SOLUTIONS

MOCK EXAMINATION 5

Paper 1
Booklet A

1 **(3)**

(1) $\frac{1}{3} = 0.3333$

(2) $\frac{2}{5} = 0.4$

(3) **30%** = 0.3 → smallest

(4) 0.45

2 **(2)**

100 tens → 1000

20 hundredths = $\frac{20}{100} = 0.2$

1000 – 0.2 = **999.8**

3 **(3)**

$\frac{3}{12} = \frac{2}{\square}$

$\frac{3\ (\times 2)}{12\ (\times 2)} = \frac{6}{24}$

$\frac{6\ (\div 3)}{24\ (\div 3)} = \frac{2}{8}$

$\square$ → **8**

4 **(2)**

1 × 6 = 6

2 × 3 = 6

Factors of 6 → 1, 2, 3, 6

1 × 18 = 18

2 × 9 = 18

3 × 6 = 18

Factors of 18 → 1, 2, 3, 6, 9, 18

Common factors of 6 and 18 → **2 and 3**

5 **(3)**

$2\frac{1}{4}$ kg = 2.25 kg = 2250 g

$\frac{450\text{ g}}{2250\text{ g}} \times 100\% =$ **20%**

6 **(4)**

Area of a face of a cube → length × length

49 cm² → 7 cm × 7 cm

Since it is a cube, all the lengths are the same.

Volume of a cube → length × length × length

→ 7 cm × 7 cm × 7 cm

= 343 cm³

Volume of 2 cubes → 343 cm³ × 2

= **686 cm³**

7 **(4)**

Clarice	:	Serene	:	Zoe
3 (× 5)	:	4 (× 5)		
5 (× 3)	:			1 (× 3)
15	:	**20**	:	**3**

8 **(2)**

Fraction of water in the container → $\frac{2}{5}$ (2 units)

Fraction of water needed to fill to its brim

→ $1 - \frac{2}{5} = \frac{3}{5}$ (3 units)

Volume of water poured to its brim → 258 mℓ

3 units = 258 mℓ

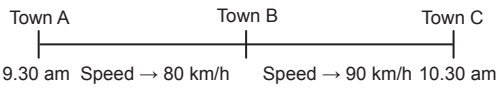
1 unit = 258 mℓ ÷ 3

= 86 mℓ

Volume of water at first → 86 mℓ × 2 units

= **172 mℓ**

9 **(4)**



Time taken from Town A to Town C → 1 h

Since the whole journey took 1 h and the speed is calculated on a per hour basis, we can add the speed together for 2 hours.

Speed → 80 km/h + 90 km/h

→ 170 km in 2 hours

2 hours → 170 km

1 hour → 170 km ÷ 2 hours

= 85 km

Therefore, he travelled at an average speed of **85 km/h**.

10 **(4)**

Fraction of beads remaining → $1 - \frac{2}{5} = \frac{3}{5}$

Fraction of beads Amy had left → 80% of remainder

$= \frac{80}{100} \times \frac{3}{5}$

$= \frac{12}{25}$ (12 units)

Number of beads Amy had left → 120

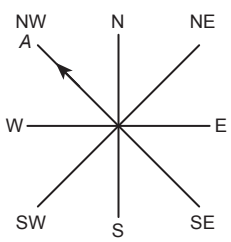
12 units = 120

1 unit = 120 ÷ 12 = 10

Number of beads Amy had at first → 10 × 25 units

= **250**

11 **(3)**



Thomas is facing north-west.

$\frac{1}{8}$ - turn → 45°

$\frac{3}{8}$ - turn → 45° × 3 = 135°

Since Thomas made a 135° turn in the clockwise direction, we will reverse in the anti-clockwise direction to find where he was at first.

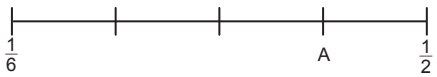
From NW to SW
→ 90º anti-clockwise direction
From SW to S
→ 45º anti-clockwise direction
} 90º + 45º = 135º

Therefore, Thomas was facing **South** at first.

