2017
Paper 1 Booklet A

1. **(3)**
   Arranging the numbers from the smallest to the greatest, we have 0.045, 0.054, 0.405, 0.504.
   Hence, 0.045 is the smallest.

2. **(2)**
   The lines AE and DE meet at 90°.
   Hence, AE and DE are perpendicular to each other.

3. **(4)**
   1 *l* = 1000 m*l*
   Each marking = 1000 m*l* ÷ 10
   = 100 m*l*
   Volume of water in the container
   = 3 × 100 m*l*
   = 300 m*l*

4. **(4)**
$\angle EBF = 90°$ (angle of a rectangle)
$\angle BEF = 180° - 90° - 48°$ (sum of angles in a triangle)
$= 42°$
$\angle AED = 180° - 92° - 42°$ (angles on a straight line)
$= 46°$

5. **(2)**
$30 + \frac{3}{10} + \frac{3}{100} = 30 + 0.3 + 0.03$
$= 30.33$

6. **(4)**
Each marking $= 20 \div 5$
$= 4$
Number of chairs the shop sold in April $= 20 + 3 \times 4$
$= 32$

7. **(4)**
Number of chairs sold in July = 20
100% ⟶ 20 chairs
1% ⟶ $\frac{20}{100}$
$= 0.2$ chairs
100% + 80% = 180%
180% ⟶ 180×0.2
$= 36$ chairs
Number of chairs sold in August = 36

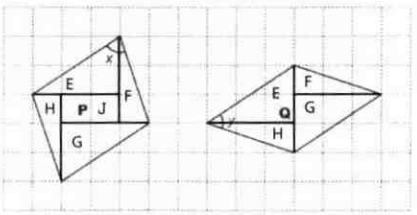
8. **(3)**
Cost of 20 erasers = \$10
Cost of 1 eraser $= \$10 \div 20$
$= \$0.50$
$= 50¢$

9. **(1)**
4 kg 55 g $= 4\frac{55}{1000}$ kg = 4.055 kg
$4\frac{1}{3}$ kg = 4.333... kg
Arranging from the heaviest to the lightest, we have
$4\frac{1}{3}$ kg, 4.25 kg, 4 kg 55 g

10. **(2)**
Length of the arc of the semicircle
$= \frac{1}{2} \times 3.14 \times 20$ cm
= 31.4 cm
Perimeter of the shaded figure
= 31.4 cm + 20 cm
= 51.4 cm

11. **(1)**
Base length of the parallelogram
$= (186 \text{ cm} - 3 \text{ cm} - 3 \text{ cm}) \div 2$
= 90 cm
Number of tiles that Devi used
$= 90 \text{ cm} \div 3 \text{ cm}$
= 30

12. **(2)**
Using a protractor to measure, $\angle x$ is not the same as $\angle y$.

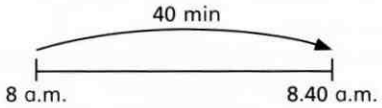


From the above diagram, Figure P and Figure Q each have four regions E, F, G and H.
However, Figure P has an extra region J. Hence, Figure P and Figure Q do not have the same area.

The four lengths of Figure P and Figure Q are the same. Hence, Figure P has the same perimeter as Figure Q.

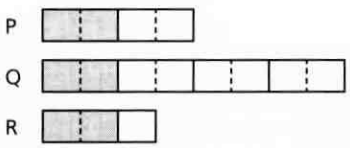
Therefore, only statement C is true.

13. **(1)**
Total distance they walked in 1 h
= 5 km + 4 km
= 9 km
9 km ⟶ 1 h
6 km ⟶ $\frac{1}{9}$ × 6 h
= $\frac{6}{9}$ h
= $\frac{2}{3}$ h
$\frac{2}{3}$ h = 40 min



They first passed each other at 8.40 a.m.

14. **(3)**



Ratio of the capacity of container P to container Q to container R
= 4 : 8 : 3

15. **(3)**
Cost of 3 apples = Cost of 2 pears
Cost of 1 apple = Cost of $\frac{2}{3}$ pear
Cost of 6 apples = Cost of (6 × $\frac{2}{3}$ =) 4 pears
Total number of pears Mr Wong can buy with $\frac{3}{7}$ of his money = 10 + 4
= 14
$1 - \frac{3}{7} = \frac{4}{7}$
$\frac{3}{7}$ of his money ⟶ 14 pears
$\frac{1}{7}$ of his money ⟶ $\frac{14}{3}$ pears
$\frac{4}{7}$ of his money ⟶ 4 × $\frac{14}{3}$
= 18 pears R 2
Most number of pears that Mr Wong can buy with the money he had left
= 18

Paper 1 Booklet B

16. 10 012

17. $\frac{1}{6} + \frac{2}{9} = \frac{3}{18} + \frac{4}{18}$
$= \frac{7}{18}$

18. $^{0}\cancel{1}^{9}\cancel{0}\cancel{0}\,.\,^{10}\cancel{0}\cancel{1}\,^{10}\cancel{0}$
$-\quad 7\,.\,4\,3$
$\overline{\qquad 2\,.\,6\,7}$
The value is **2.67**.

