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4
Primary
Based on Latest
MOE Syllabus

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onSponge

CONQUER
PROBLEM SUMS

- Proven strategies used by top performing schools to conquer problem sums
- Structured and guided approach to support learning in school
- Challenging questions to excel in P4 Mathematics

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+hinkingMath@onSponge™ Series

Essential Problem Solving Skills (P3 to P6)
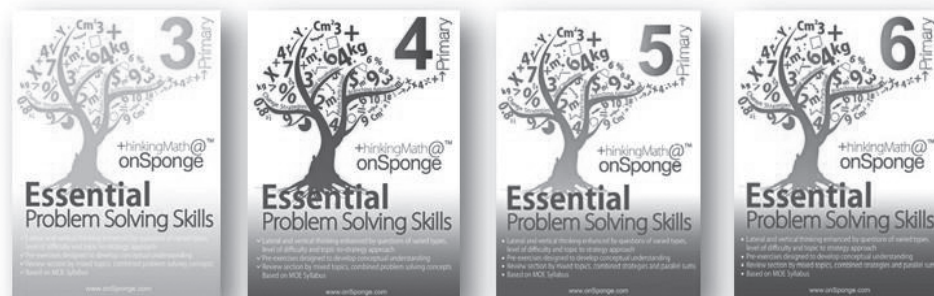
Conquer Problem Sums (P3 to P6)   **PSLE Preparation (P6)**

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SpongeTips to Excel!

Solving problem sums can be enjoyable as the process helps you to:

🔥 *Gain the knowledge and skills* to confidently solve problems in everyday life eg:

   ✔ measuring your height and working out how much you've grown.
   ✔ on car journeys - playing number-plate games, adding and subtracting with road signs, thinking about speed by dividing distance by time.
   ✔ at the shops - weighing fruit and vegetables, budgeting with pocket money, working out the relative value of products by comparing prices and weight.
   ✔ in the kitchen - with weighing and measuring, and temperature and timings.
   ✔ making models and origami shapes.

🔥 *Sharpen your thinking* so you can outwit your friends in riddles, puzzles and games.
🔥 *Think creatively* for more ways to tackle a problem that will amaze your family members and friends.

To become an excellent problem sum solver, it's really easy. Simply use **BRISK**!

B*elieve in yourself*	No problem is too difficult for anyone including you! It may be challenging but that's what makes it interesting. Imagine playing an easy computer game…you will soon be bored! So brace up and tell yourself, "I can do it!"
R*ead to understand*	Never rush through a question even if it looks really easy because you might just miss the important point or fall into the trap set by the author/examiner (Yes, they do set traps!). Read every sentence of the entire problem until you understand and know what you are going to solve.
I*dentify key facts*	All information found in the problem is important. It gives clues to help you solve the problem just like a detective would need clues to solve a mystery. Line by line as you read through, list the facts given in the problem to help guide and lead you to the solution.
S*queeze and write*	You need all the clues to solve the problem. So 'squeeze' out every possible clue from the problem sum and write them one at a time, point by point, onto the empty space provided. Do you know every correct clue/fact stated on the paper will score you points? So go on….'squeeze' and write!
K*eep questioning*	For every fact you have written out, ask yourself, "Is there a computation here that I must make that will lead me closer to the solution?" If the answer is yes, then work it out, check the working and if it is accurate, you are one step closer to the solution. Else, move to the next fact and repeat the process. Before you know it, there's the solution! Once you have arrived at your solution, don't be in a hurry to move on. Take one more look to see if the answer is logically correct. Should the answer look illogical e.g. "There are 2⅓ boys in the class", then you will have to go back and repeat the steps of **BRISK** until you arrive at an answer that is logical based on the facts given.

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P4 Solutions

Note: In all solutions, u represents Units

Chapter 1 Whole Numbers

Unit 1.1 – Divisibility Test

Qn 1
(a) 431 and 569   (b) 712 and 611   (c) 342

(d) 324 and 521   (e) 441 and 621

Unit 1.2 – Divisor, Quotient and Remainder

Qn 1
$$\begin{array}{r} 616 \\ 7\overline{)4317} \\ -42 \\ \hline 11 \\ -7 \\ \hline 47 \\ -42 \\ \hline 5 \end{array}$$

Qn 2
$$\begin{array}{r} 279 \\ 9\overline{)2513} \\ -18 \\ \hline 71 \\ -63 \\ \hline 83 \\ -81 \\ \hline 2 \end{array}$$

Qn 3
$$\begin{array}{r} 664 \\ 8\overline{)5316} \\ -48 \\ \hline 51 \\ -48 \\ \hline 36 \\ -32 \\ \hline 4 \end{array}$$

Quotient = 616
Remainder = 5

Quotient = 279
Remainder = 2

Quotient = 664
Remainder = 4

Qn 4	Qn 5
$12 \times 6 + 5 = 72 + 5 = 77$	$123 \times 8 + 2 = 984 + 2 = 986$

Qn 6	Qn 7
$104 \times 9 + 6 = 936 + 6 = 942$	$113 \times 4 + 3 = 452 + 3 = 455$

Qn 8	Qn 9
$203 \times 7 + 6 = 1421 + 6$ $= 1427$	$14 \times 8 + 6 = 118$ $12 \times 10 = 120$ $120 - 118 = 2$ more chairs

Qn 10
$434 \div 8 = 54$ remainder 2
Total she needs = 55 packets
$55 \times \$2 = \$110$
Miss Tan would need **$110.**

Qn 11
$40 \times 6 = 240$
$240 \div 14 = 17$ packets with 2 remainders
Total packets needed = **18 packets**

Unit 1.3 – Highest Common Factor (HCF)

Qn 1
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40
Common factors of 24 and 40 are 1, 2, 4 and 8.
Highest common factor of 24 and 40 is **8**.

Qn 2
Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
Factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
Common factors of 36 and 60 are 1, 2, 3, 4, 6 and 12.
Highest common factor of 36 and 60 is **12.**

Qn 3
Factors of 45: 1, 3, 5, 9, 15, 45
Factors of 80: 1, 2, 4, 5, 8, 10, 16, 20, 40, 80
Common factors of 45 and 80 are 1 and 5.
Highest common factor of 45 and 80 is **5**.

Qn 4
Factors of 16: 1, 2, 4, 8, 16
Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40
Common factors of 16 and 40 are 1, 2, 4 and 8.
Highest common factor of 16 and 40 is **8**.

Qn 5
Factors of 90: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
Factors of 75: 1, 3, 5, 15, 25, 75
Common factors of 75 and 90 are 1, 3, 5 and 15.
Highest common factor of 75 and 90 is **15**.

Unit 1.4 – Distribution involving Multiplication and Division

Qn 1 9   Qn 2 7   Qn 3 14   Qn 4 20

Qn 5 32   Qn 6 18   Qn 7 10

Unit 1.5 – Word Problems involving Common Factors

Qn 1
$$\begin{array}{l|ll} 2 & 40 & 48 \\ 2 & 20 & 24 \\ 2 & 10 & 12 \\ \hline & 5 & 6 \end{array}$$
(a) Maximum number of bags $= 2 \times 2 \times 2$
= **8 bags**
(b) In each bag = **5 candy bars +**
6 chocolate bars

Qn 2
$$\begin{array}{l|lll} 2 & 36 & 60 & 90 \\ 3 & 18 & 30 & 45 \\ \hline & 6 & 10 & 15 \end{array}$$
(a) Maximum number of goodie bags
$= 2 \times 3$
= **6 bags**
(b) In each bag = 6 packets of sweets
+10 bars of chocolates
+15 packets of biscuits
31 items

Qn 3
$$\begin{array}{l|lll} 2 & 60 & 90 & 120 \\ 3 & 30 & 45 & 60 \\ 5 & 10 & 15 & 20 \\ \hline & 2 & 3 & 4 \end{array}$$
(a) Total people catered to
$= 2 \times 3 \times 5$
= **30 people**
(b) Total items each person can take
= 2 sticks of satays
+ 3 cups of jelly
+ 4 cupcakes
9 items

Qn 4
$$\begin{array}{l|ll} 2 & 80 & 100 \\ 5 & 40 & 50 \\ 2 & 8 & 10 \\ \hline & 4 & 5 \end{array}$$
(a) Largest possible length of each tile
$= 2 \times 5 \times 2$
= **20 cm**
(b) Number of tiles needed = 4×5
= **20 tiles**

Qn 5
$$\begin{array}{l|ll} 2 & 120 & 150 \\ 5 & 60 & 75 \\ 3 & 12 & 15 \\ \hline & 4 & 5 \end{array}$$
(a) Largest possible length of each side
of the tile = $2 \times 5 \times 3$
= **30 cm**
(b) Maximum number of tiles
= 4×5
= **20 tiles**

Qn 6
$$\begin{array}{l|lll} 10 & 80 & 140 & 180 \\ 2 & 8 & 14 & 18 \\ \hline & 4 & 7 & 9 \end{array}$$
(a) Greatest possible length
$= 10 \times 2$
= **20 cm**
(b) Smaller pieces = $4 + 7 + 9$
= **20**

Unit 1.6 – Lowest Common Multiple (LCM)

Qn 1
LCM of 3 and 5 is 15.
4th October $\xrightarrow{\text{15 days later}}$ 19th October
They would meet again on **19th October**

Qn 2

3	30	36
2	10	12
3	5	6
2	5	2
5	1	1

LCM of 36 and 30
= 3 × 2 × 3 × 5 × 2
= 180 seconds = 3 minutes

8.10 p.m. $\xrightarrow{\text{3 minutes later}}$ **8.13 p.m.**

Qn 3

2	10	12	15
5	5	6	15
3	1	6	3
2	1	2	1
	1	1	1

LCM of 10, 15 and 12
= 2 × 5 × 3 × 2
= 60 seconds = 1 minute
(a) 11 p.m. $\xrightarrow{\text{1 minute later}}$ **11.01 p.m.**
(b) Since 1 h = 60 min
→ **60 times**

Qn 4

2	2	4	8
2	2	2	4
2	2	1	2
	1	1	1

Shortest length
= LCM of 2, 4 and 8
= 2 × 2 × 2
= **8**

Qn 5
LCM of 2, 3 and 5 = 2 × 3 × 5
= **30**

Qn 6
Groups of 5 = 3 extra
Groups of 8 = 7 extra
Groups of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60
   (Add 3): 8, 13, 18, ㉓, 28, 33, 38, 43, 48, 53, 58, 63
Groups of 8: 8, 16, 24, 32, 40, 48, 56, 64, 72, 80
   (Add 7): 15 ㉓ 31, 39, 47, 55, 63, 71, 79, 87
Clara has **23 sweets**.

Qn 7
Groups of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44
   (Add 2): 6, 10, 14, 18, 22, ㉖, 30, 34, 38, 42, 46
Groups of 7: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
(Subtract 2): 5, 12, 19, ㉖, 33, 40, 47, 54, 61, 68
Loraine has **26 chocolates**.

Qn 8
Groups of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60
   (Add 5): 11, ⑰ 23, 29, 35, 41, 47, 53, 59, 65
Groups of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60
 (Subtract3): 2, 7, 12, ⑰ 22, 27, 32, 37, 42, 47, 52, 57
Michael has **17 balloons.**

Qn 9
LCM of 5th and 8th = **40**

Qn 10

2	4	5	6
2	2	5	3
3	1	5	3
5	1	5	1
	1	1	1

LCM of 4, 6 and 5
= 2 × 2 × 3 × 5
= 60
Minimum number of books = **60**

Unit 1.7 – More Than/Less Than (External Unchanged Type 1)

Qn 1
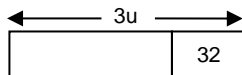
2u = 32 + 14
  = 46
1u = 23
Number of sweets Janice had at first = 23 × 3
                                     = 69
Janice had **69 sweets** at first.

Qn 2
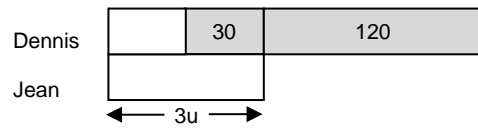
2u = 30
1u = 15
Number of marbles Dennis had at first = 15 + 150
                                      = 165
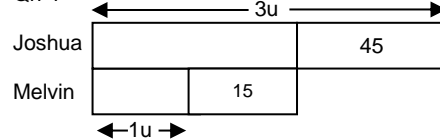Dennis had **165 marbles** at first.

Qn 3
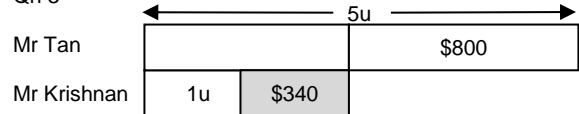
4u = $800 + $340
   = $1140
1u = $285
Mr Tan at first = 5u
                = 5 × $285
                = **$1425**

Qn 4

2u = 15 + 45
   = 60
1u = 30
Number of stickers Joshua had at first
= 3u
= 3 × 30
= **90**

Qn 5
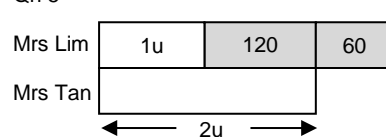
1u = 120
Number of cookies Mrs Lim baked at first = 1u + 180
                                         = 120 + 180
                                         = **300**

Qn 6
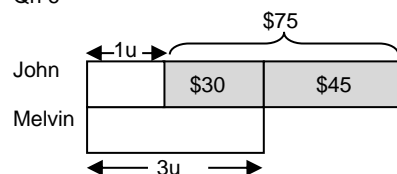
2u = $30
1u = $15
John at first = $15 + $75
              = **$90**

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Unit 1.8 – More Than/Tess than (External Unchanged Type 2)

Qn 1

Before

Boys	

| Girls | |

After

Boys — 3u

| 1u | 8 | 1u | 8 |

Girl

| 1u | **8** |

2u
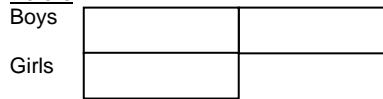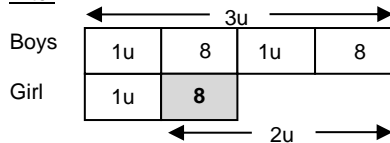
2u = 1u + 8 + 8
1u = 8 + 8
= 16
Number of boys at the party = 16 × 3
= **48**

Qn 2

Before

Aaron	

| Henry | |

After — 4u

Aaron

| 1u | 15 | 1u | 15 |

Henry

| 1u | **15** |

3u
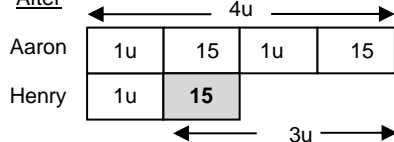
3u = 1u + 15 + 15
2u = 15 + 15
= 30
1u = 15
Number of stickets Aaron had = 4u
= 4 × 15
= **60**

