (in 2027)

L	6	1u	3u		
A	6	1u	6	1u	8

2u = 6 + 8

= 14

1u = 7

Abigail (in 2021) = 4u

= 4 × 7

= 28

Abigail (in 2031) = 28 + 10

= 38

Abigail will be **38 years old** in the year 2031.

Question 17

A = $1u^{\times 20}$ (20u)

B + C + D = $2u^{\times 20}$ (40u)

Total = $3u^{\times 20}$ (60u)

B = $1u^{\times 15}$ (15u)

A + C + D = $3u^{\times 15}$ (45u)

Total = $4u^{\times 15}$ (60u)

C = $1u^{\times 12}$ (12u)

A + B + D = $4u^{\times 12}$ (48u)

Total = $5u^{\times 12}$ (60u)

Summary

A = 20u

B = 15u

C = 12u

D = 13u

13u = 78

1u = 78 ÷ 13

= 6

A + B = 20u + 15u

= 35u

35u = 35 × 6

= 210

Ali and Bryan had **210** marbles altogether.

Question 18

Common volume: $\frac{3}{10}R = \frac{1}{4}S$

$\frac{3}{10}R = \frac{3}{12}S$

R : S = 10 : 12

Difference = 12u – 10u

= 2u

2u = 48

1u = 48 ÷ 2

= 24

10u = 10 × 24

= 240

Height of rectangular tank = 240 ÷ (8 × 6)

= 5

The height of the rectangular tank is **5 m**.

Question 19

$\frac{4}{7}T = 12u$

$\frac{1}{7}T = 12u \div 4$

= 3u

$\frac{7}{7}T = 7 \times 3u$

= 21u

Friend = 21u – 16u

= 5u

5u = 40

1u = 40 ÷ 5

= 8

21u = 21 × 8

= 168

There were **168** candies in the bag at first.

Answers to Unit 10 – Mixed Review Questions

Question 20

9 more run than 9 walk = 100 s – 19 s

= 81 s

1 more run than 1 walk = 81 s ÷ 9

= 9 s

10 more run than 10 walk = 10 × 9 s

= 90 s

To convert 10 run to 10 walk, take Luther 90 s more.

Time taken to walk 1 flight = 100 s + 90 s

= 190 s

Time taken to walk 2 flights = 2 × 190 s

= 380 s

Luther would take **380 seconds**.

Question 21

Green: $\frac{1}{3}A + \frac{1}{5}B = \frac{2}{8}$ Total

A : B = 3 : 5

Since Box B has 110 more apples than Box A,

2u = 110

1u = 110 ÷ 2

= 55

Total apples = 8u

= 8 × 55

= 440

Red apples = $\frac{3}{4}$ × 440

= 330

There were **330** red apples.

Question 22

$\frac{3}{3}P = 12u + 30$

$\frac{1}{3}P = 4u + 10$ (red marbles)

$\frac{4}{4}Q = 12u$

$\frac{3}{4}Q = 9u$ (red marbles)

4u + 9u = 62 – 10

13u = 52

1u = 52 ÷ 13

= 4

Question 22 (Cont.)

12u + 30 = 12 × 4 + 30

= 78

There were **78** marbles in Box P.

Question 23

C1: Gretal gives 4 boxes

G : K : Total

$2^{\times 3}$: $5^{\times 3}$: $7^{\times 3}$

6 : 15 : 21

C2: Keith gives 4 boxes

G : K : Total

8 : 13 : 21

2u = 4

1u = 4 ÷ 2

= 2

Gretel

C1: 6u + 4 = 6 × 2 + 4

= 16

C2: 8u = 8 × 2

= 16 (Checked)

Keith

C1: 15u = 15 × 2

= 30

C2: 13u + 4 = 13 × 2 + 4

= 30 (Checked)

Gretel and Keith have **16** boxes of cookies and **30** boxes of cookies respectively.

Question 24

5u + 8u = 31 – 5

= 26

13u = 26

1u = 26 ÷ 13

= 2

Answers to Unit 10 – Mixed Review Questions

Question 24 (Cont.)

2u + 1 = 2 × 2 + 1

= 5

The total cost of 1 bracelet and 1 hairclip is **$5**.

Question 25

Choco	Gum	Mint	Total	Check
88 × 4 = 352	12 × 7 = 84	0 × 22 = 0	436	+21
86 × 4 = 344	13 × 7 = 91	1 × 22 = 22	457	
56 × 4 = 224	28 × 7 = 196	16 × 22 = 352	772	✓

Target difference = 772 – 436

= 336

No. of mintballs = 336 ÷ 21

= 16

No. of gumballs = 16 + 12

= 28

Graham ordered **28** gumballs.

