

2018
Paper 1 Booklet A

1. (2)

$$\begin{aligned} 1000 \text{ m} &= 1 \text{ km} \\ 8040 \text{ m} &= 8000 \text{ m} + 40 \text{ m} \\ &= 8 \text{ km } 40 \text{ m} \end{aligned}$$

2. (1)

Line PQ spans across 2 rows and 6 columns. To form a right angle, the point which is joined to point P or Q should also span across either 2 rows and 6 columns or 6 rows and 2 columns.

When joined, both lines PA and PC spans across 6 rows and 2 columns. $\angle CPQ$ is an acute angle, it is smaller than a right angle while $\angle APQ$ is a right angle.

Hence, the point which P and Q should be joined to form a right-angled triangle is point A.

3. (2)

$$\begin{aligned} \text{Each minor marking} &\longrightarrow 1 \text{ cm} \div 5 \\ &= 0.2 \text{ cm} \\ 3 \text{ cm} + (2 \times 0.2 \text{ cm}) &= 3.4 \text{ cm} \\ \text{Length of the paper clip} &= 3.4 \text{ cm} - 1 \text{ cm} \\ &= 2.4 \text{ cm} \end{aligned}$$

4. (4)

$$\begin{aligned} \text{Each minor marking} &\longrightarrow 20 \text{ cm} \div 5 \\ &= 4 \text{ cm} \\ \text{Height of the plant in June} &= 60 \text{ cm} + (2 \times 4 \text{ cm}) \\ &= 68 \text{ cm} \end{aligned}$$

5. (3)

The line graph from May to June spans across the most number of minor markings (6). This indicates the greatest increase in the height of the plant.

6. (2)

Only the letters 'E' and 'T' have a line of symmetry.

7. (4)

$$\begin{aligned} \text{Dolphin} &\longrightarrow \frac{90^\circ}{360^\circ} \\ &= \frac{1}{4} \\ &= \frac{5}{20} \end{aligned}$$

Fraction of the class that chose Tiger

$$\begin{aligned} &= 1 - \frac{2}{10} - \frac{1}{10} - \frac{3}{10} - \frac{1}{4} \\ &= \frac{20}{20} - \frac{4}{20} - \frac{2}{20} - \frac{6}{20} - \frac{5}{20} \\ &= \frac{3}{20} \end{aligned}$$

8. (3)

$$\begin{aligned} 6 &= 6.00 \\ 6.3 &= 6.30 \\ \text{Arranging the numbers from the} & \\ \text{largest to the smallest:} & \\ 6.3, 6.03, 6 & \end{aligned}$$

9. (4)

$$\begin{aligned} \text{Length of the shaded face} &= 18 \text{ cm}^2 \div 2 \text{ cm} \\ &= 9 \text{ cm} \\ \text{Volume of the cuboid} &= 9 \text{ cm} \times 9 \text{ cm} \times 2 \text{ cm} \\ &= 162 \text{ cm}^3 \end{aligned}$$

10. (4)

$$\begin{aligned} \text{Total number of pupils who scored} & \\ \text{17 and more} &= 1 + 3 + 5 \\ &= 9 \\ \text{Hence, the lowest score Arjun could} & \\ \text{have scored was 17.} & \end{aligned}$$

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11. (3)

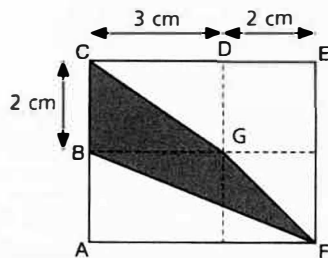
$$\begin{aligned}
 &\text{Total amount of discount} \\
 &= (10 \div 2) \times \$1 \\
 &= \$5 \\
 &\text{Original cost of the 10 files} \\
 &= 10 \times \$y \\
 &= \$10y \\
 &\text{Total amount he paid} = \$10y - \$5 \\
 &= \$(10y - 5)
 \end{aligned}$$

12. (2)

13. (2)

$$\begin{aligned}
 &\text{Circumference of 2 quarter circles} \\
 &= \text{Circumference of 1 semicircle} \\
 &\text{Circumference of 1 semicircle} \\
 &= \frac{1}{2} \times 2 \times 3.14 \times 4 \text{ cm} \\
 &= 12.56 \text{ cm} \\
 &\text{Perimeter of figure} \\
 &= 12.56 + 4 \text{ cm} + (4 \text{ cm} - 1 \text{ cm}) \\
 &\quad + (4 \text{ cm} - 1 \text{ cm}) + 4 \text{ cm} \\
 &= 26.56 \text{ cm} \\
 &= 27 \text{ cm (rounded to the nearest} \\
 &\quad \text{whole number)}
 \end{aligned}$$