12 (4)

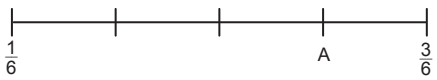
Amount of money Mrs Sim spent last month → \$720
Percentage of money Mrs Sim spent this month
→ increased by 20%
→ 100% + 20%
= 120%
Amount of money Mrs Sim spent this month
→ $\frac{120}{100}$ × \$720
= \$864
Total amount of money Mrs Sim spent in 2 months
→ \$720 + \$864
= **\$1584**

13 (2)



First, we will make the denominator for $\frac{1}{2}$ to 6 (same as the denominator for $\frac{1}{6}$)

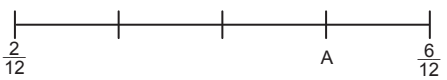
$\frac{1\ (\times 3)}{2\ (\times 3)} = \frac{3}{6}$



There are 4 units from $\frac{1}{6}$ to $\frac{3}{6}$, we cannot determine the actual fraction for 'A' as the difference in their numerators is quite narrow. Therefore, we will multiply by 2 to their numerators and denominators for both $\frac{1}{6}$ and $\frac{1}{2}$ to check if we can find the fraction for each unit.

$\frac{3\ (\times 2)}{6\ (\times 2)} = \frac{6}{12}$

$\frac{1\ (\times 2)}{6\ (\times 2)} = \frac{2}{12}$



Now, we can see that from $\frac{2}{12}$ to $\frac{6}{12}$, the difference is $\frac{4}{12}$. We can conclude that each unit is $\frac{1}{12}$ for the 4 units above and the fraction is increasing. Therefore, the fraction that represents A → $\mathbf{\frac{5}{12}}$

14 (3)

Mass of grapes Timothy bought → $\frac{1}{4}$ kg
Mass of grapes Timothy ate → $\frac{1}{6}$ of them
→ $\frac{1}{6} \times \frac{1}{4}$ kg
= $\frac{1}{24}$ kg
Mass of grapes Timothy had left → $\frac{1}{4}$ kg – $\frac{1}{24}$ kg
= $\frac{1\ (\times 6)}{4\ (\times 6)}$ kg – $\frac{1}{24}$ kg
= $\frac{6}{24}$ kg – $\frac{1}{24}$ kg
= $\frac{5}{24}$ kg
Number of bags → 5
Mass of each bag of grapes → $\frac{5}{24}$ kg ÷ 5
= $\frac{5}{24}$ kg × $\frac{1}{5}$
= $\mathbf{\frac{1}{24}}$ **kg**

15 (3)

Percentage of children → 60%
Percentage of adults → 100% – 60% = 40%
Percentage of men → 30% of the adults
Percentage of women
→ (100% – 30%) of the adults
= 70% of the adults
= $\frac{70}{100}$ × 40%
= 28%
Total number of people at the carnival → 250
Number of women at the carnival → 28%' × 250
= $\frac{28}{100}$ × 250
= **70**

Booklet B

16 Eighths → $\frac{1}{8}$

$5\frac{3}{4} \div \frac{1}{8} = \frac{23}{4} \times \frac{8}{1}$
= $\frac{184}{4}$
= **46**

17 2.24 × 6 = 134.4 × ☐
13.44 = 134.4 ÷ 10
= 134.4 ÷ $\frac{10}{1}$
= 134.4 × $\frac{1}{10}$
☐ → $\frac{1}{10}$ = **0.1**

Alternative method:

2.24 × 6 = 134.4 × ☐
☐ = $\frac{2.24 \times 6}{134.4}$
= $\frac{13.44}{134.4}$
= $\mathbf{\frac{1}{10}}$

18 1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th 13th
(2nd to 5th: 21 m)

Number of intervals (units) between 2nd and 5th trees
→ 3
3 units = 21 m
1 unit = 21 m ÷ 3 = 7 m
Number of intervals (units) between 3rd and 13th tree
→ 10
10 units = 7 m × 10 = **70 m**