Qn 3

Before

Calvin		

| Mike | |

After — 7u

Calvin

| 1u | 12 | 1u | 12 | 1u | 12 |

Mike

| 1u | **12** |

6u
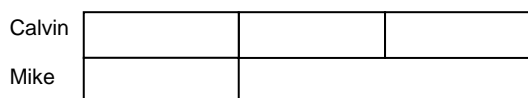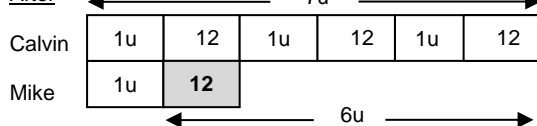
6u = 2u + 12 + 12 + 12
4u = 12 + 12 + 12
= 36
1u = 9
Number of sweets Calvin had = 7u
= 7 × 9
= **63**

Qn 4

Swimmers

Non-swimmers

| ///// | 40 |

←1u→

5u

Swimmers

| ///// ///// ///// | 40 | 40 | 40 |

Non-swimmers

| ///// |

←1u→
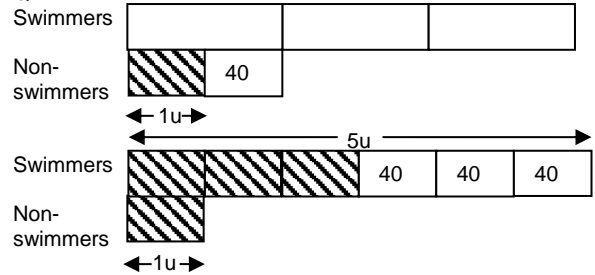
2u = 120
1u = 60
Number of swimmers at the carnival = 5u
= 5 × 60
= **300**

Unit 1.9 – More Than/Less Than (External Unchanged Type 3)

Qn 1

200

Chickens

Ducks
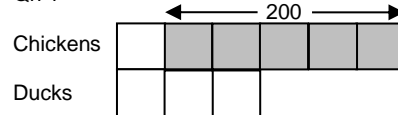
5u = 200
1u = 40
Chickens at first = 6u
= 6 × 40
= **240**

Qn 2

80

Mary

Linda
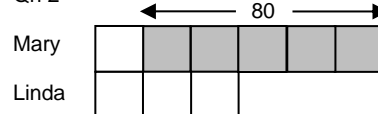
5u = 80
1u = 16
Number of cookies Mary baked at first = 6u
= 6 × 16
= **96**

Qn 3

5u

Mdm Wong

| | | | 30 |

Mdm Lee

←1u→
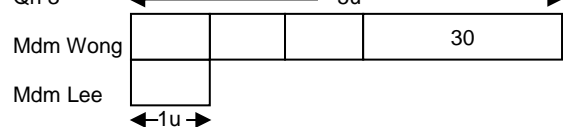
2u = 30
1u = 15
Number of egg tarts Mdm Wong had at first = 3u
= 3 × 15
= **45**

Qn 4

45

Men

Women
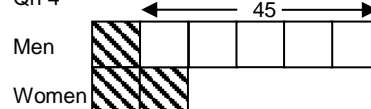
5u = 45
1u = 9
Number of men at the party at first = 6u
= 6 × 9
= **54**

Unit 1.10 – Equal Stage Type 1 (Beginning)

Qn 1

At first

Boys

Girls

End

Boys | 1u | 12

Girls | 8

←——— 3u ———→
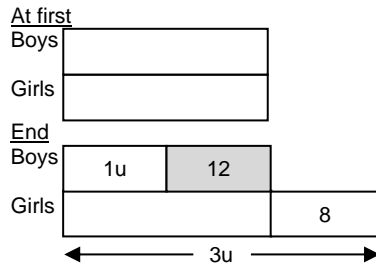
2u = 12 + 8
   = 20
1u = 10
Number of boys at the party at first
= 1u + 12
= 10 + 12
= **22**

Qn 2

At first

Roy

Kenneth

End

←——— 3u ———→

Roy | 36

Kenneth | 1u | 6
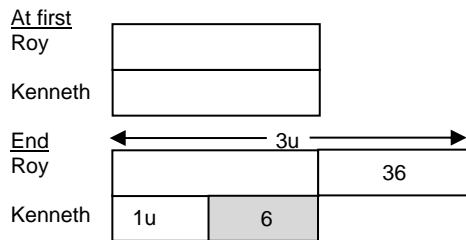
2u = 36 + 6
      = 42
1u = 21
Number of cards each had at first = 21 + 6
                                  = **27**

Qn 3

At first

Raymond

Victor

End

Raymond | 1u | $48

Victor | $12

←——— 4u ———→
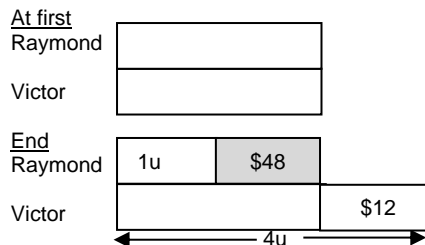
3u = $48 + $12
   = $60
1u = $20
Amount of money each of them had at first
= $20 + $48
= **$68**

Qn 4

At first

Boys

Girls

End

←——— 2u ———→

Boys | 12

Girls | 1u | 8
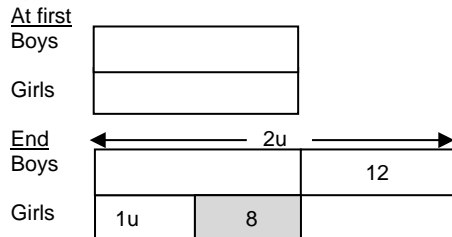
1u = 8 + 12
   = 20
Total numbers of students in the class = (20 + 8) × 2
                                       = **56**

Qn 5

At first

Pears

Apples

End

←——— 3u ———→

Pears | 42
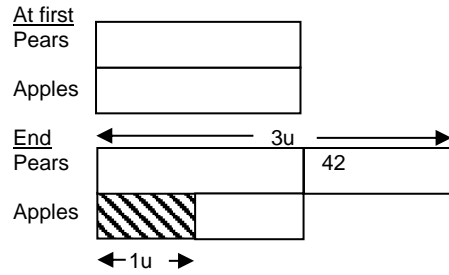
Apples | 1u

2u = 1u + 42
1u = 42
Number of apples at first = 42 × 2
                          = **84**

Qn 6

At first

Boys

Girls

End

←— 1u —→

Boys | 60

Girls | 12

←— 2u —→
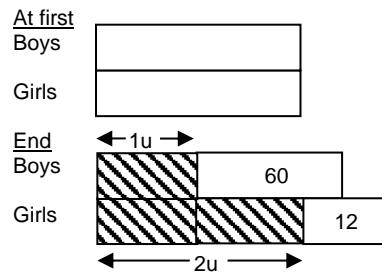
1u = 60 – 12
   = 48
Number of boys at first = 48 + 60
                        = **108**

Unit 1.11 – Equal Stage Type 2 (End)

Qn1

End

Imran

Sue

At first

←——— 2u ———→

Imran | $120

Sue | $48

←— 1u —→
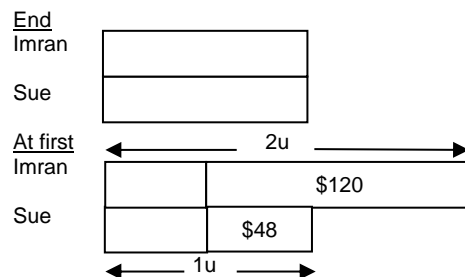
1u = $120 – $48
   = $72
Each left = $72 – $48
          = **$24**

Qn 2

End

Elias

Aileen

At first

←——— 5u ———→

Elias | 88

Aileen | 8

←— 1u —→

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Left Column
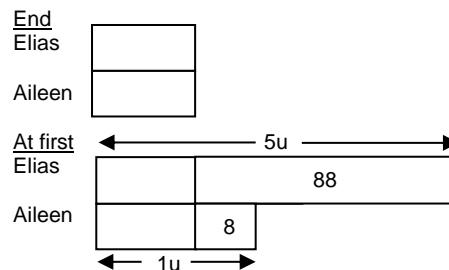
Qn 2 (Cont.)

$4u = 88 - 8$
$\quad = 80$
$1u = 20$
Number of stickers each had in the end = $20 - 8$
$\qquad\qquad\qquad\qquad\qquad\qquad\quad$ = **12**

Qn 3

<u>End</u>
Badminton

Bowling

<u>At first</u>
Badminton $\overset{\xleftarrow{\hspace{1.5cm}} 3u \xrightarrow{\hspace{1.5cm}}}{}$

$\qquad\qquad\qquad$ 36

Bowling

$\qquad\qquad$ 4

$\overset{\xleftarrow{\hspace{0.8cm}} 1u \xrightarrow{\hspace{0.8cm}}}{}$
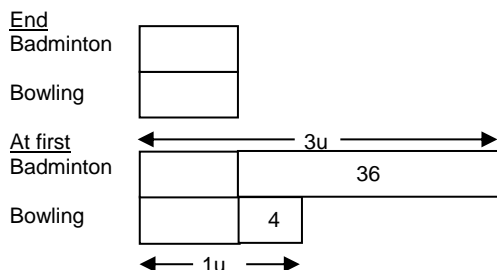
$2u = 36 - 4$
$\quad = 32$
$1u = 16$
Number of member left in each club = $16 - 4$
$\qquad\qquad\qquad\qquad\qquad\qquad\quad$ = **12**

Qn 4

<u>End</u>
Boys

Girls

<u>At first</u>
Boys $\overset{\xleftarrow{\hspace{1.2cm}} 3u \xrightarrow{\hspace{1.2cm}}}{}$

$\qquad\qquad\qquad$ 12

Girls

$\qquad\qquad$ 20

$\overset{\xleftarrow{\hspace{0.5cm}} 1u \xrightarrow{\hspace{0.5cm}}}{}$
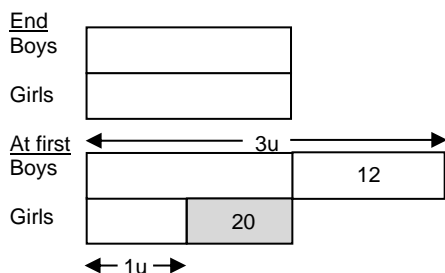
$2u = 20 + 12$
$\quad = 32$
$1u = 16$
Number of boys at first = 16×3
$\qquad\qquad\qquad\qquad\quad$ = **48**

Qn 5

<u>End</u>
Oranges

Apples

<u>At first</u>
Oranges $\qquad$ +35 $\Big\}$
$\qquad\qquad\qquad\qquad$ 125
Apples
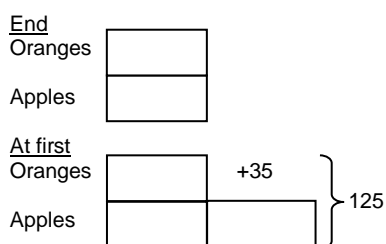
$3u = 125 - 35$
$\quad = 90$
$1u = 30$
Number of oranges at first = $30 + 35$
$\qquad\qquad\qquad\qquad\qquad$ = **65**

Right Column

Qn 6

<u>End</u>
Raymond

Rauf

<u>At first</u>
Raymond $\qquad$ 12

Rauf $\qquad$ 12 $\qquad$ 30 $\Big\}$ 224
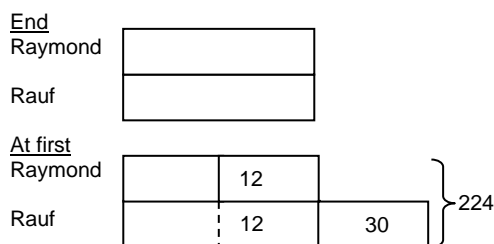
$2u = 224 - 12 - 30$
$\quad = 182$
$1u = 91$
Raymond at first = **91**

Unit 1.12– Equal Stage Type 3 (Internal Transfer)

Qn 1

<u>End</u>
Imran

Lucy

<u>At first</u>
Imran $\overset{\xleftarrow{\hspace{2cm}} 4u \xrightarrow{\hspace{2cm}}}{}$
$\qquad\qquad\qquad$ $210
Lucy $\quad$ 1u $\quad$ $210
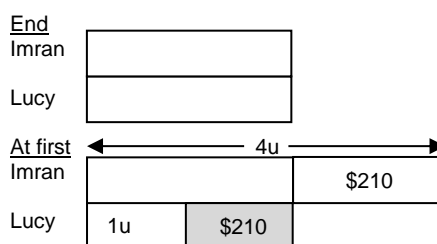
$3u = \$210 \times 2$
$\quad = \$420$
$1u = \$140$
Each at first $\qquad$ Lucy = **\$140**
$\qquad\qquad\qquad$ Imran = $4 \times \$140$
$\qquad\qquad\qquad\qquad\quad$ = **\$560**

Qn 2

<u>End</u>
Daniel

James

<u>At first</u>
Daniel $\overset{\xleftarrow{\hspace{1.5cm}} 2u \xrightarrow{\hspace{1.5cm}}}{}$
$\qquad\qquad\qquad$ 18
James $\quad$ 1u $\quad$ 18
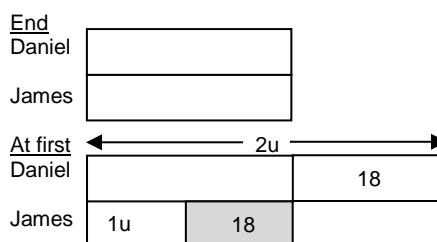
$1u = 18 + 18$
$\quad = 36$
Each at first, James = **36**
$\qquad\qquad$ Daniel = 36×2
$\qquad\qquad\qquad\qquad$ = **72**

Qn 3

<u>End</u>
Mr Lim

Mr Johnson

<u>At first</u>
Mr Lim $\overset{\xleftarrow{\hspace{2cm}} 3u \xrightarrow{\hspace{2cm}}}{}$
$\qquad\qquad\qquad$ 42
Mr Johnson $\quad$ 1u $\quad$ 42
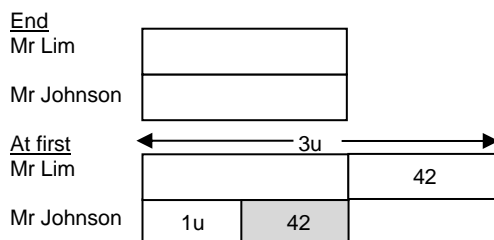
$2u = 42 + 42$
$\quad = 84$
$1u = 42$
Number of pies Mr Lim had at first = 42×3
$\qquad\qquad\qquad\qquad\qquad\qquad$ = **126**

Qn 4

End

David	
Serene	

At first — 5u →

David

	32

Serene

1u	32
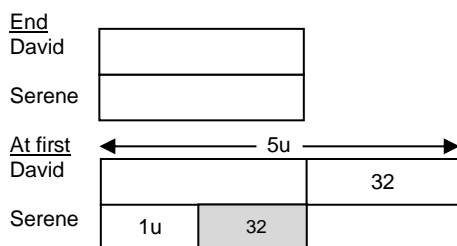
4u = 32 + 32
  = 64
1u = 16
Each at first, Serene = **$16**
            David = 5 × $16
                  = **$80**