19. $6 \div \frac{2}{5} = {}^{3}\cancel{6} \times \frac{5}{\cancel{2}_{1}}$
= **15**

20. 0.27 × 30 = 0.27 × 3 × 10
= 0.81 × 10
= **8.1**

21. Multiples of 6 which are smaller than 50: 6, 12, 18, 24, 30, 36, 42, 48
Multiples of 10 which are smaller than 50: 10, 20, 30, 40
Common multiple of 6 and 10 that is smaller than 50 = **30**

22. **8.9** cm

23. Area of ABEF = 4 cm × y cm
$= 4y$ cm^2
Area of ACDF = $4y$ cm^2 + $(6 + 5y)$ cm^2
$= (4y + 5y + 6)$ cm^2
$= \mathbf{(9y + 6)}$ cm^2

24. 1 h = 60 min
100 min ⟶ 1 tank
1 min ⟶ $\frac{1}{100}$ tank
60 min ⟶ $60 \times \frac{1}{100}$ tank
$= \frac{60}{100}$ tank
$= \frac{3}{5}$ tank

25. Volume of the cube
$= 27$ cm^3
$= 3$ cm × 3 cm × 3 cm
Length of the cube = 3 cm
Perimeter of one face of the cube
$= 4 \times 3$ cm
$= \mathbf{12}$ cm

26.
$$\begin{array}{r} 0.285 \\ 7\overline{)2.000} \\ 14 \\ \hline 60 \\ 56 \\ \hline 40 \\ 35 \\ \hline 5 \end{array}$$

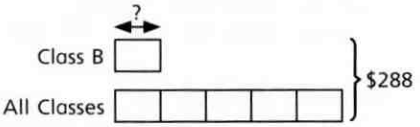
$2 \div 7 = 0.285$
$= \mathbf{0.29}$ (2 decimal places)

27. $\angle CFE = 180° - 108°$ (angles between two parallel lines, DE // CF)
$= 72°$
$\angle AFE = 180° - 90° - 72°$ (angles on a straight line)
$= \mathbf{18°}$

28. Fraction of the remaining beads
$= 1 - \frac{1}{4}$
$= \frac{3}{4}$
Fraction of the remaining beads that are yellow $= 1 - \frac{2}{9}$
$= \frac{7}{9}$
Fraction of the beads in the box that are yellow $= \frac{7}{\cancel{9}_3} \times \frac{\cancel{3}^1}{4}$
$= \frac{7}{12}$

29. Largest possible 2-digit number = 99
Value of the 3-digit number
= 415 – 99
= 316
Smallest possible difference between the two numbers = 316 – 99
$= \mathbf{217}$

30. \$108 + \$180 = \$288

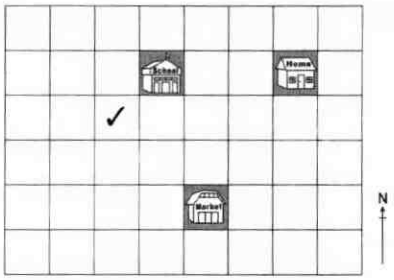


6 units = \$288
1 unit = \$288 ÷ 6
= \$48
Class B raised **\$48**.

Paper 2

1. (a) Chan's school is **west** of his home.

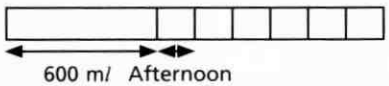
(b)



2. Number of more pupils than teachers in each group = 15 – 2
= 13
Number of groups = 52 ÷ 13
= 4

4 × 15 = 60
60 pupils went on the field trip.

3.



5 units = 600 m/ + 1 unit
4 units = 600 m/

600 m/ ÷ 4 = 150 m/
She drank **150** m/ of the juice in the afternoon.

4. Difference between their speed
= 5 m/s – 1 m/s
= 4 m/s
Time taken for Latif to catch up with Kelly = 90 m ÷ 4 m/s
= 22.5 s

5 m/s × 22.5 s = 112.5 m
Latif would have cycled **112.5** m when he caught up with Kelly.

5. 2 h = 120 min
Amount of break time each boy would have equally
= 120 min ÷ 5
= 24 min

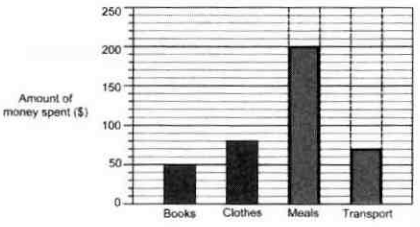
120 min – 24 min = 96 min
= 1 h 36 min
Each boy played on the court for **1** h **36** min.