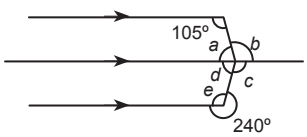
19 Amount Clarice spent on 100 g of grapes on Monday → $2.50
Mass of grapes she bought on Tuesday → 2 kg = 2000 g
100 g → $2.50
2000 g → $\frac{2000}{100}$ × $2.50
= $50
Total amount of money Clarice spent on Monday and Tuesday → $2.50 + $50
= **$52.50**

20 Ratio of breadth to length of rectangle → 2 : 3
Number of units representing perimeter of the rectangle
→ (2 × length) + (2 × breadth)
→ (2 × 3 units) + (2 × 2 units)
= 6 units + 4 units
= 10 units
10 units = 130 cm
1 unit = 130 cm ÷ 10
= 13 cm
Length of rectangle → 13 cm × 3
= **39 cm**

21 Radius of semicircle → 14 cm
Diameter of semicircle → 14 cm × 2 = 28 cm
Circumference of semicircle → $\frac{1}{2} \times 2\pi r$
→ $\frac{1}{2} \times 2 \times \frac{22}{7} \times 14$ cm
= $\frac{616}{14}$ cm
= 44 cm
Perimeter of semicircle → circumference + diameter
→ 44 cm + 28 cm
= **72 cm**

22 Length of tank → 3 m = 300 cm
Number of 3-cm lengths to fit length of tank
→ 300 cm ÷ 3 cm = 100
Width of tank → 5 m = 500 cm
Number of 3-cm widths to fit width of tank
→ 500 cm ÷ 3 cm
= 166 R 2
≈ 166 (Round down)
Height of tank → 6 m = 600 cm
Number of 3-cm heights to fit height of tank
→ 600 cm ÷ 3 cm
= 200
Maximum number of 3-cm cubes to fit into the tank
→ 100 × 166 × 200
= **3 320 000**

23



We divide the figure into half.
$\angle a$ = 180° – 105° (angles between two parallel lines)
= 75°
$\angle b$ = 180° – 75° (angles on a straight line)
= 105°
$\angle e$ = 360° – 240° = 120° (angles at a point)
$\angle d$ = 180° – 120° (angles between two parallel lines)
= 60°
$\angle c$ = 180° – 60° (angles on a straight line)
= 120°
$\angle y = \angle b + \angle c$
= 105° + 120°
= **225°**

24 5¢ × 21 coins = $1.05
10¢ × 50 coins = $5.00
20¢ × 22 coins = $4.40
50¢ × 15 coins = $7.50
$1 × 6 coins = $6.00
Total amount of money Ray has saved
→ $1.05 + $5.00 + $4.40 + $7.50 + $6.00 = **$23.95**

25 Each row represents 2 seashells.
Mandy, Candy and Sandy collected 12 seashells each.
Number of seashells Timmy collected → 24
Number of seashells Timmy collected more than each of his friends → 24 – 12 = 12
Number of seashells Timmy must give each of his friends → 12 ÷ 4 = **3**

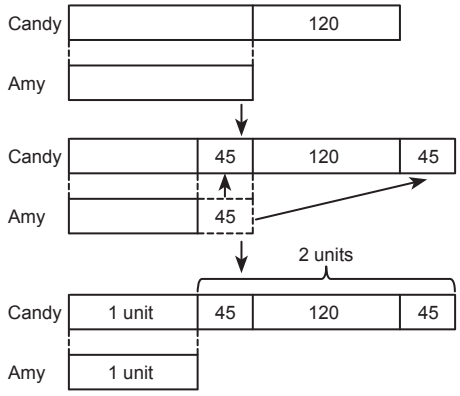
26 A A B C D A A A A B C D A A A …
1 group
Number of letters in a group → 7
Number of groups of 7 letters → 81 ÷ 7 = 11 R 4
Since the remainder is 4, the letter for the 81st position is the 4th position in a group → **C**

27 Average number of apples each boy received at first → 16
Average number of apples each boy received in the end → 10
Difference in average number of apples each boy received → 16 – 10 = 6
Number of rotten apples → 30
Number of boys → 30 ÷ 6 = **5**