Unit 1.13 – Multiple Quantities (More than/Less than)

Qn 1

1 CD

1 thumbdrive $20

5 CDs

4 thumbdrives   } $242

9U + $80 = $242
9u = $162
1u = $18
Cost of 1 CD is **$18.**

Qn 2

1 bulb

1 lamp $44

7 bulbs

5 lamps   + ($44 × 5)   } $292

12u + $220 = $292
12u = $72
 1u   = $6
A lamp costs = $44 + $6
            = **$50**

Qn 3

1 T-shirt

1 Bermuda $18

3 T-shirts

4 Bermudas   + ($18 × 4)   } $170

7u + $72 = $170
7u = $98
1u = $14
Cost fo 1 Bermudas = $14 + $18
                  = **$32**

Qn 4

1 plate

1 cup

6 plates = 12u
8 cups =   8u
20u   = $120
 1u   = $6
12 plates cost = $6 × 2 × 12
              = **$144**

Qn 5

1 crate

1 carton

5 cartons =   5u
7 crates = 21u   } 130 kg

26u   = 130 kg
 1u   = 130 ÷ 26
      = 5 kg
Mass of 1 carton = **5 kg**

Qn 6

1 pillow

1 bolster

3 pillows = 12u
8 bolsters =   8u   } $360

20u   = $360
 1u   = $360 ÷ 20
      = 18
Cost of 1 pillow = $18 × 4
                = **$72**

Qn 7

1 bat

1 racket $22

4 bats

7 rackets   ($22 × 7)   } $286

11u + $154 = $286
11u = $132
 1u = $12
1 racket costs $12 + $22 = **$34**

Qn 8

1 CD

1 shirt $8

1 Bermuda $8   +$12   } $76

3u + $28 = $76
3u   = $48
1u   = $16
1 T-shirt costs = $16 + $8
              = **$24**

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Qn 9

2 cups

1 plate $3

1 bowl $3 $2
} $18

4u + $8 = $18
4u   = $10
1u   = $2.50
12 cups = 12 × $2.50
        = **$30**

Unit 1.14 – Number of Units and Value of Units

Qn 1

	No.	×	Value	=	Total cost
Plates	4u	×	$7	=	28u
Cups	1u	×	$4	=	4u
					32u

32u = $160
1u = $160 ÷ 32
    = 5
Total number of plates = 4u
                       = 4 × 5
                       = **20**

Qn 2

	No.	×	Value	=	Total cost
Horses	3u	×	4	=	12u
Chickens	1u	×	2	=	2u
					14u

14u = 168
1u = 168 ÷ 14
    = 12
Total number of chickens = 1u
                         = **12**

Qn 3

	No.	×	Value	=	Total cost
Welders	4u	×	$35	=	140u
Painters	1u	×	$20	=	20u
					160u

160u = $1280
1u   = $1280 ÷ 160
     = 8
Total number of welders employed = 4u
                                 = 4 × 8
                                 = **32**

Qn 4

	No.	×	Value	=	Total balloons
Girls	5u	×	5	=	25u
Boys	1u	×	4	=	4u
					29u

29u = $174
1u = $174 ÷ 29
    = 6
Number of girls = 5u
                = 5 × 6
                = **30**

Qn 5

	Number	×	Value	=	Total
Adults	1u	×	$8	=	8u
Children	20u	×	$5	=	100u
					108u

108u = 432
1u   = 432 ÷ 108
     = 4
Total number of children = 20u
                         = 20 × 4
                         = **80**

Qn 6

	Number	×	Value	=	Total
Correct Qn	5u	×	3 points	=	15u
Wrong Qn	1u	×	− 2points	=	−2u
Difference					13u

13u = 104
1u = 104 ÷ 13
    = 8
Number of questions answered correctly
= 5u
= 5 × 8
= **40**

Unit 1.15 – Repeated Identity (Type 1)

Qn 1

Imran

Daniel

Jessica
} 143
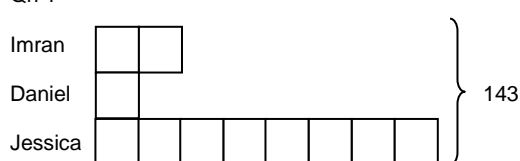
11u = 143
1u = 143 ÷ 11
    = 13
Number of stickers Imran has = 2u
                             = 2 × 13
                             = **26**

Qn 2

Sam

Calvin

Krishnan
} $2100
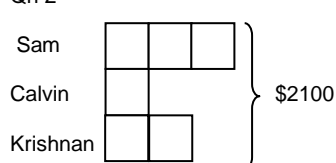
6u = $2100
1u = $2100 ÷ 6
    = $350
Amount of money that Sam had = 3u
                             = 3 × $350
                             = **$1050**

Qn 3

Blue

Red

Green
} 135
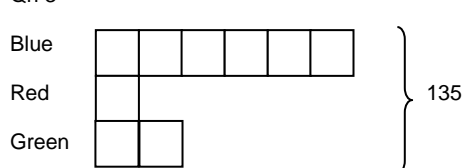
9U = 135
1U = 135 ÷ 9
    = 15
Number of red balls in the bag = **15**

Qn 4

Michelle

Chris

Rebecca   ← 8 →
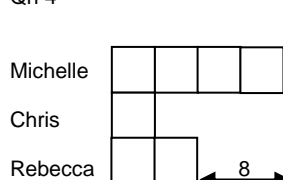
2u = 8
1u = 8 ÷ 2
    = 4
Total dolls collected = 7u
                      = 7 × 4
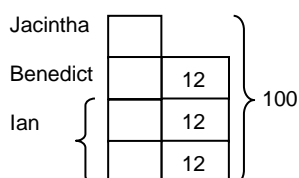   = **28**

Qn 5

Boys

Girls
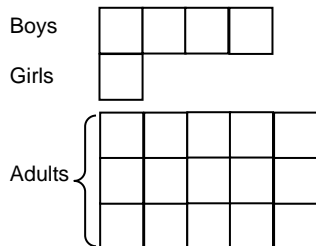
Adults {

Difference between adults and boys = 11u
11u = 88
1u   = 8

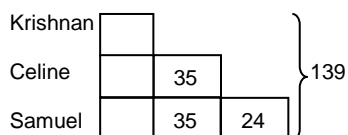Total number of people at the fun fair
= 20u
= 20 × 8
= **160**

Unit 1.16 – Repeated Identity (Type 2)

Qn 1

Jacintha

Benedict — 12

Ian { 12, 12 } 100

4u + 36 = 100
4u = 64
1u = 16
Number of stickers Benedict has = 16 + 12
= **28**

Qn 2

Krishnan

Celine — 35

Samuel — 35 24 } 139

3u + 94 = 139
3u = 45
1u = 15

Total number of bottle caps Celine collected
= 15 + 35
= **50**

Qn 3

Green

Red — 12

Blue { 12, 12, 12 } 128
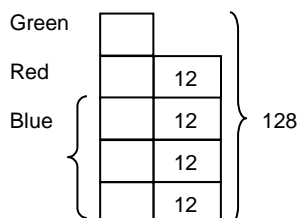
5u + 48 = 128
5u = 80
1u = 16
Total number of red balls in the bag = 16 + 12
= **28**

Qn 4

Clara

Betty — 8

Alicia { 8, 8, 8 } 102
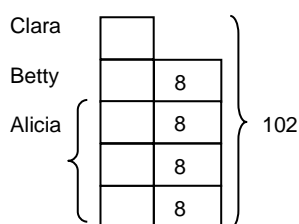
5U + 32 = 102
5U = 70
1U = 14
Total number of buttons Betty had = 14 + 8
= **22**

Qn 5

Green

Blue — 15

Red { 15, 15 } 141
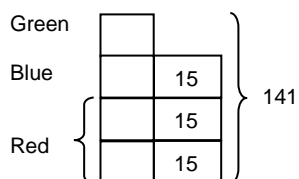
4u + 45 = 141
4u   = 96
1u   = 24
Total green balloons = **24**

Unit 1.17 – Repeated Identity (Type 3)

Qn 1

Daniel + Elias = 240
Cindy + Elias = 320
Difference between Cindy and Daniel = 320 – 240
= 80

Cindy   =   3u
Daniel   =   1u
Difference   2u = 80
1u = 40
Number of cards Daniel have = 1u
= 40
Number of cards Elias have = 240 – 40
= **200**

Qn 2

Difference in students = Difference in girls
Difference : 3u = 420 – 225
= 195
1u = 195 ÷ 3
= 65 (Girls in Campsite A)
Number of boys in Campsite A = 225 – 65
= 160
Total number of boys in both campsites = 160 × 2
= **320**

Qn 3

Difference in red and blue balls = 3u – 1u
= 2u
2u = 320 – 180
= 140
1u = 70

Total number of green balls in both bags
= (180 – 70) × 2
= **220**

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Qn 4

John + Benedict = 124
Henry + Benedict = 284
Difference between John and Henry = 284 −124
= 160

Henry = 5u
John = 1u
Difference 4u
4u = 160
1u = 40
Number of cards John has = 1u
= 40
Number of cards Benedict has = 124 − 40
= **84**

Qn 5

Serene + Tommy = 130
Tommy + Clara = 141
Serene + Clara = 99

Twice of (Serene + Tommy + Clara) = 370
Serene + Tommy + Clara = 370 ÷ 2
= 185

Serene = 185 − 141
= **44**

Chapter 2 Fraction

Unit 2.1 – Addition & Subtraction of Fractions (Type 1)

Qn 1

(a) $1 - \dfrac{5}{12} - \dfrac{1}{12} = \dfrac{6}{12}$
$= \dfrac{1}{2}$

He gave $\dfrac{1}{2}$ of his sweets in all.

(b) He had $\dfrac{1}{2}$ of his sweets left.

Qn 2

$1 - \dfrac{3}{11} - \dfrac{4}{11} = \dfrac{4}{11}$

$\dfrac{4}{11}$ pole = 20 cm

$\dfrac{1}{11}$ pole = 5 cm

(a) $\dfrac{4}{11}$ of the pole was painted green.

(b) Length of the pole = 11 × 5
= **55 cm**

Qn 3

(a) $1 - \dfrac{2}{9} - \dfrac{4}{9} = \dfrac{3}{9}$
$= \dfrac{1}{3}$

$\dfrac{1}{3}$ of the class likes soccer.

(b) Total students in the class = 12 × 3
= **36**

Qn 4

$1 - \dfrac{1}{7} - \dfrac{3}{7} = \dfrac{3}{7}$

(a) She did not spend $\dfrac{3}{7}$ of her money.

(b) $\dfrac{3}{7}$ total = $27

$\dfrac{1}{7}$ total = $9

Total at first = $9 × 7
= **$63**

Qn 5

$1 - \dfrac{4}{13} - \dfrac{3}{13} = \dfrac{6}{13}$

(a) She had $\dfrac{6}{13}$ of her money left.

(b) $\dfrac{6}{13}$ of total = $24

$\dfrac{1}{13}$ of total = $4

Total amount of money at first = $4 × 13
= **$52**

Qn 6

$\dfrac{7}{12} - \dfrac{5}{12} = \dfrac{2}{12}$
$= \dfrac{1}{6}$

$\dfrac{1}{6}$ ribbon = 24 cm

Ribbon at first = 24 × 6
= **144 cm**

Unit 2.2 – Addition & Subtraction of Fractions (Type 2)

Qn 1

$\dfrac{1}{3} + \dfrac{1}{8} = \dfrac{8}{24} + \dfrac{3}{24}$
$= \dfrac{11}{24}$

She spent $\dfrac{11}{24}$ of her money.

Qn 2

$1 - \dfrac{2}{5} - \dfrac{2}{7} = 1 - \dfrac{14}{35} - \dfrac{10}{35}$
$= \dfrac{11}{35}$

She had $\dfrac{11}{35}$ of her salary left.

Qn 3

$1 - \dfrac{1}{6} - \dfrac{1}{4} = 1 - \dfrac{2}{12} - \dfrac{3}{12}$
$= \dfrac{7}{12}$

$\dfrac{7}{12}$ total = 35

$\dfrac{1}{12}$ total = 5

Qn 3 (Cont.)
Total = 12 × 5 pies
     = 60 pies

Qn 4

$$1 - \frac{1}{4} - \frac{3}{8} = 1 - \frac{2}{8} - \frac{3}{8}$$

$$= \frac{3}{8}$$

$\frac{3}{8}$ strings = 90 cm

$\frac{1}{8}$ string = 30 cm

Original length = 30 × 8
            = **240 cm**

Qn 5

$$1 - \frac{1}{4} - \frac{2}{5} = 1 - \frac{5}{20} - \frac{8}{20}$$

$$= \frac{7}{20}$$

$\frac{7}{20}$ track = 1400 m

$\frac{1}{20}$ track = 200 m

Entire track = 200 m × 20
            = **4000 m**

Qn 6

$$1 - \frac{1}{3} - \frac{3}{7} = 1 - \frac{7}{21} - \frac{9}{21}$$

$$= \frac{5}{21}$$

$\frac{5}{21}$ of total = 145

$\frac{1}{21}$ of total = 145 ÷ 5

            = 29

Total apples at first = 29 × 21
            = **609**

Unit 2.3 – Addition & Subtraction of Fractions (Type 3)

Qn 1

$$\text{Difference in mass} = \frac{1}{2} \text{ kg} - \frac{1}{3} \text{ kg}$$

$$= \frac{3}{6} \text{ kg} - \frac{2}{6} \text{ kg}$$

$$= \frac{1}{6} \textbf{ kg}$$

Qn 2

$$\text{Weight of pencil box} = \frac{8}{9} \text{ kg} - \frac{2}{3} \text{ kg}$$

$$= \frac{8}{9} \text{ kg} - \frac{6}{9} \text{ kg}$$

$$= \frac{2}{9} \text{ kg}$$

$$\text{Difference in mass} = \frac{2}{3} \text{ kg} - \frac{2}{9} \text{ kg}$$

$$= \frac{6}{9} \text{ kg} - \frac{2}{9} \text{ kg}$$

$$= \frac{4}{9} \textbf{ kg}$$

Qn 3

$$\text{Difference} = \frac{1}{3} - \frac{1}{5}$$

$$= \frac{5}{15} - \frac{3}{15}$$

$$= \frac{2}{15} \text{ cake}$$

$\frac{2}{15}$ of cake = 200 g

$\frac{1}{15}$ of cake = 100 g

Total cake = 15 × 100g
            = **1500 g**

Qn 4

$$\text{Mass of cup} = \frac{2}{3} \text{ kg} - \frac{2}{5} \text{ kg}$$

$$= \frac{10}{15} \text{ kg} - \frac{6}{15} \text{ kg}$$

$$= \frac{4}{15} \text{ kg}$$

$$\text{Difference in mass} = \frac{2}{5} \text{ kg} - \frac{4}{15} \text{ kg}$$

$$= \frac{6}{15} \text{ kg} - \frac{4}{15} \text{ kg}$$

$$= \frac{2}{15} \textbf{ kg}$$

Unit 2.4 – Part-whole Relationship (Type 1)