14. (3)



$$\begin{aligned}
 &\text{Area of triangle BCG} \\
 &= \frac{1}{2} \times 3 \text{ cm} \times 2 \text{ cm} \\
 &= 3 \text{ cm}^2 \\
 &\text{Area of triangle BFG} \\
 &= \frac{1}{2} \times 3 \text{ cm} \times 2 \text{ cm} \\
 &= 3 \text{ cm}^2 \\
 &\text{Total shaded area} = 3 \text{ cm}^2 + 3 \text{ cm}^2 \\
 &= 6 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 &\text{Area of rectangle ACEF} \\
 &= (3 \text{ cm} + 2 \text{ cm}) \times (2 \text{ cm} + 2 \text{ cm}) \\
 &= 5 \text{ cm} \times 4 \text{ cm} \\
 &= 20 \text{ cm}^2 \\
 &\text{Fraction of rectangle ACEF that is} \\
 &\text{shaded} = \frac{6}{20} \\
 &= \frac{3}{10}
 \end{aligned}$$

15. (4)

$$\begin{aligned}
 &\frac{1}{3} \text{ of the distance of the race} \\
 &\rightarrow 20 \text{ cm/s} \times 12 \text{ s} \\
 &= 240 \text{ cm} \\
 &\text{Total distance of the race} \\
 &= 3 \times 240 \text{ cm} \\
 &= 720 \text{ cm}
 \end{aligned}$$

Paper 1 Booklet B

16. Accept any decimal greater than 2.1 but less than 2.2.
For example, 2.11 (2 decimal places) or 2.154 (3 decimal places).

$$\begin{aligned}
 17. \quad &\angle AFB = \angle EFC \text{ (Vertically opposite angles)} \\
 &= 72^\circ \\
 &\angle EFD = 72^\circ - 5^\circ \\
 &= 67^\circ
 \end{aligned}$$

$$\begin{aligned}
 18. \quad &3m - 1 + m = 3(7) - 1 + 7 \\
 &= 21 - 1 + 7 \\
 &= 27
 \end{aligned}$$

$$\begin{aligned}
 19. \quad &60 \text{ s} = 1 \text{ min} \\
 &\text{Amount of water that will leak from} \\
 &\text{the tap in 1 minute} \\
 &= 60 \times 5 \text{ m/} \\
 &= 300 \text{ m/}
 \end{aligned}$$

20. 24°

21. $1\frac{1}{4} \text{ l} = 1\frac{25}{100} \text{ l}$
 $= 1.25 \text{ l}$

$1 \text{ l} 22 \text{ ml} = 1 \text{ l} + \frac{22}{1000} \text{ l}$
 $= 1.022 \text{ l}$

 The smallest is $1 \text{ l} 22 \text{ ml}$.

 The largest is $1\frac{1}{4} \text{ l}$.

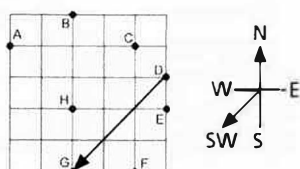
22.

		²⁷		⁴²	⁶
					8
x					8
	5	8		0	8

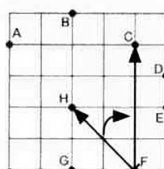
$7.26 \times 8 = 58.08$

$= 58.1 \text{ (correct to 1 decimal place)}$

23. (a) South-west



(b) Point F



24. $100 \text{ cm} = 1 \text{ m}$

Total length of the wire she cuts off
 $= 3 \times 8 \text{ cm}$

$= 24 \text{ cm}$

$= 0.24 \text{ m}$

Length of the remaining roll of wire

$= 10.2 \text{ m} - 0.24 \text{ m}$

$= 9.96 \text{ m}$

25. To obtain the smallest difference between the two whole numbers, the two numbers will have to be consecutive numbers so that the larger number is 1 more than the smaller number.

Larger number		}	1037
Smaller number			

$2 \text{ units} = 1037 - 1$

$= 1036$

$1 \text{ unit} = 1036 \div 2$

$= 518 \text{ (smaller number)}$

$518 + 1 = 519 \text{ (larger number)}$

The smallest difference is 1.

 The two numbers are **519** and **518**.

26. This is an internal transfer, hence the total number of stamps Sally and Ting have before and after the transfer remains unchanged.