28 Fraction of red and white beads → $1 - \frac{1}{8} = \frac{7}{8}$
Ratio of white beads to red beads → 2 : 3
Total number of units representing white and red beads → 2 units + 3 units = 5 units
Fraction of white beads → $\frac{2}{5} \times \frac{7}{8} = \frac{14}{40}$
Fraction of red beads → $\frac{3}{5} \times \frac{7}{8} = \frac{21}{40}$
Fraction of blue beads → $\frac{1 (\times 5)}{8 (\times 5)} = \frac{5}{40}$
Ratio of white beads to red beads to blues beads
→ **14 : 21 : 5**

29 Number of stamps Leo collected → y
Number of stamps Tim collected
→ twice as many stamps as Leo
→ 2 × y
= 2y
Number of stamps Carl collected
→ $\frac{2}{3}$ as many as Tim
→ $\frac{2}{3} \times 2y$
= $\frac{\mathbf{4y}}{\mathbf{3}}$

30 Amy had 120 fewer stamps than Candy at first which means Candy had 120 more stamps than Amy at first.
Number of stamps Amy gave Candy → 45
Number of stamps Candy had in the end
→ 3 times as many as Amy



2 units = 45 + 120 + 45
= 210
1 unit = 210 ÷ 2
= 105
Number of stamps Amy had at first
→ 1 unit + 45
= 105 + 45
= **150**

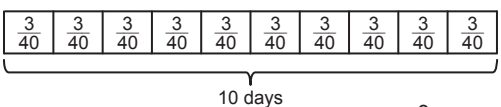
Paper 2

1 Amount of money Terence paid for 4 chairs with 7% GST → $417.30
107% → $417.30
1% → $417.30 ÷ 107 = $3.90
GST → 7% → $3.90 × 7 = $27.30
Discounted price of 4 chairs without GST
→ $417.30 – $27.30 = $390
Percentage discount → 25%
Percentage after discount → 100% – 25% = 75%
75% → $390
100% → $\frac{100}{75}$ × $390 = $520
Original cost of 4 chairs → $520
Original cost of 1 chair → $520 ÷ 4 = $130
Alternative method:
<u>With discount</u>
1 chair → $417.30 ÷ 4
= $104.325 (107% of discounted price of 1 chair)
Discounted price
w/o GST → $104.325 × $\frac{100\%}{107\%}$ = $97.50
<u>Before discount</u>
75% of original price → $97.50
100% of original price of 1 chair → $\frac{100\%}{75\%}$ = **$130**
The cost of each chair before the discount without the GST was **$130**.

2 Number of bags of marbles sold on Monday → 120
Number of bags of marbles sold on Tuesday → 150
Difference in number of bags of marbles sold on Monday and on Tuesday → 150 – 120 = 30
Percentage increase → $\frac{30}{120}$ × 100% = **25%**

3 Fraction of red pens Rose bought → $\frac{3}{7}$ (3 units)
Fraction of blue pens Rose bought → $1 - \frac{3}{7}$
= $\frac{4}{7}$ (4 units)
Difference in number of units representing red and blue pens Rose bought → 4 units – 3 units = 1 unit
Number of blue pens Rose bought
→ 18 more than red pens
1 unit = 18
Total number of pens Rose bought → 18 × 7 units
= 126
Fraction of blue pens Jason bought → $\frac{3}{5}$ (3 units)
Fraction of red pens Jason bought → $1 - \frac{3}{5}$
= $\frac{2}{5}$ (2 units)
Total number of pens Jason bought
→ 59 more than Rose
→ 59 + 126
= 185
5 units = 185
1 unit = 185 ÷ 5 = 37
Number of red pens Jason bought → 37 × 2
= 74
Jason bought **74** red pens.