Qn 1
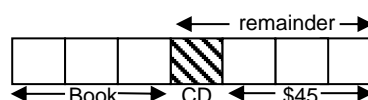
3u = $45
1u = $15
Total amount of money at first = 7u
                            = 7 × $15
                            = **$105**

Qn 2
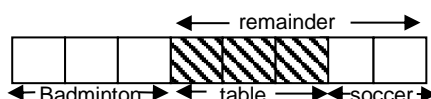
Difference between badminton and soccer = 1u
                               = 6

Total in class = 8u
               = 8 × 6
               = **48**

Qn 3
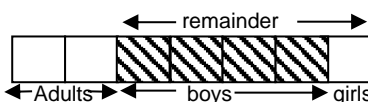
Difference between adults and girls = 1u
                           = 80

Total at the party = 7u
                 = 7 × 80
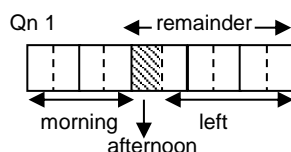   = **560**

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Qn 4
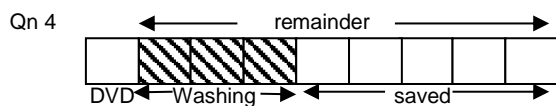
5u = $1250
1u = $250
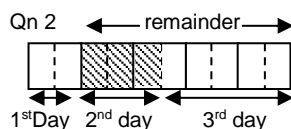Total spent on DVD = **$250**

Qn5
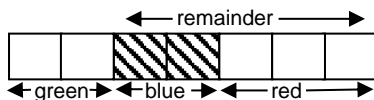
Difference between red and green = 1u
1u = 12
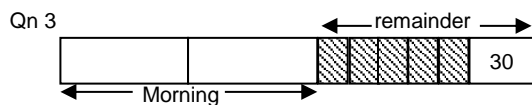Total in the bag = 7u
$$= 7 \times 12$$
$$= \mathbf{84}$$
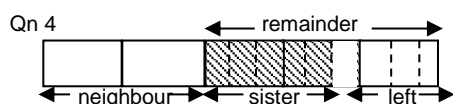
Unit 2.5 – Part-whole Relationship (Type 2)

Qn 1

5u   = 250
1u   = 50
Total = 10u
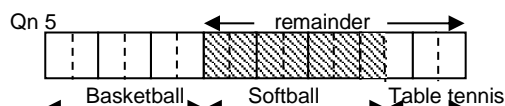$$= 10 \times 50$$
$$= \mathbf{500}$$

Qn 2

Difference between the 1st and 3rd day = 3u
3u = 48
1u = 16
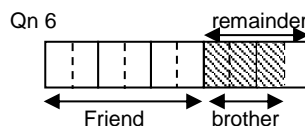Total pages of book = 10u
$$= 10 \times 16$$
$$= \mathbf{160}$$

Qn 3

Since 1u = 30
Remainder = 6u
$$= 6 \times 30$$
$$= 180$$
Total at first = 180 × 3
$$= \mathbf{540}$$

Qn 4

4u = 80
1u = 20
Total = 15u
$$= 15 \times 20$$
$$= \mathbf{300}$$

Qn 5

Difference between basketball and table tennis = 3u
3u = 9
1u = 3
Total in the class = 16u
$$= 16 \times 3$$
$$= \mathbf{48}$$

Qn 6

Difference between friend and brother = 3u
3u = 15
1u = 5
Total cookies she baked at first = 10u
$$= 5 \times 10$$
$$= \mathbf{50}$$

Qn 7
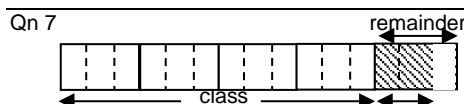
1u = 30
Total = 15u
$$= 15 \times 30$$
$$= \mathbf{450}$$

Qn 8
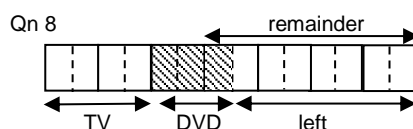
7u = $630
1u = $630 ÷ 7
   = $90
Total = 14u
14u = 14 × $90
$$= \mathbf{\$1260}$$

Qn 9
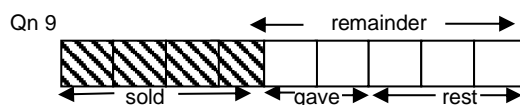
Total = 9u
9u = 360
1u = 360 ÷ 9
   = 40
Rest = 3u
3u = 3 × 40
   = 120
Number of boxes = 120 ÷ 30
$$= \mathbf{4}$$

Unit 2.6 Part-whole Relationship (Type 3)

Note: u represents units and p represent parts.

Qn 1
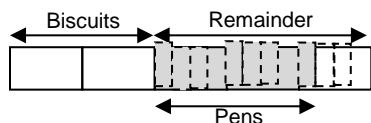
3u of Total = 12p
1u of Total = 4p
5u of Total = 20p

(a) He spent $\frac{9}{20}$ of his money on pens.

Money left = 12p – 9p
        = 3p

3p = 6
1p = 2
4p = 8

1u = 8
5u = 40

(b) Max had **$40** at first.

Qn 2
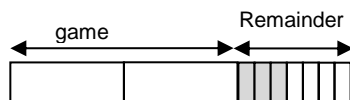
1u of Total = 7p
3u of Total = 21p

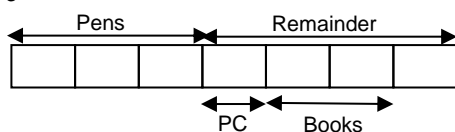(a) She spent $\frac{4}{21}$ of her money on the CD.

4p = 24
1p = 6
7p = 42

1u = 42
3u = 126

(b) Daphne had **$126** at first.

Qn 3

(a) Fraction of money left = $\frac{1}{7}$

(b) 1u = $12
    7u = 7 × $12
       = $84
    Serene had **$84** at first.

Qn 4
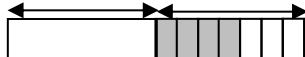
1u of Total = 7p
2u of Total = 14p

4p = 8 loaves of bread
1p = 2 loaves of bread
7p = 14 loaves of bread

Qn 4 (Cont.)

1 loaf of bread = 3 pies
14 loaves of bread = 42 pies
 Esther bought **42 pies**.

Qn 5

5u of Total = 15p
1u of Total = 3p
7u of Total = 21p
10p = $2200
1p = $2200 ÷ 10
   = $220
21p = 21 × $220
    = $4620
Mr Imran's salary was **$4620.**

Qn 6
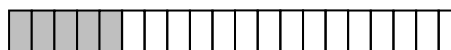
6u of Girls and 3u of boys did not know how to swim.
Swimmers = 20u – 9u
         = 11u
11u = 154
1u = 14
20u = 280
There were **280 students** altogether at the event.

Unit 2.7 Comparison of Different Quantities

Qn 1
1 box   = 3u
1 crate = 5u

2 boxes = 6u   ⎱
4 crates = 20u   ⎰ 130 kg
Total mass = 26u
26u = 130 kg
1u = 150 kg ÷ 26
   = 5 kg
Mass of 1 box of onions = 3u
                        = 3 × 5 kg
                        = **15 kg**

Qn 2
1 wire   = 1u
1 ribbon = 3u
6 wires   = 6u
3 ribbons = 9u
Total = 15u
15u = 300 cm
1u = 300 cm ÷ 15
   = 20 cm
Length of a wire = **20 cm**

Qn 3
1 girl   = 1u
1 boy   = 4u
8 girls = 8u   ⎱
6 boys   = 24u   ⎰ 256
Total = 32u
32u = 256
1u = 256 ÷ 32
   = 8
No. of sweets received by each girl = **8**

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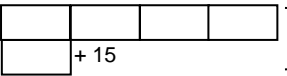
Qn 4
1 radio   = 3u
1 computer = 5u
7 radios   = 21u
4 computers = 20u } $3280
Total = 41u
41u = $3280
1u = $3280 ÷ 41
   = $80
Cost of computer = 5u
            = 5 × $80
            = **$400**

Unit 2.8 – Equal Stage (Type 1)

Qn 1
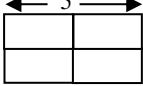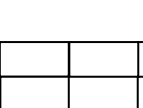
$\frac{1}{4}$ of pencils left
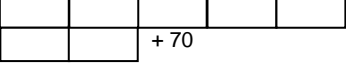
End
Pencils
Pens

At first
Pencils   } 100
Pens   + 15

5u + 15 = 100
5u = 85
1u = 17
Total pens at first = 17 + 15
            = **32**

Qn 2

End $\frac{2}{5}$ of boys left behind
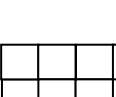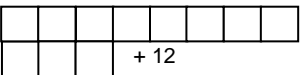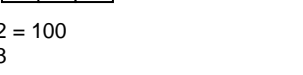
Boys
Girls

At first
Boys   } 280
Girls   + 70

7u + 70 = 280
7u = 210
1u = 30
Total boys at first = 5u
            = 5 × 30
            = **150**

Qn 3
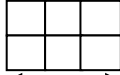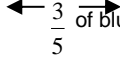
$\frac{3}{8}$ of plates left

End
Plates
Cups
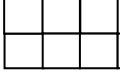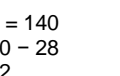
At first
Plates   } 100
Cups   + 12

11u + 12 = 100
11u = 88
 1u = 8
Total cups at shop at first = 3u + 12
            = 3 × 8 + 12
            = **36**

Qn 4
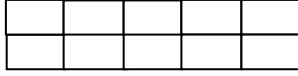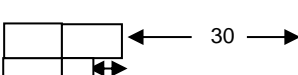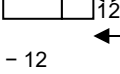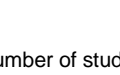
End
Green
Blue
        $\frac{3}{5}$ of blue balls left

At first
Green   +28   } 140
Blue

8u + 28 = 140
8u = 140 − 28
   = 112
1u = 14
Total blue balls at first = 5u
            = 5 × 14
            = **70**

Qn 5
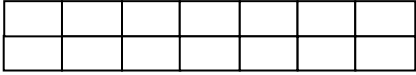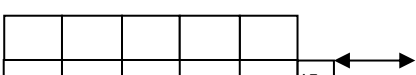
At first
Boys
Girls
End
Boys   30
Girls   12
            42
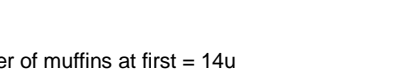
3u = 42 − 12
   = 30
1u = 10
Total number of students at first = 10u
            = 10 × 10
            = **100**

Qn 6

At fist
Banana
Chocolate
End
Banana
Chocolate   15   45
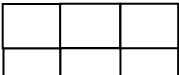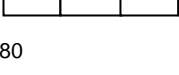
2u = 45 + 15
   = 60
1u = 30
Total number of muffins at first = 14u
            = 14 × 30
            = **420**

Unit 2.9 – Equal Stage (Type 2)

Qn 1

Daniel
Gerald   } 280

10u = 280
1u = 28
Number of sweets Gerald must give Daniel = 2u
            = 2 × 28
            = **56**

Qn 2

Tan
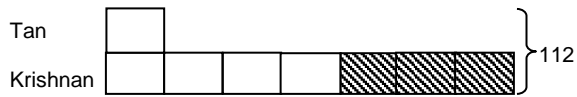
Krishnan } 112

8u = 112
1u = 14
Number of cookies Mrs Krishnan must give Mrs Tan
= 3u
= 3 × 14
= **42**

Qn 3

Joseph

Aaron } $128
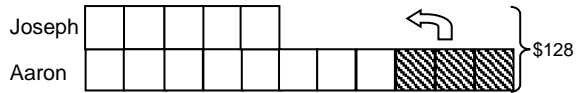
16u = $128
1u = $8
Aaron must give to Joseph = 3u
= 3 × $8
= **$24**

Qn 4

Clara

Judy } 260
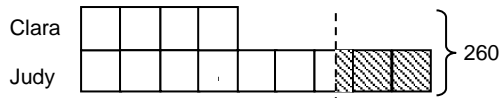
13u = 260
1u = 20
Number of pebbles Judy must give to Clara

$= 2\frac{1}{2}$ u

$= 2\frac{1}{2} \times 20$

$= \frac{5}{2} \times 20$

= **50**

Qn 5

David

Raymond } 280
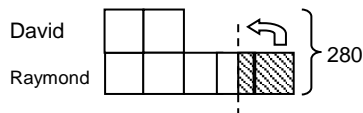
7u = 280
1u = 40
Number of books Raymond must give David

$= 1\frac{1}{2}$ u

$= 1\frac{1}{2} \times 40$

$= \frac{3}{2} \times 40$

= **60**

Unit 2.10 – Equal Stage (Type 3)

Qn 1

$\frac{3}{4}$ of Chelsia = $\frac{2}{3}$ of Benson

$\frac{6}{8}$ of Chelsia = $\frac{6}{9}$ of Benson

Chelsia = 8u
Benson = 9u

Difference = 1u

Qn 1 (Cont.)

1u = $18
Total sum of Chelsia + Benson = 17u
= 17 × $18
= **$306**

Qn 2

$\frac{4}{7}$ of girls = $\frac{2}{3}$ of boys

$\frac{4}{7}$ of girls = $\frac{4}{6}$ of boys

Girls = 7u
Boys = 6u
Total = 13u
13u = 78
1u = 6
Total girls = 7u
= 7 × 6
= **42**

Qn 3

$\frac{3}{5}$ of pencils = $\frac{2}{5}$ of pens

$\frac{6}{10}$ of pencils = $\frac{6}{15}$ of pens

Pencils = 10u
Pens = 15u
Total = 10u + 15u
= 25u
25u = 75
1u = 3
Pencils = 10u
= 10 × 3
= **30**

Qn 4

$\frac{3}{4}$ of men = $\frac{1}{7}$ of women

$\frac{3}{4}$ of men = $\frac{3}{21}$ of women

Men = 4u
Women = 21u
Total = 4u + 21u
= 25u
25u = 225
1u = 9
Total men = 4u
= 4 × 9
= **36**

Qn 5

$\frac{3}{4}$ boys = $\frac{2}{3}$ girls

$\frac{6}{8}$ boys = $\frac{6}{9}$ girls

Boys = 8u
Girls = 9u
Total = 17u
17u = 510
1u = 30
Difference between boys and girls = 1u
= **30**

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Qn 6

$\dfrac{2}{5}$ of blue = $\dfrac{3}{5}$ of red

$\dfrac{6}{15}$ of blue = $\dfrac{6}{10}$ of red

Blue = 15u
Red = 10u
Total = 15u + 10u
        = 25u
25u = 125
1u = 5
Difference between blue and red = 5u
                = 5 × 5
                = **25**

Qn 7

$\dfrac{3}{4}$ of English = $\dfrac{2}{7}$ of Chinese

$\dfrac{6}{8}$ of English = $\dfrac{6}{21}$ of Chinese

English = 8u
Chinese = 21u
Total = 8u+ 21u
        = 29u
29u = 435
1u = 15
English total = 8u
        = 8 × 15
        = **120**

Qn 8

$\dfrac{3}{8}$ of oranges = $\dfrac{2}{5}$ of apples

$\dfrac{6}{16}$ of oranges = $\dfrac{6}{15}$ of apples

Oranges = 16u
Apples = 15u
Total = 16u + 15u
        = 31u
31u = 620
1u = 20
Apples = 15u
        = 15 × 20
        = **300**

Qn 9

$\dfrac{1}{4}$ Esther = $\dfrac{3}{7}$ Kevin

$\dfrac{3}{12}$ Esther = $\dfrac{3}{7}$ Kevin

Esther = 12u
Kevin = 7u
Difference = 5u
5u = $350
1u = $70
Kevin = 7u
        = 7 × $70
        = **$490**

Qn 10

$\dfrac{2}{5}$ boys = $\dfrac{3}{8}$ girls

$\dfrac{6}{15}$ boys = $\dfrac{6}{16}$ girls

Qn 10 (Cont.)