Total number of units in the end

$= 1 + 2$

$= 3$

$3 \text{ units} = 40 + 32$

$= 72 \text{ stamps}$

$1 \text{ unit} = 72 \div 3$

$= 24 \text{ stamps}$

$2 \text{ units} = 2 \times 24$

$= 48 \text{ stamps}$

 Number of stamps Ting had in the end = **48**

27. $1000 \text{ g} = 1 \text{ kg}$

$360 \text{ g} = \frac{360}{1000} \text{ kg}$
 $= 0.36 \text{ kg}$

Total mass of flour used

$= \frac{1}{5} \text{ kg} + \frac{1}{2} \text{ kg}$

$= \frac{2}{10} \text{ kg} + \frac{5}{10} \text{ kg}$

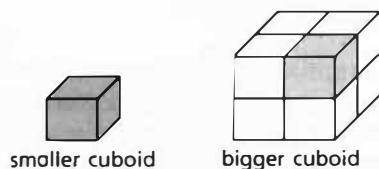
$= \frac{7}{10} \text{ kg}$

$= 0.7 \text{ kg}$

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Mass of flour she had at first
 $= 0.7 \text{ kg} + 0.36 \text{ kg}$
 $= 1.06 \text{ kg}$

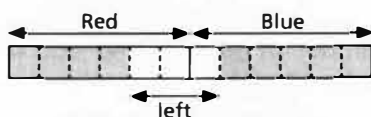
28. Since the length, breadth and height of the bigger cuboid is 2 times the smaller cuboid, the number of unit cubes used to make up the bigger cuboid is 8 times of the number of unit cubes used to make up the smaller cuboid.



Number of unit cubes she used to form the smaller cuboid
 $= 384 \div 8$
 $= 48$

29. $\frac{2}{3} = \frac{4}{6}$

Total units of red and blue stickers
 $= 6 + 6$
 $= 12$
 Total units of red and blue stickers left
 $= \frac{1}{4} \times 12$
 $= 3$



Number of units of blue stickers given away = 5
 Fraction of blue stickers given away
 $= \frac{5}{6}$

30. Big circle
 Radius $= 42 \text{ cm} \div 2$
 $= 21 \text{ cm}$
 Area $= \frac{22}{7} \times 21 \text{ cm} \times 21 \text{ cm}$
 $= 1386 \text{ cm}^2$

Small circle
 Radius $= 21 \text{ cm} \div 3$
 $= 7 \text{ cm}$
 Area $= \frac{22}{7} \times 7 \text{ cm} \times 7 \text{ cm}$
 $= 154 \text{ cm}^2$

Area of shaded part
 $= 1386 \text{ cm}^2 - 154 \text{ cm}^2$
 $= 1232 \text{ cm}^2$

Paper 2

1. $\times 6 \left(\begin{array}{l} 15 \text{ cupcakes} \longrightarrow 3 \text{ eggs} \\ 90 \text{ cupcakes} \longrightarrow 18 \text{ eggs} \end{array} \right) \times 6$

He used **18** eggs altogether.

2. $(1 - \frac{3}{5}) = \frac{2}{5}$ of journey $\longrightarrow 84 \text{ km}$
 $\frac{1}{5}$ of journey $\longrightarrow 84 \text{ km} \div 2$
 $= 42 \text{ km}$
 $\frac{5}{5}$ of journey $\longrightarrow 5 \times 42 \text{ km}$
 $= 210 \text{ km}$

$\frac{210 \text{ km}}{2 \text{ h} + 1 \text{ h}} = \frac{210 \text{ km}}{3 \text{ h}}$
 $= 70 \text{ km/h}$

Eric's average speed for the whole journey was **70 km/h**.

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3.

Statement	True	False	Not possible to tell
Ali collected the most number of bottles.			✓
Bolo collected more bottles than Carl.			✓
The 3 boys collected $3m + 19$ bottles altogether.	✓		

For the first statement:

If m is any value that is less than 9, Ali will collect the most number of bottles.

If m is any value that is 9 or more than 9, Ali will not be the one who will collect the most number of bottles.

For the second statement:

If $m = 1$, Bala will collect $(2 \times 1 =) 2$ bottles while Carl will collect $(2 + 1 =) 3$ bottles.

If $m = 2$, Bala will collect $(2 \times 2 =) 4$ bottles while Carl will collect $(2 + 2 =) 4$ bottles.

For the 3rd statement:

Total number of bottles collected
 $= 17 + 2m + 2 + m$
 $= 3m + 19$

4. Breadth of overlap area
 $= 5.2 \text{ m}^2 \div 4 \text{ m}$
 $= 1.3 \text{ m}$

Length of the area not covered by the mats
 $= 6 \text{ m} - 1.3 \text{ m}$
 $= 4.7 \text{ m}$

Breadth of the area not covered by the mat

$$= 6 \text{ m} - 4 \text{ m}$$

$$= 2 \text{ m}$$

$$4.7 \text{ m} \times 2 \text{ m} = 9.4 \text{ m}^2$$

The area of the room not covered by the mat is 9.4 m^2 .

5. Before

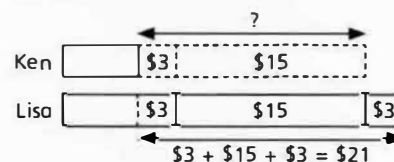
 Ken \$15

 Liso

$$\$21 - \$15 = \$6$$

$$\$6 \div 2 = \$3$$

After



$$\$3 + \$15 = \$18$$

Ken gave **\$18** to Liso.