4 Fraction of flour Eunice used in 8 days
→ $\frac{3\ (\times 8)}{5\ (\times 8)}$
= $\frac{24}{40}$ (24 units)
Fraction of flour Eunice used in 1 day → $\frac{3}{5} \div 8$
= $\frac{3}{5} \div \frac{8}{1}$
= $\frac{3}{5} \times \frac{1}{8}$
= $\frac{3}{40}$



Fraction of flour Eunice used in 10 days → $\frac{3}{40} \times 10$
= $\frac{3}{4}$
Fraction of flour Eunice left → $1 - \frac{3}{4}$
= $\frac{4}{4} - \frac{3}{4}$
= $\frac{1\ (\times 10)}{4\ (\times 10)}$
= $\frac{10}{40}$ (10 units)
Mass of flour Eunice left → 120 g
10 units = 120 g
1 unit = 120 g ÷ 10
= 12 g
24 units = 12 g × 24
= 288
Eunice used **288 g** of flour during the first 8 days.

5 Before

vanilla : chocolate

20% : 80% (100% – 20%)

1 u : 4 u

After

vanilla : chocolate

36% : 64% (100% – 36%)

9 p : 16 p

9 p = 1 u + 100

16 p = 4 u

16 × (1 u + 100) = 9 × (4 u)

16 u + 1600 = 36 u

20 u = 1600

1 u = 80

Total cupcakes at first (5 u) = 5 × 80

= **400**

6 Cindy collected 20% fewer stamps than Wendy.

Cindy	:	Wendy
100% – 20% = 80%	:	100%
4	:	5

Cindy collected 40% more stamps than Doreen.

Cindy	:	Doreen
100% + 40% = 140%	:	100%
7	:	5

Cindy	:	Wendy	:	Doreen
4 (× 7)	:	5 (× 7)		
7 (× 4)	:			5 (× 4)
28	:	35	:	20

Number of stamps Cindy collected → 252

28 units = 252

1 unit = 252 ÷ 28

= 9

Number of stamps Doreen collected → 9 × 20 units

= 180

Doreen collected **180** stamps.

7 To find the number of vanilla cupcakes, we have to assume all the amount of money was spent on the chocolate cupcakes first.

Cost of 57 chocolate cupcakes → \$2.80 × 57

= \$159.60

Difference with actual amount → \$169.60 – \$159.60

= \$10

Difference in cost of 1 vanilla cupcake and 1 chocolate cupcake → \$3.20 – \$2.80 = \$0.40

Number of vanilla cupcakes she bought → \$10 ÷ \$0.40

= 25

Sophia bought **25** vanilla cupcakes.

8 Paul:

5 hours → 1 house

1 hour → $\frac{1}{5}$ of the house

2 hours → $\frac{1}{5}$ × 2 of the house

Paul can paint $\frac{2}{5}$ of the house in 2 hours.

Dave:

6 hours → 1 house

1 hour → $\frac{1}{6}$ of the house

2 hours → $\frac{1}{6}$ × 2 of the house

Dave can paint $\frac{2}{6}$ of the house in 2 hours.

Fraction of house painted by both in 2 hours

$\rightarrow \frac{2(\times 6)}{5(\times 6)} + \frac{2(\times 5)}{6(\times 5)}$

$= \frac{12}{30} + \frac{10}{30}$

$= \frac{22(\div 2)}{30(\div 2)}$

$= \frac{11}{15}$

$\frac{11}{15}$ of the house would be painted by them in 2 hours.

9 **(a)**

Pattern	1st	2nd	3rd	4th	5th
Number of circles	7	10	13	**16**	**19**

+ 3 + 3 + 3 + 3

(b) 999th pattern → 7 + (998 × 3)

= 7 + 2994

= 3001

There will be **3001** circles in the 999th pattern.

10 Radius of small quarter → 18 cm ÷ 2 = 9 cm

Area of unshaded triangle → $\frac{1}{2}$ × base × height

→ $\frac{1}{2}$ × 9 cm × 9 cm

= 40.5 cm²

Area of unshaded small quarter

→ $\frac{1}{4} \times \pi r^2$

→ $\frac{1}{4}$ × 3.14 × 9 cm × 9 cm

= 63.585 cm²

Area of big quarter circle

→ $\frac{1}{4} \times \pi r^2$

→ $\frac{1}{4}$ × 3.14 × 18 cm × 18 cm

= 254.34 cm²

Area of shaded part

→ 254.34 cm² – 40.5 cm² – 63.585 cm²

= 150.255 cm²

≈ 150 cm²

The area of the shaded part is about **150 cm²**.