Boys = 15u
Girls = 16u
Difference = 1u
1u = 30
Boys at first = 15u
        = 15 × 30
        = **450**

Qn 1

At first
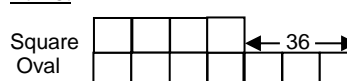
3u = 36
1u = 12
Number of square-shaped cookies = 4u
                = 4 × 12
                = 48
Number of oval-shaped cookies = 7u
                = 7 × 12
                = 84
End
Oval = 3u
Square = 1u
Since oval-shaped cookies remained the same;
3u = 84
1u = 28
Number of square-shaped cookies in the end = 1u
                = 28
Number of square-shaped cookies removed = 48 – 28
                = **20**

Qn 2

At first
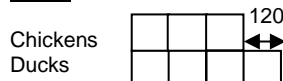
1u = 120
Number of chickens = 3u
                = 3 × 120
                = 360
Number of ducks = 4u
                = 4 × 120
                = 480
End
Ducks = 4u
Chickens = 1u
Since the number of ducks remained the same;
4u = 480
1u = 120
Number of chickens in the end = 1u
                = 120
Number of of chickens sold = 360 – 120
                = **240**

Qn 3

At first
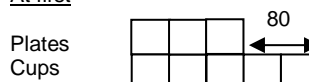
2u = 80
1u = 40

Number of plates = 3u
      = 3 × 40
      = 120
Number of cups = 5u
      = 5 × 40
      = 200
<u>End</u>
Plates = 2u
Cups = 1u
Since the number of plates remained the same;
2u = 120
1u = 60
Number of cups in then end = 1u
         = 60
Number of cups sold = 200 – 60
        = 140

Qn 4

<u>At first</u>
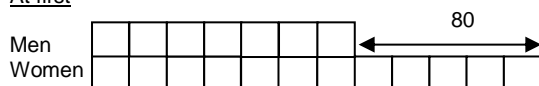
5u = 80
1u = 16

Men = 16 × 7
   = 112
Women = 12 × 16
   = 192

<u>End</u>
Men = 1u
Women = 3u

Since women remain the same,
3u = 192
1u = 64
Number of men who left halfway = 112 – 64
           = 48

Unit 2.12 – External Unchanged (Type 2)

Qn 1

<u>At first</u>
Orange = 3u
Water = 7u

<u>End</u>
Orange = 1u × 3
    = 3u
Water = 4u × 3
    = 12u
Increase in water used = 12u – 7u
        = 5u
5u = 1100 mℓ
1u = 220 mℓ
Amountof syrup used = 3u
       = 3 × 220 mℓ
       = 660 mℓ

Qn 2

<u>At first</u>
Children = 3u × 4
    = 12u
Adults = 4u × 4
    = 16u

<u>End</u>
Children = 4u × 3
    = 12u
Adults = 5u × 3
    = 15u

Decrease in adults = 1u
1u = 2
Number of children in the bus = 12u
           = 12 × 2
           = 24

Qn 3

<u>At first</u>
Boys = 4u × 3
   = 12u
Girls = 3u × 3
   = 9u
<u>End</u>
Boys = 3u × 4
   = 12u
Girls = 5u × 4
   = 20u
Increase in girls = 20u – 9u
      =11u

11u = 22
1u = 2
Number of students in the end = 32u
          = 32 × 2
          = 64

Qn 4

<u>At first</u>
Oranges = 1u × 3
     = 3u
Pears   = 2u × 3
     = 6u

<u>End (conditional)</u>
Oranges = 3u
Pears   = 2u

Decrease in pears = 6u – 2u
       = 4u
4u = 20
1u = 5
Total = 9u
   = 9 × 5
   = 45

Qn 5

<u>At first</u>
Red = 1u × 5
   = 5u
Blue = 3u × 5
   = 15u
<u>End</u>
Red = 2u × 3
   = 6u
Blue = 5u × 3
   = 15u

Increase in red = 6u – 5u
      = 1u
2u = 12
Total = 20u
   = 20 × 12
   = 240

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Unit 2.13 – Repeated Identity

Qn 1

Banana = 1u × 2
Chocolate = 5u × 2 } Banana = 2u
                         Chocolate = 10u } 15u
Banana = 2u   Blueberry = 3u
Blueberry = 3u }

15u = 120
1u = 8
Total number of banana = 2u
                       = 2 × 8
                       = **16**

Qn 2

Serene = 4u × 4
Melvin = 7u × 4 } Serene = 16u
                      Melvin = 28u
Melvin = 4u × 7   Esther = 35u
Esther = 5u × 7 }

Difference between Serene and Esther = 35u – 16u
                                     = 19u
19u = 38
 1u = 2
Total number of chocolate = 16u + 28u + 35u
                          = 79u
                          = 79 × 2
                          = **158**

Qn 3

Boys = 1u × 5
Girls = 3u × 5 } Boys = 5u
                     Girls = 15u
Adults = 2u × 4   Adults = 8u
Children = 5u × 4 }

Difference between adults and boys = 8u – 5u
                                   = 3u
3u = 24
1u = 8
Total number of people = 28u
                       = 28 × 8
                       = **224**

Qn 4

Red = 3u × 3
Blue = 5u × 3 } Red = 9u
                    Blue = 15u
Green = 2u × 5   Green = 10u
Blue = 3u × 5 }

Difference between green and red balls = 10u – 9u
                                       = 1u
1u = 8
Total number of balls = 9u + 15u + 10u
                      = 34u
                      = 34 × 8
                      = **272**

Chapter 3 Angles

Unit 3.1 – Naming Angles (Basic)

Qn 1
∠ABC   ∠BCD

Qn 2
∠TUW   ∠WXY

Qn 3
∠ACB   ∠CDE

Qn 4
∠AEC   ∠BDC

Qn 5
(a) ∠WXY
(b) ∠UTW
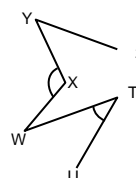
Qn 6
(a) ∠UYT
(b) ∠UWZ
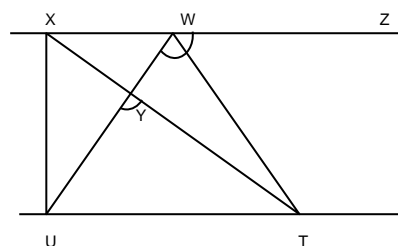
Qn 7
(a) ∠AFE
(b) ∠EBC
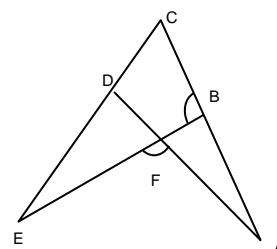
Unit 3.2 – Measuring Angles (Basic)

Qn 1
(a) ∠a = *27°*   (b) ∠a = *130°*
(c) ∠a = *87°*   (d) ∠a = *57°*
(e) ∠ABC = *140°*   (f) ∠XYZ = *102°*

Qn 2
∠ABD = *49°*   ∠CBD = *131°*   ∠ABD + ∠CBD = *18*0°

Qn 3
∠EFH = *71°*   ∠GFH = *109°*   ∠EFH + ∠GFH = *18*0°

Qn 4
∠EFH = *73°*   ∠EFJ = *107°*   ∠EFH + ∠EFJ = *18*0°

Qn 5
(a) ∠DCE = *52°* ∠ECB = *38°*
    ∠DCE + ∠ECB = *90°*

(b) ∠DCE = *34°* ∠ECB = *56°*
    ∠DCE + ∠ECB = *90°*

(c) ∠DCA = *30°* ∠ACB = *60°*
  ∠DCA + ∠ACB = *90°*

Qn 6

∠w = *80°*	∠x = *140°*	∠y = *26°*	∠z = *68°*

Qn 7

∠a = *317°*	∠b = *128°*	∠c = *130°*	∠d = *67°*

Unit 3.3 – Constructing Angles (Basics)
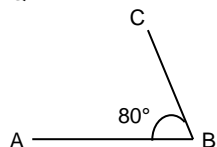
Qn 1   Qn 2
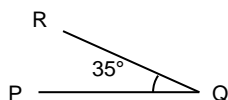
Qn 3
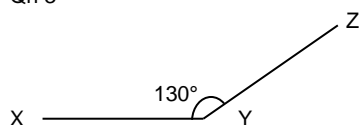
Qn 4
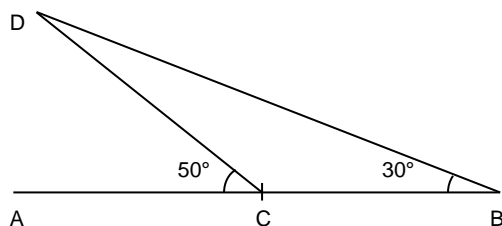
Qn 5
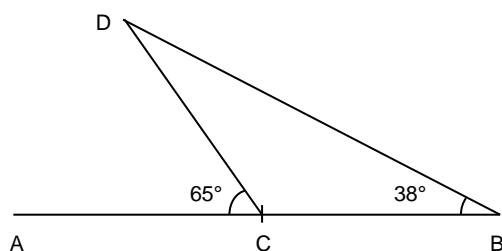
Qn 6
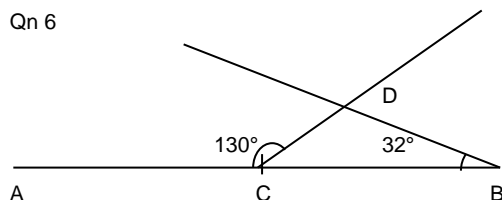
Qn 7
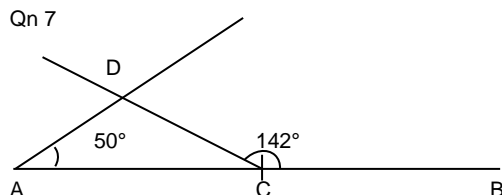
Unit 3.4 – Fraction of Right Angles

Qn 1

(a) $\frac{1}{2}$ -turn = 180°   (b) $\frac{1}{4}$ -turn = 90°

(c) $1\frac{3}{4}$ -turn = 630°   (d) 2-turns = 720°

Qn 2
There are 4 angles.
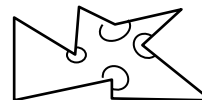
Qn 3
(a) 2

(b) 6

(c) 3
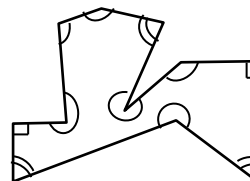
Qn 4
(a) 0

(b) 4

(c) 3

(d) 2

(e) 2
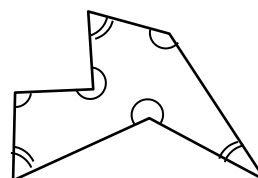
Qn 5
(a) 2
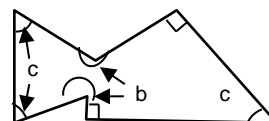
Unit 3.5 – 8 Point Compass

Qn 1

If Mary faces	She makes a	She will face
East	$\frac{1}{2}$ -turn to her **right/left**	West
South	$\frac{1}{2}$ -turn to her right	**North**
North-east	$\frac{1}{4}$ -turn to her **right**	South-east
South	$\frac{3}{4}$ -turn to her left	**West**
South-west	$\frac{3}{4}$ -turn to her left	North-west
South-east	2-turns to her right	South-east

Qn 2

If Jacintha faces	She makes a	She will face
North	$\frac{3}{4}$ -turn to her right	West
South-west	$\frac{1}{2}$ -turn to her left	**North-east**
North-east	$\frac{1}{4}$ -turn to her **right**	South-east
North-west	$\frac{3}{4}$ -turn to her left	**North-east**
South-east	$\frac{3}{4}$ -turn to her left	South-west
North-east	$\frac{1}{4}$ -turn to her right	South-east

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Qn 3

If Michael faces the	He makes a	He will face the
MRT Station	$\frac{1}{2}$-turn to his left	**Bus stop**
Food centre	$\frac{1}{4}$-turn to his left	**Library**
Swimming pool	$\frac{1}{4}$-turn to his left	**Food centre**
Bus stop	$\frac{3}{4}$-turn to his left	Stadium
Food centre	$\frac{1}{4}$-turn to his right	Swimming pool
Stadium	$\frac{1}{2}$-turn to his **right/ left**	Community centre
MRT Station	$\frac{1}{4}$-turn to his **left** OR $\frac{3}{4}$-turn to the **right**	Stadium

Qn 4

If Serena faces the	She makes a	she will face the
Garden	$\frac{1}{2}$-turn	**Hair Salon**
Candies Shop	$\frac{1}{4}$-turn to her right	**Garden**
Bowling Centre	$\frac{3}{4}$-turn to her left	**Sports complex**
Hair Salon	$\frac{1}{4}$-turn to her right	**Candies shop**
Candies shop	$\frac{1}{4}$-turn to her right	Garden
Furniture shop	$\frac{1}{4}$-turn to her **right**	Bowling Centre
Jewellery shop	$\frac{1}{4}$-turn to her **right**	Hair Salon

Qn 5

If Daniel faces the	He makes a	He will face the
Bowling centre (North-east)	90° clockwise turn	**Sports Complex (South-east)**
South west	270° anticlockwise turn	**Furniture Shop (North-west)**
Hair Salon (East)	90° clockwise turn	**Candies Shop** (South)
Furniture Shop (North-west)	180° anticlockwise turn	**Sports Complex** (South-east)
Garden	90° anticlockwise turn	**Candies Shop (South)**
Jewellery Shop	**135°** clockwise turn	Sports complex