Question 26

$\frac{2}{5}$ A = $\frac{3}{4}$ B

$\frac{6}{15}$ A = $\frac{6}{8}$ B

A : B = 15 : 8

(Actual)	A	B
At first	$15u^{\times 2}$	$8u^{\times 3}$
Change	$-30^{\times 2}$	$-8^{\times 3}$
End	$3p^{\times 2}$	$2p^{\times 3}$

(Working)	A	B
At first	30u	24u
Change	– 60	– 24
End	6p	6p

6u = 36

1u = 36 ÷ 6

= 6

Total tarts at first = 15u + 8u

= 23u

23u = 23 × 6

= 138

There were **138** mini tarts in both boxes at first.

Question 27

	Change	End	At first
(3) L	$+\frac{1}{5}$ (1u)	$\frac{6}{5}$ (6u)	$\frac{5}{5}$ (5u)
(2) J	$-\frac{1}{2}$ (6u)	$\frac{1}{2}$ (6u)	$\frac{2}{2}$ (12u)
(1) K	+3 (9u)	4 (12u)	1 (3u)

	K	J	L
End	$1u^{\times 6}$	$1u^{\times 6}$	$1u^{\times 6}$
	6u	6u	6u
Rev (3)			– 1u
	6u	6u	5u
Rev (2)		+ 6u	
	$6u^{\times 2}$	$12u^{\times 2}$	$5u^{\times 2}$
	12u	24u	10u
Rev (1)	– 9u		
At first	3u	24u	10u

Total (at first) = 3u + 24u + 10u

= 37u

37u = 14 060

1u = 14 060 ÷ 37

= 380

Lenny at first = 10u

= 10 × 380

= 3800

Lenny saved **$3800** at first.

Question 28

$\frac{1}{6}$ G = 3u + 16

$\frac{6}{6}$ G = 18u + 96

Question 28 (Cont.)

18u + 96 + 28u = 4236

46u = 4236 – 96

= 4140

1u = 4140 ÷ 46

= 90

General = 18u + 96

= 18 × 90 + 96

= 1716

Sienna's monthly general expenses was **$1716**.

Question 29

At first

	Spent	End	At first
Z	$\frac{1}{8}$ (5u)	$\frac{7}{8}$ (35u)	$\frac{8}{8}$ (40u)
A	$\frac{2}{5}$ (16u + 32)	$\frac{3}{5}$ (24u + 48)	$\frac{5}{5}$ (40u + 80)

End

35u – 24u = 51 + 48

11u = 99

1u = 99 ÷ 11

= 9

40u + 80 = 40 × 9 + 80

= 440

Adelia had **$440** at first.

Question 30

(a) 15% = $\frac{3}{20}$ 30% = $\frac{3}{10}$

Fraction of boys = $1 - \frac{3}{20} - \frac{3}{10} - \frac{1}{10}$

$= \frac{9}{20}$

$\frac{9}{20}$ of the people who came were boys.

Question 30 (Cont.)

(b) $\frac{9}{20}$ Total = 180

$\frac{1}{20}$ Total = 180 ÷ 9

= 20

$\frac{20}{20}$ Total = 20 × 20

= 400

400 people were at the event.

(c) 80% = 400

1% = 400 ÷ 80

= 5

100% = 100 × 5

= 500

500 people came to the event the year before.

Question 31

Discount for 1 group of \$72 = \$9

Amount to pay for every group = \$72 − \$9

= \$63

No. of groups of \$63 = 840 ÷ 63

= 13 R 21

Discount for 13 groups of \$63 = 13 × \$9

= \$117

Amelia was given **\$117** discount.

Question 32

Items	Quantity	×	Value (\$)	Total value (\$)
On time	15u	×	5	75u
Late	4u	×	3.5	14u
Total	19u			89u

(a) 89u = 7298

1u = 7298 ÷ 89

= 82

Late = 4u

= 4 × 82

= 328

328 parcels were delivered late.

(b) Difference in cost of 1 parcel = \$5 – \$3.50

= \$1.50

Difference in total cost = 328 × \$1.50

= \$492

The company would collect an additional **\$492**.

Answers to Unit 10 – Mixed Review Questions

Question 33

R : P + N

$5^{\times 4}$: $7^{\times 4}$

20 : 28

P : N : P + N

$1^{\times 7}$: $3^{\times 7}$: $4^{\times 7}$

7 : 21 : 28

Summary

R : N : P

20 : 21 : 7

Items	Quantity	×	Value (\$)	Total value (\$)
R	20u	×	2	40u
N	21u	×	8	168u
P	7u	×	4	28u
Total	48u			236u

236u = 708

1u = 708 ÷ 236

= 3

Total items = 48u

= 48 × 3

= 144

Sumitha bought **144** items altogether.