6. (a) $\frac{1}{5} \times 100\% = 20\%$
Sue spent **20%** of her money on Clothes.

(b) $\frac{1}{5}$ of her money ⟶ \$80
Total sum of her money
= 5 × \$80
= \$400

$\frac{\$50}{\$400} = \frac{1}{8}$
Sue spent $\frac{1}{8}$ of her money on Books.

(c) Amount of her money spent on Meals
$= \frac{1}{2} \times \$400$
= \$200
Fraction of her money spent on Transport
$= 1 - \frac{1}{2} - \frac{1}{5} - \frac{1}{8}$
$= \frac{7}{40}$
Amount of her money spent on Transport
$= \frac{7}{40} \times \$400$
= \$70



7. (a) $6 + k + 3 + 4k = 5k + 9$
The total number of cans Raj, Sam and Talib collected was **$5k + 9$**.

(b) Total number of cans collected
$= 5 \times 9 + 9$
$= 54$

$54 \div 3 = 18$
The average number of cans the 3 boys collected was **18**.

8. (a) Number of numbers in each cycle
$= 4$
Number of cycles in 626 numbers
$= 626 \div 4$
$= 156$ R 2
2nd number in each cycle = 0

The 626th number is **0**.

(b) Sum of the 4 numbers in each cycle $= 4 + 0 + 1 + 2$
$= 7$
Number of cycles in 627 numbers
$= 627 \div 4$
$= 156$ R 3
Total sum of 156 cycles
$= 156 \times 7$
$= 1092$

$1092 + 4 + 0 + 1 = 1097$
The sum of the first 627 numbers is **1097**.

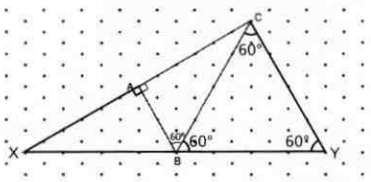
9. Number of textbooks left $= 60 - 10$
$= 50$
Number of storybooks left $= 118 - 50$
$= 68$
Percentage of the storybooks left
$= 100\% - 20\%$
$= 80\%$
$80\% \longrightarrow 68$ books
$1\% \longrightarrow 68 \div 80$
$= 0.85$ books

$100 \times 0.85 = 85$
Ping had **85** storybooks at first.

10. 25 m = 2500 cm
Number of pieces of ribbon she can cut from each roll
$= 2500$ cm $\div 110$ cm
$= 22$ R 80 cm
Number of rolls of ribbon required
$= 200 \div 22$
$= 9$ R 2

$9 + 1 = 10$
The least number of rolls of ribbons Jess needs to buy is **10**.

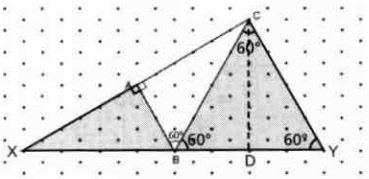
11. (a), (b)



(c) <u>Method 1:</u>
Area of triangle ABX
$= \frac{1}{2} \times 4 \times 3$
$= 6$ units^2
Area of triangle BCY
$= \frac{1}{2} \times 4 \times 6$
$= 12$ units^2

6 : 12 = 1 : 2
The ratio of the area of triangle ABX to the area of triangle BCY is **1 : 2**.

Method 2:

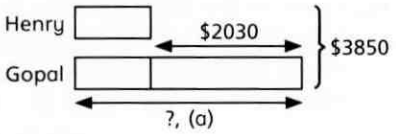


CD = XA
BD = DY = AB
Area of triangle ABX
= Area of triangle BCD
= Area of triangle CDY.
The ratio of the area of triangle ABX to the area of triangle BCY is **1 : 2**.

12. Length of 6 parts of the cones
= 26 cm – 14 cm
= 12 cm
Length of 1 part of the cone
= 12 cm ÷ 6
= 2 cm
Length of 1 cone
= 14 cm – 2 cm – 2 cm
= 10 cm
$\frac{1}{2}$ m = 50 cm
Total length of the cones in the box excluding the first cone
= 50 cm – 10 cm
= 40 cm
Number of cones excluding the first cone in the box
= 40 cm ÷ 2 cm
= 20

20 + 1 = 21
The most number of cones he can pack into the box is **21**.

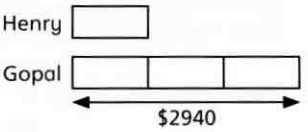
13.



(a) 2 units = $3850 – $2030
= $1820
1 unit = $1820 ÷ 2
= $910

$910 + $2030 = $2940
Gopal was paid **$2940** for the job.