Qn 6

If Ryan faces the	He makes a	He will face the
Furniture Shop (West)	270° clockwise tun	**Airport (South)**
East	180° clockwise turn	**Furniture Shop (West)**
Airport	270° clockwise turn	**Jewellery Shop** (East)
Supermarket	90° clockwise turn	**Cake Shop** (North-east)
Cinema (South-east)	90° clockwise turn	**Swimming pool**
Airport	**135°** clockwise turn	Supermarket

Unit 3.6 – Constructing Angles (Intermediate)

Qn 1

∠BAC= *90°*

Qn 2

∠DFE= *45°*

Qn 3

∠KJL= *34°*

Qn 4

∠NPM= *28°*

Qn 5

∠KJL= *45°*

Qn 6

∠NPM= *98°*
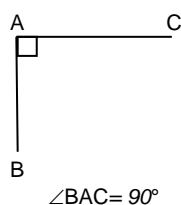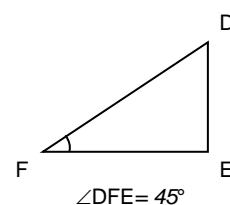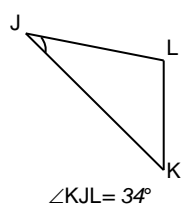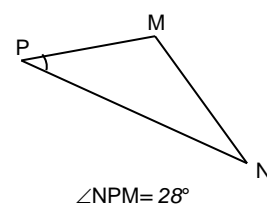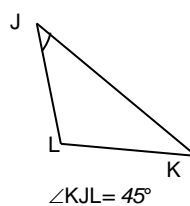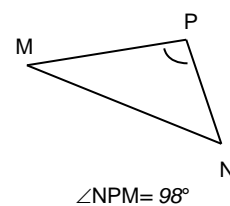
Chapter 4 Decimals

Unit 4.1 – Identifying Decimal Places

Qn 1

(a) tenths

(b) hundredths

(c) thousandths

(d) ones

(e) hundredths

(f) thousandths

(g) tenths

(h) thousandths

Qn 2

(a) 0.007 / 7 thousandths   (b) 0.04 / 4 hundredths

(c) 0.3 / 3 tenths   (d) 0.006 / 6 thousandths

Qn 3

(a) 5 + 0.6 + 0.03 + 0.004 = 5.634

(b) 120 + 0.6 + 0.04 = 120.64

(c) 1.2 + 0.012 = 1.212

(d) 2.5 + 0.05 + 0.012 = 2.562

(e) 4.0 + 0.12 + 0.005 = 4.125

(f) 210 + 1.2 + 0.42 = 211.62

(g) 420 + 1.7 + 0.054 = 421.754

(h) 42 + 2.8 + 0.12 = 44.92

(i) 72 + 0.13 + 0.002 = 72.132

(j) 1.29 + 0.024 = 1.314

Unit 4.2 – Comparing and Ordering Decimals

Qn1	0.65	Qn 2	95.59	Qn 3	45.327
Qn 4	29.102	Qn 5	12.124	Qn 6	124.05
Qn 7	13.405	Qn 8	0.25, 0.254, 0.42		

Qn 9   0.304, 0.340, 0.403

Qn 10   0.571, 0.715, 0.751

Qn 11   12.415, 12.421, 12.541

Qn 12   26.721, 27.261, 27.621

Qn 13   16.457, 16.475, 16.754

Qn 14   81.542, 105.524, 108.452

Unit 4.3.1 – Converting Fractions into Decimals (Tenths)

Qn 1	0.6	Qn 2	0.8	Qn 3	1.7	Qn 4	2.1
Qn 5	5.2	Qn 6	6.0	Qn 7	0.2	Qn 8	0.5
Qn 9	1.3	Qn 10	1.7	Qn 11	1.8	Qn 12	2.6

Unit 4.3.2 – Converting Fractions into Decimals (Hundredths)

Qn 1	0.06	Qn 2	0.25	Qn 3	0.40	Qn 4	1.24
Qn 5	0.28	Qn 6	0.35	Qn 7	1.04	Qn 8	3.02
Qn 9	5.2	Qn 10	4.25	Qn 11	0.75	Qn 12	0.48
Qn 13	1.68	Qn 14	3.4	Qn 15	1.34	Qn 16	2.48

Unit 4.3.3 – Converting Fractions into Decimals (Thousandths)

Qn 1	0.006	Qn 2	0.008	Qn 3	0.042
Qn 4	0.035	Qn 5	0.482	Qn 6	0.125
Qn 7	1.234	Qn 8	4.256	Qn 9	0.006
Qn 10	0.012	Qn 11	0.035	Qn 12	0.324
Qn 13	0.525	Qn 14	4.256	Qn 15	2.032
Qn 16	6.25	Qn 17	2.75	Qn 18	5.375
Qn 19	6.625	Qn 20	5.192		

Unit 4.4 – Rounding off

Qn 1	34	Qn 2	9	Qn 3	2	Qn 4	12
Qn 5	13	Qn 6	34	Qn 7	24.5	Qn 8	84.1
Qn 9	22.0	Qn10	15.3	Qn11	9.9	Qn12	5.5
Qn 13	37.82	Qn14	15.05	Qn15	5.21	Qn 16	31.35

Unit 4.5 – Converting Decimals into Fractions

Qn 1 $\dfrac{96}{100} = \dfrac{24}{25}$ Qn 2 $\dfrac{43}{50}$ Qn 3 $12\dfrac{6}{10} = 12\dfrac{3}{5}$

Qn 4 $42\dfrac{41}{50}$ Qn 5 $3\dfrac{1}{4}$ Qn 6 $8\dfrac{4}{25}$

Qn 7 $37\dfrac{101}{125}$ Qn 8 $112\dfrac{173}{500}$ Qn 9 $2\dfrac{12}{25}$

Qn 10 $134\dfrac{9}{20}$ Qn 11 $1\dfrac{21}{25}$ Qn 12 $45\dfrac{4}{5}$

Qn 13 $4\dfrac{9}{20}$ Qn 14 $4\dfrac{6}{25}$

Unit 4.6 – Addition and Subtraction of Decimals

Qn 1   12 + 0.25 + 0.04 = 12.29

Qn 2   26 + 0.8 + 0.32 = 27.12

Qn 3   8 + 0.2 + 0.52 = 8.72

Qn 4   2 + 0.4 + 0.24 = 2.64

Qn 5	0.9 + 84.9 = 85.8	Qn 6	0.24 + 24.5 = 24.74
Qn 7	146.85	Qn 8	237.97
Qn 9	95.31	Qn10	173.9
Qn11	63.2 – 1.2 = 62	Qn12	12.8 – 0.31 = 12.49
Qn13	56.86	Qn14	74.28
Qn15	36.54	Qn16	15.2

Qn17
Amount of change received = $50.00 – $18.30 – $7.80
           = **$23.90**

Qn 18
Amount short of = $85 – $23.50 – $30.20 – $21.80
           = **$9.50**

Qn 19
Amount left = $20 – $4.50 – $3.20 – $2.70
           = **$9.60**

Unit 4.7 – Multiplication of Decimals

Qn 1   Amount received = $345.50 × 8
                  = **$2764**

Qn 2   Cost of parcel = 3 kg × $1.26
                  = **$3.78**

Qn 3   Amount paid = $54.20 × 9
                  = **$487.80**

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Qn 4   Total length of cloth = 26.42 × 8
                              = **211.36 m**

Qn 5   Amount of water stored = 1.25 ℓ × 7
                               = **8.75 ℓ**

Qn 6   Changed received = $100 − $8.40 × 8
                         = **$32.80**

Qn 7   Cost of MP3 = 4 × $18.40
                     = $73.60
        Total cost   = $73.60 + $18.40
                     = **$92**

Qn 8
        8 cups cost   = 8 × $2.30
                      = $18.40
        5 plates cost = $4.50 × 5
                      = $22.50
        Total cost   = $18.40 + $22.50
                      = **$40.90**

Unit 4.8 – Division of Decimals

Qn 1 1.6   Qn 2 1.5   Qn 3 6.25   Qn 4 2.5

```
     1.6          1.5          6.25          2.5
 5/  8.0      4/  6.0      4/  25.00     8/  20.0
    −5           −4           −24           −16
     3 0          2 0           1 0           4 0
    −3 0         −2 0           −8           −4 0
      0            0            2 0            0
                               −2 0
                                 0
```

Qn 5   Amount paid daily = $196 ÷ 8
                          = **$24.50**

Qn 6   Cost of each pen = $42 ÷ 8
                         = **$5.25**

Qn 7   Mass of each packet = 145.2 kg ÷ 6
                            = **24.2 kg**

Qn 8

2 magazines = 2 × $4.50
             = $9
$9 + $6.20   = $15.20
6 pens   = $50 − $15.20
             = $34.80
1 pen   = $34.80 ÷ 6
             = **$5.80**

Qn 9

3 calculators   = 3 × $15.50
                = $46.50
$46.50 + $4.50 = $51
5 towels   = $100 − $51
                = $49
1 towel   = $49 ÷ 5
                = **$9.80**

Chapter 5 Area and Perimeter

Unit 5.1 – Finding Area and Perimeter with Given Sides

Qn 1
(a)   Area   = 7 cm × 3 cm
                   = 21 cm²
        Perimeter = (7 cm + 3 cm) × 2
                   = 20 cm
(b)   Area   = 13 cm × 4 cm
                   = 52 cm²
        Perimeter = (13 cm + 4 cm) × 2
                   = 34 cm
(c)   Area   = 18 cm × 12 cm
                   = 216 cm²
        Perimeter = (18 cm + 12 cm) × 2
                   = 30 cm × 2
                   = 60 cm
Qn 2
(a)   Area   = 7 cm × 7 cm
                   = 49 cm²
        Perimeter = 7 cm × 4
                   = 28 cm
(b)   Area   = 15 cm × 15 cm
                   = 225 cm²
        Perimeter = 15 cm × 4
                   = 60 cm
(c)   Area   = 13 cm × 13 cm
                   = 169 cm²
        Perimeter = 13 cm × 4
                   = 52 cm

Unit 5.2 – Finding Sides with Given Area OR Perimeter

Qn 1
(a)   Breadth   = 72 cm² ÷ 9 cm
                   = 8 cm
        Perimeter = (9 cm + 8 cm) × 2
                   = 34 cm
(b)   Breadth   = 150 cm² ÷ 15 cm
                   = 10 cm
        Perimeter = (15 cm + 10 cm) × 2
                   = 50 cm
(c)   Length   = 84 cm² ÷ 4 cm
                   = 21 cm
        Perimeter = (21 cm + 4 cm) × 2
                   = 50 cm
(d)   Length   = 150 cm² ÷ 10 cm
                   = 15 cm
        Perimeter = (15 cm + 10 cm) × 2
                   = 50 cm
Qn 2
(a)   Length   = 3 cm
        Perimeter = 3 cm × 4
                   = 12 cm
(b)   Length   = 8 cm
        Perimeter = 8 cm × 4
                   = 32 cm
(c)   Length   = 6 cm
        Perimeter = 6 cm × 4
                   = 24 cm
(d)   Length   = 5 cm
        Perimeter = 5 cm × 4
                   = 20 cm
Qn 3
(a)   Length   = 24 cm ÷ 4
                   = 6 cm
        Area   = 6 cm × 6 cm
                   = 36 cm²

Qn 3 (Cont.)
(b)   Length   = 44 cm ÷ 4
                = 11 cm
        Area   = 11 cm × 11 cm
                = 121 cm²
(c)   Length   = 64 cm ÷ 4
                = 16 cm
        Area   = 16 cm × 16 cm
                = 256 cm²
(d) Length   = 56 cm ÷ 4
                = 14 cm
        Area   = 14 cm × 14 cm
                = 196 cm²

Unit 5.3 – Area and Perimeter of Composite Figures (Basics)

Qn 1
20 – 8 = 12
12 ÷ 2 = 6
16 – 6 = 10
10 ÷ 2 = 5
Area A = 16 cm × 6 cm
       = 96 cm²
Area B = 10 cm × 6 cm
       = 60 cm²
Area C = 8 cm × 5 cm
       = 40 cm²
Total Area = 96 cm² + 60 cm² + 40 cm²
           = **196 cm²**
Total Perimeter = (16 + 20) × 2
                = **72 cm**

Qn 2

Area A = 22 cm × 4 cm
       = 88 cm²
Area B = 8 cm × 8 cm
       = 64 cm²
Area C = 8 cm × 4 cm
       = 32 cm²
Total Area = 88 cm² + 64 cm² + 32 cm²
           = **184 cm²**
Total Perimeter = (22 cm + 4 cm + 16 cm) × 2
                = **84 cm**

Qn 3

Area of big square   = 14 cm × 14 cm
                       = 196 cm²
Area of 4 small squares = 3 cm × 3 cm × 4
                       = 36 cm²
Area of remaining figure = 196 cm² – 36 cm²
                       = **160 cm²**
Perimeter of remaining figure = 14 cm × 4
                            = **56 cm**

Qn 4

Area of big square   = 18 cm × 18 cm
                       = 324 cm²
Area of 4 small squares = 4 cm × 4 cm × 4
                       = 64 cm²
Area of remaining figure = 324 cm² – 64 cm²
                       = **260 cm²**
Perimeter of remaining figure = 18 cm × 4
                            = **72 cm**

Qn 5

Area of rectangle   = 14 cm × 10 cm
                   = 140 cm²
Area of 4 squares = 2 cm × 2 cm × 4
                 = 16 cm²
Area of remaining figure = 140 cm² – 16 cm²
                        = **124 cm²**
Perimeter of remaining figure = (14 cm + 10 cm) × 2
                            = **48 cm**

Qn 6

Area of rectangle = 22 cm × 14 cm
                 = 308 cm²
Area of 4 squares = 2 cm × 2 cm × 4
                 = 16 cm²
Area of remaining figure = 308 cm² – 16 cm²
                        = **292 cm²**
Perimeter of remaining figure
= (22 cm +14 cm) × 2 + 4 cm+ 4 cm
= 72 cm + 8 cm
= **80 cm**

Unit 5.4 – Area and Perimeter of Proportional Figures

Qn 1
Length × Breadth   = 108 cm²
3 units × 1 unit   = 108 cm²
1 unit × 1 unit   = 108 cm² ÷ 3
                  = 36 cm²

1 unit   = 6 cm
Length   = 18 cm
Breadth   = 6 cm
Perimeter = (18 cm + 6 cm) × 2
          = **48 cm**

Qn 2

Length × Breadth   = 64 cm²
4 units × 1 unit   = 64 cm²
1 unit × 1 unit   = 64 cm² ÷ 4
                 = 16 cm²
1 unit   = 4 cm
Length   = 16 cm
Breadth   = 4 cm
Perimeter = (16 cm + 4 cm) × 2
          = **40 cm**

Qn 3

Length × Breadth   = 27 cm²
3 units × 1 unit   = 27 cm²
1 unit × 1 unit   = 27 cm² ÷ 3
                 = 9 cm²
1 unit   = 3 cm
Length   = 9 cm
Breadth   = 3 cm
Perimeter = (9 cm + 3 cm) × 2
          = **24 cm**

Qn 4
Breadth = 2 units
Length   = 3 units

2 units × 3 unit   = 54 cm²
1 unit × 1 unit   = 54 cm² ÷ 6
                  = 9 cm²

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Qn 4 (Cont.)