Question 34

At first

J : F : Total

$3^{\times 3}$: $1^{\times 3}$: $4^{\times 3}$

9 : 3 : 12

End

J : F : Total

$2^{\times 4}$: $1^{\times 4}$: $3^{\times 4}$

8 : 4 : 12

1u

1u = 77

8u = 8 × 77

= 616

Jonas had **616** comic books left.

Question 35

(a) Difference in savings = \$5 – \$2

= \$3

No. of days = 180 ÷ 3

= 60

Alfred took **60** days to save \$180 less than Bruce.

(b) Total no. of days from Dec to Mar = 3 × 31 + 28

= 121

Total savings = \$(2 + 5) × 121

= \$847

Both would have saved **\$847** altogether.

Question 36

At first

	Gave	End	At first
A	$\frac{1}{5}$ (3u + 12)	$\frac{4}{5}$ (12u + 48)	$\frac{5}{5}$ (15u + 60)
C	$\frac{1}{3}$ (5u)	$\frac{2}{3}$ (10u)	$\frac{3}{3}$ (15u)

Gave

2u = 12 – 6

= 6

1u = 6 ÷ 2

= 3

Apples pie remained = 12u + 48

= 12 × 3 + 48

= 84

84 apple pies remained in the end.

Question 37

(a) $\frac{1}{4}$ Total = pineapple + apple

= 16 + 14

= 30

$\frac{4}{4}$ Total = 4 × 30

= 120

120 students took part in the survey.

(b) Orange + Durian = $\frac{1}{2}$ × 120

= 60

Orange = $\frac{2}{3}$ × 60

= 40

Fraction = $\frac{40}{120}$

= $\frac{1}{3}$

$\frac{1}{3}$ of the students preferred oranges.

Answers to Unit 10 – Mixed Review Questions

Question 38

	Sold	Left	At first
A	$\frac{1}{5}$	$\frac{4}{5}$	$\frac{5}{5}$
M	$\frac{3}{25}$	$\frac{22}{25}$	$\frac{25}{25}$

Left

$\frac{4}{5}$ A = $\frac{22}{25}$ M

$\frac{44}{55}$ A = $\frac{44}{50}$ M

A : M : A + M

55 : 50 : 105

S : A + M

$2^{\times 35}$: $3^{\times 35}$

70 : 105

Summary

A : M : S

55 : 50 : 70

(a) Apples and mango strudel left = 44u + 44u

= 88u

88u = 352

1u = 352 ÷ 88

= 4

Strawberry = 70u

= 70 × 4

= 280

There were **280** strawberry strudels.

(b) Sold = $\frac{1}{5}$ × 55u + $\frac{3}{25}$ × 50u

= 11u + 6u

= 17u

17u = 17 × 4

= 68

68 strudels were sold.

Question 39

End

+hinkingMath™

Question 39 (Cont.)

	Gave	Left	At first
B	$\frac{2}{5}$ (2u + 8)	$\frac{3}{5}$ (3u + 12)	$\frac{5}{5}$ (5u + 20)
R	$\frac{1}{2}$ (3u)	$\frac{1}{2}$ (3u)	$\frac{2}{2}$ (6u)

At first

11u = 42 – 20

= 22

1u = 22 ÷ 11

= 2

Red pens gave away = 3u

= 3 × 2

= 6

Amira gave away **6** red pens.

Question 40

(a) 4 × 14 cm + 2 × $\frac{1}{4}$ × $\frac{22}{7}$ × 28 cm = 100 cm

The perimeter of the unshaded part is **100 cm**.

(b) 2 × $\frac{3}{4}$ × $\frac{22}{7}$ × 14 cm × 14 cm

+ 2 × $\left(\frac{1}{4} \times \frac{22}{7} \times 14 \text{ cm} \times 14 \text{ cm} - \frac{1}{2} \times 14 \text{ cm} \times 14 \text{ cm}\right)$

= 1036 cm^2

The area of the shaded part is **1036 cm^2**.

Question 41

C1: 6 booties = 6 × \$6.75

= \$40.50

C2: 4 booties = 4 × \$6.75

= \$27

2 mittens = \$46 – \$23.50

= \$22.50

1 mitten = \$22.50 ÷ 2

= \$11.25

Question 41 (Cont.)

C1: Cassandra's money = 4M + \$46

= 4 × \$11.25 + \$46

= \$91

Check

C2: 6M + 23.5 = 6 × \$11.25 + \$23.50

= \$91 (checked)

Cassandra has **\$91**.