(b) Assume that Gopal and Henry earned the same amount of money each day.



3 parts = $2940
1 part = $2940 ÷ 3
= $980
Since Henry earned $5 less than Gopal each day, Henry earned ($980 – $910 =) $70 less.
Number of days Henry worked
= $70 ÷ $5
= 14

3 × 14 = 42
Gopal worked for **42** days.

14. (a) Difference in the percentage discount = 20% – 15%
= 5%
5% of the original price
= $2 + $2.50
= $4.50
1% of the original price
= $4.50 ÷ 5
= $0.90

$100 \times \$0.90 = \$90$
The original price of the red bag was **\$90**.

(b) (100% − 20% =) 80%
⟶ $80 \times \$0.90$
$= \$72$

$\$72 + \$2 = \$74$
Lina had **\$74** at first.

15. (a) $\frac{1}{4} = \frac{5}{20}$
Fraction of the participants who completed the 8-km route
$= 1 - \frac{5}{20} - \frac{9}{20}$
$= \frac{6}{20}$

The ratio is **5 : 9 : 6**.

(b) Assume that 5 participants completed the 3-km route, 9 participants completed the 5-km route and 6 participants completed the 8-km route in one group.
Total distance walked in one group
$= 5 \times 3 \text{ km} + 9 \times 5 \text{ km} + 6 \times 8 \text{ km}$
$= 108 \text{ km}$
Total distance walked
$= \$8208 \div \$4$
$= 2052 \text{ km}$
Number of groups
$= 2052 \text{ km} \div 108 \text{ km}$
$= 19$
Total number of participants in each group $= 5 + 9 + 6$
$= 20$

$19 \times 20 = 380$
The total number of participants at the walkathon is **380**.

16. (a) $2 \times (10 \text{ cm} \times 5 \text{ cm}) + 2 \times (10 \text{ cm} \times 4 \text{ cm}) + 2 \times (5 \text{ cm} \times 4 \text{ cm})$
$= 220 \text{ cm}^2$
The total painted area is **220 cm²**.

(b) (i) Number of cubes along the length with none of the faces painted
$= 10 - 2$
$= 8$
Number of cubes along the breadth with none of the faces painted
$= 5 - 2$
$= 3$
Number of cubes along the height with none of the faces painted
$= 4 - 2$
$= 2$

$8 \times 3 \times 2 = 48$
48 cubes have none of the faces painted.

(ii) Number of cubes along a 10-cm edge with 2 of the faces painted = 8
Total number of cubes along the 10-cm edges with 2 of the faces painted
$= 4 \times 8$
$= 32$
Number of cubes along a 5-cm edge with 2 of the faces painted
$= 3$
Total number of cubes along the 5-cm edges with 2 of the faces painted
$= 4 \times 3$
$= 12$

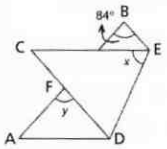
Number of cubes along a 4-cm edge with 2 of the faces painted
= 2
Total number of cubes along the 4-cm edges with 2 of the faces painted
= 4 × 2
= 8

32 + 12 + 8 = 52
52 cubes have 2 of the faces painted.

17. (a) ∠BCA
= (180° − 84°) ÷ 2 (base angles of an isosceles triangle)
= 48°
∠DEC
= 180° − 67° − 48° (sum of angles in a triangle)
= 65°

∠*x* is **65°**.

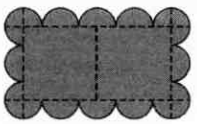
(b)



∠ADF
= 180° − 67° − 67° (angles on a straight line)
= 46°
∠BAC = 48°
∠AFD
= 180° − 46° − 48° (sum of angles in a triangle)
= 86°

∠*y* is **86°**.

18. (a)



Length of the rectangle
= 2 × Breadth of the rectangle
Therefore, we can divide the rectangle equally into 2 squares.
Area of $\frac{1}{2}$ of the rectangle
= 288 cm² ÷ 2
= 144 cm²
Breadth of the rectangle
= $\sqrt{144}$ cm
= 12 cm
Length of the rectangle
= 2 × 12 cm
= 24 cm

24 cm + 12 cm + 24 cm + 12 cm
= 72 cm
The perimeter of the rectangle is **72 cm**.

(b) Length of 4 radii = 12 cm
Length of 1 radius = 12 cm ÷ 4
= 3 cm
Area of a quarter circle
= $\frac{1}{4} \times \frac{22}{7} \times 3$ cm × 3 cm
= $\frac{99}{14}$ cm²
Area of 28 quarter circles
= $28 \times \frac{99}{14}$ cm²
= 198 cm²

288 cm² + 198 cm² = 486 cm²
The area of the figure is **486 cm²**.