1 unit   = 3 cm

Breadth   = 2 × 3
              = 6 cm
Length   = 3 × 3
              = 9 cm
Perimeter = (6 cm + 9 cm) × 2
              = **30 cm**

Qn 5
Breadth = 3 units
Length = 4 units

3 units × 4 unit   = 192 cm²
1 unit × 1 unit   = 192 cm² ÷ 12
                      = 16 cm²
1 unit   = 4 cm

Breadth   = 3 × 4
              = 12 cm
Length   = 4 × 4
              = 16 cm
Perimeter = (12 cm + 16 cm) × 2
              = **56 cm**

Unit 5.5 – Area and Perimeter of Squares using Guess and Check

Qn 1
Guess-and-Check :
100 – 49 = 51
(10 × 10) – (5 × 5) = 51
Area of big square = 100 m² (10 m × 10 m)
Area of garden   = 100 m² – 51 m²
                    = **49 m²** (7 m × 7 m)

Qn 2
Guess-and-Check:
144 – 64 = 80
(12 × 12) – (8 × 8) = 80
Area of big square = 144 m² (12 m × 12 m)
Area of garden   = 144 m² – 80 m²
                      = **64 m²** (8 m × 8 m)

Qn 3
Length of square garden = 36 m ÷ 4
                          = 9 m
Area of square garden   = 9 m × 9 m
                          = 81 m²
Area of big square   = 12 m × 12 m
                          = 144 m²
Area of path   = 144 m² – 81 m²
                          = **63 m²**

Qn 4
Length of pool   = 64 m ÷ 4
                          = 16 m
Area of swimming pool   = 16 m × 16 m
                          = 256 m²
Area of square   = 20 m × 20 m
                          = 400 m²
Area of border   = 400 m² – 256 m²
                          = **144 m²**

Qn 5
Length of square garden   = 8 m
Area of big square   = (8 + 6) m × (8 + 6) m
                                = 14 m × 14 m
                                = 196 m²
Area of pathway   = 196 m² – 64 m²
                                = **132 m²**

Qn 6
Length of small square   = 8 cm
Length of big square   = 8 cm + 4 cm
                            = 12 cm
Area of big square   = 12 cm × 12 cm
                            = **144 cm²**

Qn 7
Since 64 – 16 = 48
Area of big square = **64 cm²**

Qn 8

Since 36cm² + 64cm²   = 100 cm²
Length of small square = 6 cm
Length of big square   = 8 cm
Total perimeter   = (6 cm + 8 cm + 8 cm) × 2
                         = **44 cm**

Qn 9
Since 81 cm² + 144 cm² = 225 cm²
Length of small square = 9 cm
Length of big square   = 12 cm
Total perimeter of figure = (12 cm + 12 cm + 9 cm) × 2
                            = **66 cm**

Unit 5.6 – Area and Perimeter of Composite Figures (Intermediate)

Qn 1

Area of garden   = 9 m × 5 m
                          = 45 m²
Area of big rectangle   = 13 m × 9 m
                          = 117 m²
Area of pathway   = 117 m² – 45 m²
                          = **72 m²**

Qn 2

Area of garden   = 13 m × 8 m
                          = 104 m²
Area of pond   = 9 m × 4 m
                          = 36 m²
Area of pathway   = 104 m² – 36 m²
                          = **68 m²**

Qn 3

Perimeter of garden   = (2 units + 1 unit) × 2
                          = 6 units

6 units = 48 m
1 unit = 8 m
Area of garden   = 16 m × 8 m
                          = 128 m²
Area of big rectangle   = 20 m × 12 m
                          = 240 m²
Area of pathway   = 240 m² – 128 m²
                          = **112 m²**

Qn 4

Area of pond   = 3 units × 1 units
                  = 48 m²
1 unit x 1 unit = 48 m² ÷ 3
                  = 16 m²
1 unit   = 4 m
Length (pond)   = 12 m
Breadth (pond)   = 4 m
Area of big rectangle   = 14 m × 6 m
                          = 84 m²
Area of pathway   = 84 m² – 48 m²
                          = **36 m²**

Qn 5

Area of field	= 2 units × 1 units
	= 3200 m²
1 unit × 1 unit	= 1600 m²
1 unit	= 40 m
Length (field)	= 80 m
Breadth (field)	= 40 m
Area of big rectangle	= 90 m × 50 m
	= 4500 m²
Area of track	= 4500 m² − 3200 m²
	= **1300 m²**

Qn 6

8 m | 3 m

4 m | 32 m² | 12 m² | 4 m
2 m | 16 m² | 6 m² | 2 m

8 m | 3 m

Perimeter of figure
= (6 m + 11 m) × 2
= **34 m**

Qn 7

7 m | *3 m*

5 m | 35 m² | 15 m² | 5 m
2 m | 14 m² | 6 m² | 2 m
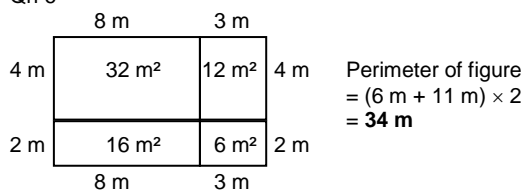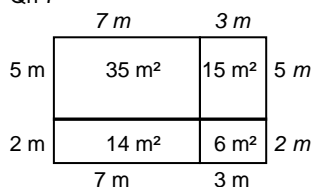
7 m | 3 m

Perimeter of figure
= (7 m + 3 m + 5 m + 2 m) × 2
= **34 m**

Qn 8

10 m | 5 m

6 m | 60 m² | 30 m² | 6 m
3 m | A | 15 m² | 3 m

10 m | 5 m

Area of A
= 10 m × 3 m
= **30 m²**

Qn 9

14 m | 6 m

8 m | 112 m² | 48 m² | 8 m
 | (shaded) | 12 m² | 2 m

6 m

Shaded Area
= 14 m × 2 m
= **28 m²**
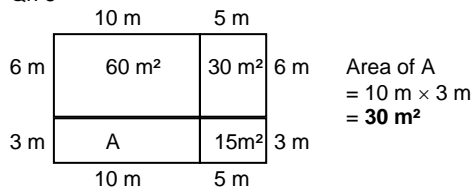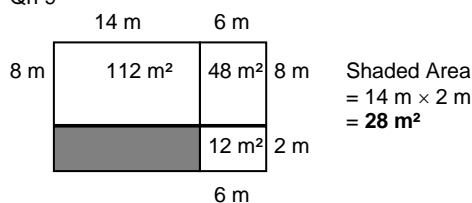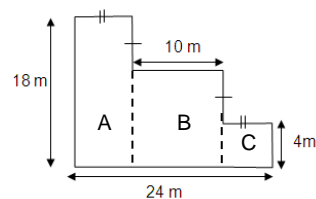
Qn 10

(24 − 10) ÷ 2 = 7 m
Area of A = 18 m × 7 m
= 126 m²
(18 − 4) ÷ 2 = 7 m
Area of B = 10 m × 11 m
= 110 m²

Qn 10 (Cont.)

Area C	= 7 m × 4 m
	= 28 m²
Total area	= 126 m² + 110 m² + 28 m²
	= **264 m²**
Perimeter	= (18 m + 24 m) × 2
	= **84 m**

Qn 11

Area of rectangle	= 40 cm × 24 cm
	= 960 cm²
Area of square	= 14 cm × 14 cm
	= 196 cm²
Area of remaining figure	= 960 cm² − 196 cm²
	= **764 cm²**
Perimeter of figure	= (40 cm + 24 cm) × 2 + 14 cm × 2
	= 128 cm + 28 cm
	= **156 cm**

Qn 12

24 ÷ 3	= 8 m
Area A	= 16 m × 8 m
	= 128 m²
Area B	= 8 m × 10 m
	= 80 m²
(16 - 6) ÷ 2	= 5 m
Area C	= 8 m × 5 m
	= 40 m²
Total Area	= 128 m² + 80 m² + 40 m²
	= **248 m²**
Total Perimeter	= (24 m + 16 m) × 2
	= **80 m**

Qn 13
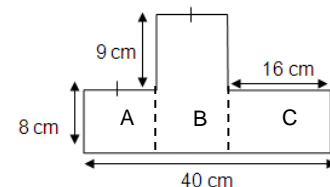
(40 − 16) ÷ 2	= 12 cm
Area of A	= 8 cm × 12 cm
	= 96 cm²
Area of B	= 17 cm × 12 cm
	= 204 cm²
Area of C	= 16 cm × 8 cm
	= 128 cm²
Total area	= 96 cm² + 204 cm² + 128 cm²
	= **428 cm²**
Total perimeter	= (40 cm + 9 cm + 8 cm) × 2
	= **114 cm**

Unit 5.7 – Area using Cut and Paste

Qn 1

Area of shaded figure
= (6 × 5) − 5
= 25 squares
= **25 cm²**

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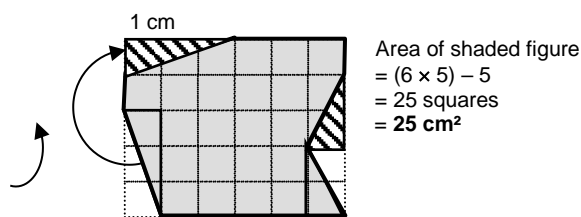
Qn 2

Area of shaded figure
= 21 squares
= **21 cm²**
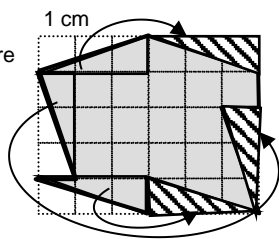
Qn 3

Area of shaded figure
= 21 squares
= **21 cm²**
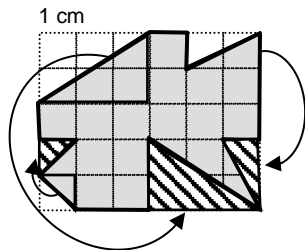
Qn 4

Area of shaded figure
= 22 squares
= **22 cm²**
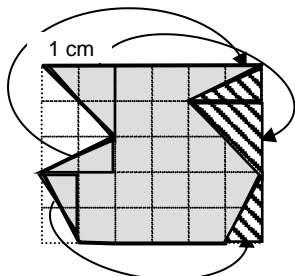
Qn 5

Area of shaded figure
= 16 squares
= **16 cm²**
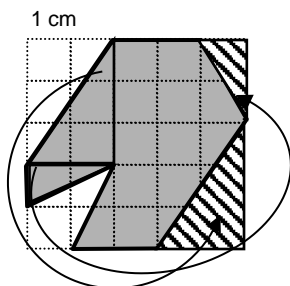
Qn 6

Area of
Shaded
figure
= 18 squares
= **18 cm²**
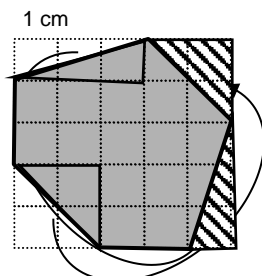
Qn 7

Area of shaded figure
= 18 squares
= **18 cm²**
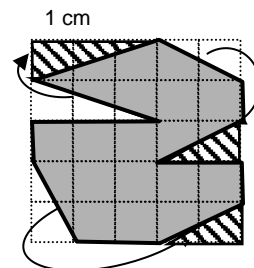
Qn 8

Area of shaded figure
= 20 squares
= **20 cm²**
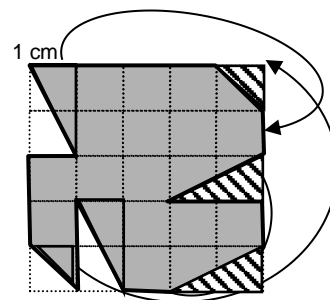
Chapter 6 Graphs

Unit 6.1 – Interpreting Line Graphs

Qn 1(a) 12 pm   (b) 4   (c) 13   (d) 22   (e) 4

Qn 2(a) $16 000   (b) 2007   (c)$24 000 - $4 000 = $20 000

Qn 3(a) 48 kg   (b) April or May   (c) 38 kg   (d) June

Qn 4(a) Total = 8 + 14 + 18 + 34 + 26 = 100
    (b) 34 + 26 = 60   c) 26 – 14 = 12   d) 8 + 14 = 22

Qn 5(a) Total = 11 + 13 + 9 + 15 + 27 = 75
    (b) 27 – 13 = 14   (c) Friday   (d) 11 + 13 + 9 = 33

Qn 6(a) 37.7°C
    (b) 11 a.m., 2 p.m. and 4 p.m.
    (c) 9 a.m. to 10 a.m., 2 p.m. to 3 p.m.
    (d) 7 hours, from 10 a.m. to 5 p.m.

Chapter 7 Time

Unit 7.1 – Measurement of Time in Seconds

Qn1   252 s   Qn2 754 s   Qn3   1928 s   Qn4 1324 s

Qn5 3602 s   Qn6 2520 s   Qn7 7242 s   Qn 8 4500 s

Unit 7.2 – Addition and Subtraction of Time in Seconds

Qn1
12 min 33 s = 753 s

Qn2
42 min 69 s = 2589 s

Qn3
50 min 35 s = 3035 s

Qn 4
975 s – 445 s = 530 s

Qn5	Qn 6
864 s – 175 s = 689 s	981 s – 515 s = 466 s

Qn 7	Qn8
1163 s – 1005 s = 158 s	17 min 43 s

Qn9	Qn10
28 min 41 s	16 min 25 s

Qn11	Qn12
3780 s – 2542 s = 1238 s	7225 s – 4500 s = 2725 s

Qn 13
11712 s – 4980 s = 6732 s

Unit 7.3 – Conversion into 24-hour Clock

Qn1	1412 h	Qn2	0824 h	Qn3	2145 h
Qn4	0024 h	Qn5	2400 h or 0000 h		
Qn6	0315 h	Qn7	1455 h	Qn8	2359 h
Qn9	1718 h	Qn10	1024 h	Qn11	2348 h
Qn12	1616 h	Qn13	4.25 p.m.	Qn14	7.35 a.m.
Qn15	11.15 p.m.	Qn16	6.10 p.m.	Qn17	11.59 p.m.
Qn18	12.16 p.m.	Qn19	9.06 a.m.	Qn20	11.59 a.m.
Qn21	1.12 p.m.	Qn22	9.26 a.m.	Qn23	12.55 p.m.
Qn24	1.14 p.m.	Qn25	2.17 p.m.	Qn26	12 midnight

Unit 7.4 Word Problems Involving Time

Qn1

3 h 20 min ⟶ 20 min ⟶ 15 min ⟶ 2 h ⟶ 45 min
09 20 ▲ 12 40 ▲ 13 00 ▲ 13 15 ▲ 15 11 ▲ 16 00
He reached KL at **1600 h**

Qn 2

4 h 45 min ⟶ 1 h ⟶ 10 min ⟶ 5 min ⟶ 2 h 42 min
13 05 ▲ 17 50 ▲ 18 50 ▲ 19 00 ▲ 19 05 ▲ 21 47
The coach reached Town B at **2147 h.**

Qn 3

25 min ⟶ 5 min ⟶ 35 min
05 30 ▲ 05 55 ▲ 06 00 ▲ 06 35
John would reach the school at **6.35 a.m.**

Qn 4

Time Mrs Jones reach the park 0745 →15min→ 0800 →10min→ 0810

Time Mrs Jones left the park 0905 →5min→ 0900 →20mins→ 0840

Time taken to exercise 0810 →30mins→ 0840

The exercise lasted **30 minutes.**

Qn 5

Time taken for multiple choice questions	= 5 min × 10
	= 50 min
Time taken for work problems	= 18 min × 8
	= 144 min
Time taken altogether min	= 50 min + 144
	= 194 min
	= 3 hr 14 min

3 hr ⟶ 14mins
1415 ▲ 1715 ⟶ 1729

John completed his trial paper at **1729 h.**

Chapter 8 Review

Unit 8 Review

Qn 1

D	1u	15	1u	15	1u	15
R	1u	15				
M	1u	15				

$130

4 × $15 = $60
5u = $130 − $60
   = $70
1u = $70 ÷ 5
   = $14
Mark has **$14**.