11 Ratio of number of apples, oranges and pears Kate bought → 3 : 2 : 5

Cost of an apple → \$0.80

Cost of an orange → \$1.00

Cost of a pear → \$1.20

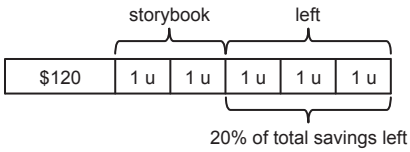
Total amount of money spent → \$104

Number of units representing amount of money spent on apples → 3 u × \$0.80 = 2.4 u

Number of units representing amount of money spent on oranges → 2 u × \$1.00 = 2 u

Number of units representing amount of money spent on pears → 5 u × $1.20 = 6 u
Total number of units → 2.4 u + 2 u + 6 u = 10.4 u
10.4 u = $104
1 u = $104 ÷ 10.4 = 10
Number of oranges bought (2 u) → 10 × 2 = 20
Number of pears bought (5 u) → 10 × 5 = 50
Number of oranges and pears bought → 20 + 50 = 70
Kate bought **70** oranges and pears.

12 Amount Merri spent on headphones → $120
Fraction of savings spent on storybook
→ 40% of her remaining savings
$= \frac{40}{100}$ of her remaining savings
$= \frac{2}{5}$ of her remaining savings
Fraction of savings left → $\left(1 - \frac{2}{5}\right)$ of her remaining savings
$= \frac{3}{5}$ of her remaining savings



From the above model diagram,
3 u → 20%
5 u → $\frac{5}{3} \times 20\% = \frac{5}{3} \times \frac{20}{100} = \frac{1}{3}$
Fraction of savings left and spent on storybook → $\frac{1}{3}$
Fraction of savings spent on headphones
→ $1 - \frac{1}{3} = \frac{2}{3}$ (2 units)
2 units = $120
1 unit = $120 ÷ 2 = $60
Total savings at first → $60 × 3 units = $180
Merri had a savings of **$180** at first.

13 Fraction of paper painted red → $\frac{2\ (\times 3)}{5\ (\times 3)} = \frac{6}{15}$
Fraction of paper painted green → $\frac{1\ (\times 5)}{3\ (\times 5)} = \frac{5}{15}$
Fraction of remaining space → $1 - \frac{6}{15} - \frac{5}{15} = \frac{4}{15}$
Fraction of paper painted blue → $\frac{1}{2}$ of the remaining space
$\rightarrow \frac{1}{2} \times \frac{4}{15}$
$= \frac{2}{15}$
Fraction of paper painted → $\frac{6}{15} + \frac{5}{15} + \frac{2}{15}$
$= \frac{13}{15}$
Fraction of paper not painted → $1 - \frac{13}{15} = \frac{2}{15}$
Area of paper not painted → 240 cm²
2 units = 240 cm²
1 unit = 240 cm² ÷ 2 = 120 cm²
Area of whole paper → 120 cm² × 15 units = 1800 cm²
Its length was twice its breadth.
Number of units representing area of rectangular paper
→ 2 u × 1 u = 2 u²
2 u² → 1800 cm²
1 u² → 1800 cm² ÷ 2 = 900 cm²
1 u × 1 u → 1 u²
30 cm × 30 cm = 900 cm²
1 u → 30 cm
Length of rectangular paper → 30 cm × 2 u = 60 cm
Breadth of rectangular paper → 30 cm
Perimeter → (60 cm + 30 cm) × 2 = 180 cm
The perimeter of the paper was **180 cm**.