Question 42

$\frac{1}{4}$ R = $\frac{1}{3}$ G

R : G = 4 : 3

(Actual)	R	G
At first	$4u^{\times 5}$	$3u^{\times 2}$
Change	$-206^{\times 5}$	$+80^{\times 2}$
End	$2p^{\times 5}$	$5p^{\times 2}$

(Working)	R	G
At first	20u	6u
Change	– 1030	+ 160
End	10p	10p

(a) 20u – 6u = 160 + 1030

14u = 1190

1u = 1190 ÷ 14

= 85

Ryan at first = 4u

= 4 × 85

= 340

Ryan had **\$340** at first.

(b) Gillian in the end = 3u + 80

= 3 × 85 + 80

= 335

Gillian had **\$335** in the end.

Question 43

At first

	At first (1)	Change	End (1)
H	$\frac{5}{5}$ (50u + 50)	$-\frac{2}{5}$ (20u + 20)	$\frac{3}{5}$ (30u + 30)
J	50u	+ (20u + 20)	70u + 20

	At first (2)	Change	End (2)
H	30u + 30	+ (14u + 4)	44u + 34
J	$\frac{5}{5}$ (70u + 20)	$-\frac{1}{5}$ (14u + 4)	$\frac{4}{5}$ (56u + 16)

End (2)

12u = 34 + 6 – 16
= 24
1u = 24 ÷ 12
= 2
Helena at first = 50u + 50
= 50 × 2 + 50
= 150
Helena had **$150** at first.

Question 44

No. of questions answered = 30 – 4
= 26
Total marks for 26 questions = 34 + (4 × 1)
= 38

Correct (awarded)	Wrong (deducted)	Total marks	Check
26 × 3 = 78	0 × 2 = 0	78	– 5
25 × 3 = 75	1 × 2 = 2	73	
18 × 3 = 54	8 × 2 = 16	38	✓

Target difference = 78 – 38
= 40
No. of questions answered wrongly = 40 ÷ 5
= 8
No. of question answered correctly = 26 – 8
= 18
Tony answered **18** questions correctly.

Answers to Unit 10 – Mixed Review Questions

Question 45

Case 1: Sharifah 800 cookies left	Case 2: Sharifah 1700 cookies left
S : D	S : D
6 : 3	3 : 6
$2^{\times 2}$: $1^{\times 2}$	1 : 2
4 : 2	

3u

3u = 1700 – 800
= 900
1u = 900 ÷ 3
= 300
No. of cookies Sharifah sold = 4u + 800
= 4 × 300 + 800
= 2000

Check
No. of cookies Sharifah sold = 1u + 1700
= 1 × 300 + 1700
= 2000 (checked)
No. of boxes = 2000 ÷ 50
= 40
Sharifah baked **40** boxes of cookies.

Question 46

(Actual)	A	O
At first	$2u^{\times 7}$	$3u^{\times 3}$
Change	$-20^{\times 7}$	$+30^{\times 3}$
End	$3p^{\times 7}$	$7p^{\times 3}$

(Working)	A	O
At first	14u	9u
Change	– 140	+ 90
End	21p	21p

5u = 140 + 90
= 230
1u = 230 ÷ 5
= 46

+hinkingMath™

Question 46 (Cont.)

No. of apples after added 20 apples = 2u
= 2 × 46
= 92

Apples at first = 92 – 20
= 72

Farmer Sam has **72** apples in the crate.

Question 47

Area of semicircle = $\frac{1}{2}$ × 3.14 × 10 cm × 10 cm
= 157 cm^2

Area of triangle PQR = 157 cm^2 + 93 cm^2
= 250 cm^2

PQ = 250 cm^2 × 2 ÷ 20 cm
= 25 cm

The length of PQ is **25 cm**.

Question 48

Feb's savings: 120% = \$180
1% = \$180 ÷ 120
= \$1.50

Jan's savings: 100% = 100 × \$1.50
= \$150

Mar's savings = (100 – 15)% × \$180
= $\frac{85}{100}$ × \$180
= \$153

Total savings over the 3 months = \$150 + \$180 + \$153
= \$483

Average monthly savings = \$483 ÷ 3
= \$161

Lily's average monthly savings was **\$161**.

Question 49

Total no. of yellow balls = 32 × 2
= 64

<u>Yellow balls:</u>

2u = 64 – 8
= 56

1u = 56 ÷ 2
= 28

Question 49 (Cont.)

No. of yellow balls in Basket B = 28 + 8
= 36

No. of green balls in Basket B = 84 – 36
= 48

Average no. of green balls = 32 + 8
= 40

Total no. of green balls = 40 × 2
= 80

No. of green balls in Basket A = 80 – 48
= 32

Difference in no. of green balls = 48 – 32
= 16

Basket B has **16** more green balls than Basket A.

Question 50

4u = 150

1u = 150 ÷ 4
= 37.5

Difference between C and D at first = 2u + 2x
= 2 × 37.5 + 2x
= 75 + 2x

Chris had **(75 + 2x)** more marbles than David at first.