Qn 2

∠ b	1u	1u
∠ a	1u	
∠ c	1u	51

90° − 42° = 48°

3u = 48°
1u = 48° ÷ 3
   = 16°
∠c= 16° + 51°
   = **67°**

Qn 3

B	1u	1u		× 5
S	1u	1u	1u	× 4

330

10u + $12u = 22u
22u = $330 ÷ 22
    = $15
1u = 3 × $15
    = **$45**

Qn 4

(a)

(b)
Total chairs = 11 × 2
= **22**
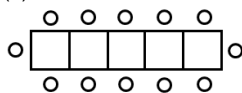
(c)
Total chairs = 21 × 2
= **42**

(d)
128 ÷ 2 = 64
Figure no. = 64 − 1
= **63**

Qn 5

End

At first

3u = $60 + $60
= $120
1u = $120 ÷ 3
= $40
Caryn had **$40** at first.

Qn 6
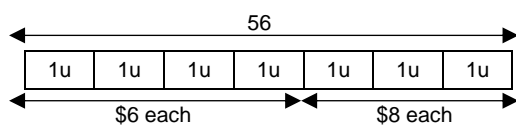
7u = 56
1u = 56 ÷ 7
= 8
4u = 4 × 8
= 32
3u = 3 × 8
= 24
Amount collected ($6 each) = 32 × $6
= $192
Amount collected ($8 each) = 24 × $8
= $192
Total collected = $192 + $192
= $384
The shopkeeper collected **$384** altogether.

Qn 7

End

Qn 7 (Cont.)

At first

7u = 588 − 140
= 448
1u = 448 ÷ 7
= 64
5u = 5 × 64
= 320
Daniel had **$320** at first.

Qn 8

At first

End

7u = 128 + 467
= 595
1u = 595 ÷ 7
= 85
6u = 6 × 85
= 510
Dennis had **$510** at first.

Qn 9

3 × 12 = 36
6u = 246 − 36
= 210
1u = 210 ÷ 6
= 35
3u = 3 × 35
= 105
3u + 12 = 105 + 12
= 117
Fion has **117 more** muffins than Eric.

Qn 10

Length of 1 small square = 32 ÷ 4
= 8 cm
Length AB = 8 cm × 3
= 24 cm
Area = 24 cm × 24 cm
= **576 cm²**

Qn 11

<u>At first</u>

$G = 2u^{x3}$ (6u)
$B = 1u^{x3}$ (3u)

<u>End</u>

$G = 3u^{x2}$ (6u)
$B = 1u^{x2}$ (2u)

1u = 85
6u = 6 × 85
   = 510

There were **510 girls** in the school hall.

Qn 12

3u = 18
1u = 18 ÷ 3
   = 6

Flour left $= 12 - \dfrac{5}{6}$

$= 11\dfrac{1}{6}$

Chef Benedict had $11\dfrac{1}{6}$ kg of four left.

Qn 13

<u>At first</u>

<u>End</u>

3u = 100 + 35
   = 135
1u = 135 ÷ 3
   = 45
Serene at first = 45 + 35
              = 80
Serene had **$80** at first.

Qn 14

Number of tables	Number of pupils
1	5
2	8
3	11

(a)   No. of pupils = 15 × 3 + 2
                  = 47
      47 pupils can be seated.

(b)   104 − 2 = 102
      102 ÷ 3 = 34
      34 tables can seat 104 pupils altogether.

Qn 15

No. of Adults	Adults (Cost)	No. of Children	Children (Cost)	Total Cost	Check
50	50 × 12 = 600	0	0	600	x
49	49 × 12 = 588	1	1 × 8 = 8	588 + 8 = 596	x
17	17 × 12 = 204	33	33 × 8 = 264	204 + 264 = 468	✓

Target difference = 600 − 468
                 = 132
No. of children = 132 ÷ 4
               = 33
Mrs Krishnan bought **33 tickets.**

Qn 16

$W = 8u^{x2}$
$E = 5u^{x2}$ (10u)   W = 16u
                             E = 10u
$E = 2u^{x5}$ (10u)   D = 5u
$D = 1u^{x5}$ (5u)

Total = 16u + 10u + 5u
     = 31u
31u = 930
1u = 930 ÷ 31
   = 30
16u = 16 × 30
    = 480
Winnie bought **480 marbles**.

Qn 17

Note : Last sentence should be "How much did **one pack of biscuits** cost?"

2E = 38 − 27
   = 11
E = 11 ÷ 2
  = 5.50
B = 9 − 5.50
  = 3.50
A pack of biscuits cost **$3.50.**

Qn 18

4 × 12   = 48
213 − 48 = 165
   5u = 165
   1u = 165 ÷ 5
      = 33
Jerry = 33 + 12
      = 45
Jerry had **45 stamps.**

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Qn 19

AB = 64 cm ÷ 4
    = 16 cm
Perimeter = 8 × 16
          = 128
The perimeter is **128 cm.**

Qn 20

At first

R

K

End

	280	
R	1u	144	136
K	1u	4u	136

4u = 280 – 136
   = 144
1u = 144 ÷ 4
   = 36
 1u + 280 = 36 + 280
          = 316
Each of them had **$316** at first.

Qn 21

A + D = 155
D + C = 175
A + C = 164

155	
D	A
D	C
175	

A	1u	
C	1u	20

} 164
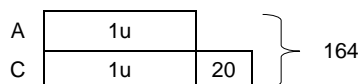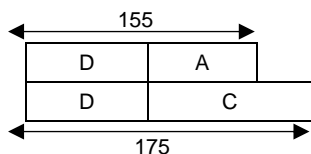
2u = 164 – 20
    = 144
1u = 144 ÷ 2
    = 72
A   = 1u
    = 72
C   = 72 + 20
    = 92
D   = 155 – 72
    = 83

Adam, Calvin and Dennis scored **72, 92 and 83 marks** respectively.

Qn 22

J + S = 200
B + S = 152

200	
S	J
S	B
152	

Qn 22 (Cont.)

	5u	
J	3u	48
B	3u	2u
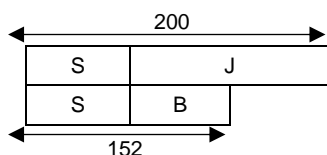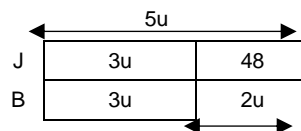
2u = 48
1u = 48 ÷ 2
    = 24
B   = 3 × 24
    = 72
J   = 5 × 24
    = 120
S   = 152 – 72
    = 80

Sarah, Janice and Bernie baked **80, 120 and 72 cookies** respectively.

Qn 23

sister		Bob			$240
1u	1u	1u	1u	1u	1u
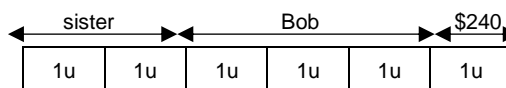
1u = 240
6u = 4 × 240
   = 1440
Jordan had **$1440** at first.

Qn 24

C	1u	3u	x 3
B	1u		x 5
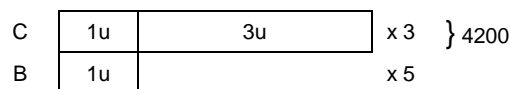
} 4200

Mass of 1 cup = 4200 ÷ 3
              = 1400
4u = 1400
1u = 1400 ÷ 4
   = 350
The mass of each bowl is **350 g.**

Qn 25

A	1u	1u	1u	120
B	1u	1u	1u	
C	1u			
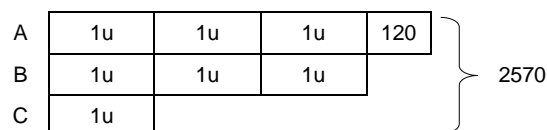
} 2570

7u = 2570 – 120
   = 2450
1u = 2450 ÷ 7
   = 350
3u = 3 × 350
   = 1050
1050 g = 1.05 kg
The mass of Parcel B is **1.05 kg.**

Qn 26

		Actual (No. of sweets)
		42
C1	5 sweets per pupil	
C2	5 sweets per pupil	2 sweets per pupil
		34

Gap
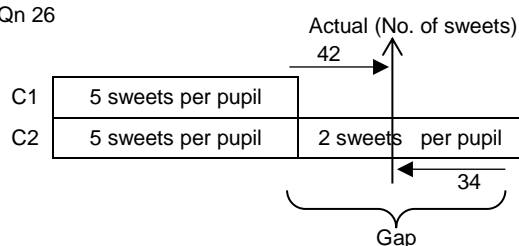
Qn 26 (Cont.)

Gap = 42 + 34
     = 76
Difference = 2 sweets per pupil

(a)   No. of pupils = 76 ÷ 2
                    = 38
There are **38 pupils.**

(b)   No. of sweets
C1 : 5 × 38 = 190
      190 + 42 = 232
C2 : 7 × 38 = 266
      266 − 34 = 232

Miss Goh has **232 sweets.**

Qn 27

(a)
No. of squares in Pattern 1   = 2 × 4
                             = 8
No. of squares in Pattern 2   = 3 × 4
                             = 12
No. of squares in Pattern 8   = 9 × 4
                             = 36
There are **36 tiles** in pattern 8.

(b)
No. of squares in Pattern 20   = 21 × 4
                                = 84
There are **84 tiles** in Pattern 20.

Qn 28

At first

End

1u = 36 + 65
    = 101
101 + 36 = 137
Each of them had **137 stickers** at first.

Qn 29
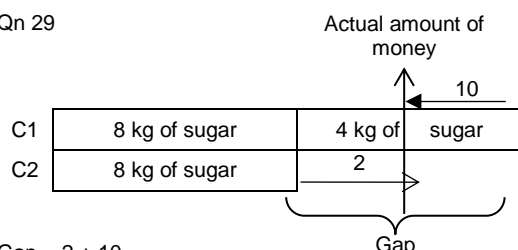
Gap = 2 + 10
     = 12
Difference = 4 kg of sugar
4 kg of sugar = 12
1 kg of sugar = 12 ÷ 4
               = 3
1 kg of sugar cost **$3.**

Qn 30

$$1\frac{1}{2}^{\times 4}_{\times 4}D = \frac{4}{5}W$$

$$\frac{4}{8}D = \frac{4}{5}W$$

  D = 8u

  W = 5u

3u = 75
1u = 75 ÷ 3
    = 25
Winnie (at first) = 5 × 25
                 = 125
Winnie had **$125** at first.

Qn 31

A   = 76 − 18
       = 58
B + C = 320 − 58
       = 262
2u = 262 − 18
    = 244
1u = 244 ÷ 2
    = 122
Difference = 122 − 58
          = 64
Catherine had **$64 more** than Ally.

Qn 32

Items	Qty	×	Value ($)	Total value ($)
B	1u + 7	×	25	25u + 175
F	1u	×	43	43u
Total	2u + 7	×		68u + 175

68u = 1535 − 175
    = 1360
1u = 1360 ÷ 68
    = 20
(a)   He bought **20 footballs.**
(b)   25u = 25 × 20
             = 500
500 + 175 = 675
Mr Lim spent **$675** on the basketballs.

Qn 33

At first

B			

S	

End

B	1u	1u	1u	1u	1u	1u

S	1u	65

1u = 65
8u = 8 × 65
   = 520
Mrs Gomez made **520 tarts** to sell.

Qn 34

Cost

P	1u	1u	1u

M	1u

For every 3 muffins, Mrs Raj can buy 1 pie.
24 muffins = 8 pies
1u = 8 pies
2u = 16 pies
Mrs Raj could buy **16 pies** with the rest of the money.

Qn 35

End

S	1u

M	1u

At first

S	1u	1u

M	1u	35

} 134

3u = 134 − 35
   = 99
1u = 99 ÷ 3
   = 33
2u = 2 × 33
   = 66
Qunnie had **66 stickers** at first.

Qn 36

$\dfrac{1}{3}$ P = $\dfrac{2}{5}$ A

$\dfrac{2}{6}$ P = $\dfrac{2}{5}$ A

P = 6u
A = 5u

1u = 28
5u = 5 × 28
   = 140

Mrs Loh bought **140 apples.**

Qn 37

48 pens = 60 pencils
8 pens = 10 pencils

Since 8 pens = 10 pencils, he had already bought
= 16 + 10
= 26 pencils
Difference = 60 − 26
          = 34
James can buy **34 more** pencils.

Qn 38

Ribbon B = 1u

Ribbon A = 1u + 12

Ribbon C = 1u + 25

Ribbon D = 1u + 60

4u = 357 − 97
   = 260

1u = 65

Ribbon D = 65 + 60
        = 125

The length of the longest ribbon is **125 cm.**

Qn 39

Amount of money = 20 × 3

                = 60
Cost of a bowl of ice cream = 3 − 0.5

                          = 2.5
No. of bowls = 60 ÷ 2.5

            = 24
No. of bowls extra = 24 − 20

                  = 4
Melvin can buy **4 more** bowls of ice cream.

Qn 40

$\dfrac{1}{3}^{\times 3}_{\times 3}$ (20 c) = $\dfrac{3}{4}$ (50 c)

$\dfrac{3}{9}$ (20 c) = $\dfrac{3}{4}$ (50c)

20 c = 9u

50 c = 4u

Items	Qty	×	Value (c)	Total value ($)
20 c	9u	×	20	180u
50 c	4u	×	50	200u
Total	13u			380u

380u = 5700

1u = 15

13u = 13 × 15

    = 195

There was a total of **195 coins**.