14 Volume of tank → 50 cm × 30 cm × 20 cm
= 30 000 cm³
Volume of water in the tank → $\frac{4}{15}$ × 30 000 cm³
= 8000 cm³
Volume of water needed to fill up the tank
→ 30 000 cm³ – 8000 cm³ = 22 000 cm³
Volume of water flowing from Tap A in 1 min
→ 0.5 ℓ = 500 mℓ
Volume of water flowing from Tap A in 5 min
→ 500 mℓ × 5 = 2500 mℓ
Since 3 ℓ of water is poured from a container into the tank every 5 minutes,
at the 5th min
→ 2500 mℓ + 3 ℓ
= 2500 mℓ + 3000 mℓ
= 5500 mℓ
Every 5 minutes, 5500 mℓ of water would fill the tank.
Number of groups of 5 minutes to fill up the tank
→ 22 000 cm³ ÷ 5500 mℓ
= 4 groups
Time taken to fill up the tank → 4 × 5 min
= 20 min
It would take **20 min** to fill the tank to its brim.

15 $\frac{3}{3}$ of red balls + $\frac{5}{5}$ of blue balls → 270
$-\frac{1}{3}$ of red balls + $\frac{2}{5}$ of blue balls → 100

$\frac{2}{3}$ of red balls + $\frac{3}{5}$ of blue balls → 170
$-\frac{1}{3}$ of red balls + $\frac{2}{5}$ of blue balls → 100

$\frac{1}{3}$ of red balls + $\frac{1}{5}$ of blue balls → 70
We need to eliminate red balls in order to find 1 unit of blue balls.
$\frac{1}{3}$ of red balls + $\frac{2}{5}$ of blue balls → 100
$-\frac{1}{3}$ of red balls + $\frac{1}{5}$ of blue balls → 70
---
0 red balls + $\frac{1}{5}$ of blue balls → 30
$\frac{1}{5}$ of blue balls → 30
$\frac{2}{5}$ of blue balls → 30 × 2 = 60
Number of blue balls taken out → 60
Total number of balls taken out → 100
Number of red balls taken out → 100 – 60
= 40
Michael took out **40** red balls.

16 Initial ratio

Singapore : Malaysia

40% : 60%

2 u : 3 u

In the end

Singapore stamps → 2 u + 60

Malaysia stamps → $\frac{50}{100}$ × 3 u – 5

= 1.5 u – 5

Ratio in the end

Singapore : Malaysia

2 p : 1 p

This means that

Singapore stamps left = twice Malaysia stamps left

2 u + 60 = 2 × (1.5 u – 5)

2 u + 60 = 3 u – 10

3 u – 2 u = 60 + 10

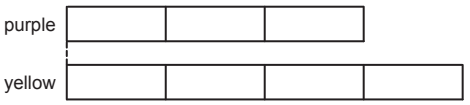
1 u = 70

Stamps at first (5 u) → 5 × 70

= **350**

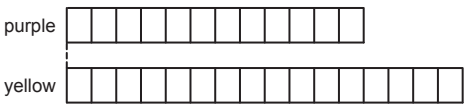
17 Fraction of purple marbles → $\frac{3}{7}$ (3 units)

Fraction of yellow marbles → $1 - \frac{3}{7} = \frac{4}{7}$ (4 units)



$\frac{17}{28}$ of the marbles were left in the box. This means that there were a total of 28 units of marbles. We have to divide each unit from the above model diagram to get a total of 28 units.

28 ÷ 7 units = 4 smaller units for each unit

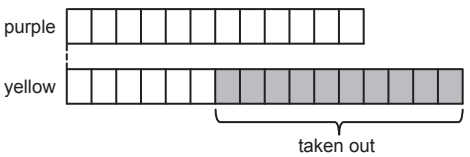


Fraction of yellow marbles taken out → $\frac{5}{8}$

Number of units representing yellow marbles taken out

→ $\frac{5}{8}$ × 16 u

= 10 u



$\frac{17}{28}$ of the marbles were left in the box → 17 u were left

Number of units representing yellow marbles left

→ 16 u – 10 u

= 6 u

Number of units representing purple marbles left

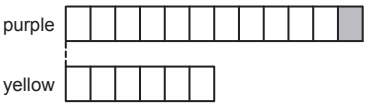
→ 17 u – 6 u

= 11 u

Number of units representing purple marbles taken out

→ 12 u – 11 u

= 1 u



Number of purple marbles taken out → 20

1 unit = 20

Number of marbles in the box at first → 20 × 28 units

= 560

There were **560** marbles in the box at first.