6. (a) $\frac{18}{6 + 12 + 18} = \frac{18}{36}$
 $= \frac{1}{2}$

$\frac{1}{2}$ of the fruits that Vera bought were apples.

(b) Cost of apples $= 18 \times \$0.40$
 $= \$7.20$

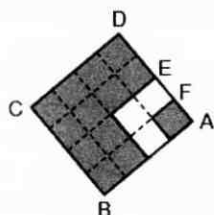
Cost of pears $= 12 \times \$0.80$
 $= \$9.60$

Cost of mangoes $= 6 \times \$1.10$
 $= \$6.60$

Vera spent the most on **pears**.
 She spent **\$9.60** on pears.

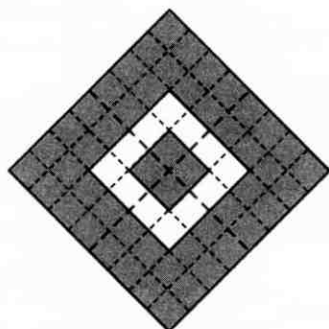
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7. (a)



$\frac{13}{16}$ of the tile ABCD is shaded.

(b)



Total number of squares
 $= 8 \times 8$
 $= 64$

12 squares $\rightarrow 81 \text{ cm}^2$
 1 square $\rightarrow 81 \text{ cm}^2 \div 12$
 $= 6.75 \text{ cm}^2$

$(64 - 12 =) 52$ squares
 $\rightarrow 52 \times 6.75 \text{ cm}^2$
 $= 351 \text{ cm}^2$

The total area of the shaded parts in Figure Y is **351 cm²**.

8. $\angle BAE = 60^\circ$ (angle of an equilateral triangle)
 $\angle BAC = 60^\circ - 38^\circ$
 $= 22^\circ$
 $\angle BCA = \angle BAC$ (base angles of an isosceles triangle)
 $= 22^\circ$
 $\angle CBE = 180^\circ - 60^\circ - 22^\circ - 22^\circ$ (sum of angles in a triangle)
 $= 76^\circ$
 $\angle DEB = 180^\circ - 76^\circ$ (angles between two parallel lines, $BC \parallel ED$)
 $= 104^\circ$

9. To use the least number of boxes, we try to fill up as many large boxes as possible.

Number of cupcakes	508	508	508	508
Less: Multiples of 12	12	24	36	48
	496	484	472	460
Is it divisible by 20?	x	x	x	✓

Number of boxes of 20 $= 460 \div 20$
 $= 23$

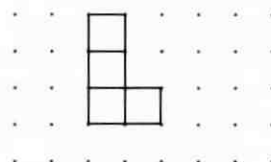
Number of boxes of 12 $= 48 \div 12$
 $= 4$

$23 + 4 = 27$

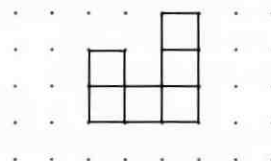
The least number of boxes he used was **27**.

10. (a)

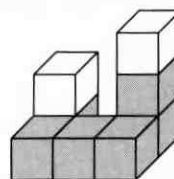
Front View



Side View



(b)



6 cubes has 4 sides painted red.

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11. (a) \$3

(b) 4 km

 (c) $(\$15 - \$6) \div (6 - 4) = \$9 \div 2$
 $= \$4.50$

 The taxi company charges **\$4.50** for every kilometre after 4 km of travel.

 12. (a) $\angle ACD = 180^\circ - 27^\circ$ (angles between
 $= 153^\circ$ two parallel lines,
 CD // AE)

 $\angle ACB = 180^\circ - 153^\circ$ (angles on
 $= 27^\circ$ a straight line)

 $\angle BAC = \angle ACB$ (base angles of an
 $= 27^\circ$ isosceles triangle)

 $\angle ABC = 180^\circ - 27^\circ - 27^\circ$ (sum of
 $= 126^\circ$ angles in a triangle)

 (b) $\angle ABC + \angle BDE = 126^\circ + 53^\circ$
 $= 179^\circ \neq 180^\circ$

 The sum of angles between two parallel lines of a parallelogram is 180° .

 ABDE is **not** a parallelogram because AB is **not** parallel to ED.

 13. (a) $\frac{100 + 200 + 370 + 210 + 290}{5} = \frac{1170}{5}$
 $= 234$

 The average number of visitors from Monday to Friday was **234**.

 (b) Average number of visitors on Saturday and Sunday
 $= 234 + 16$
 $= 250$

 Total number of visitors on Saturday and Sunday
 $= 2 \times 250$
 $= 500$

$$200 + 300 = 500$$

 One possible set of values was **200** and **300**.

(Accept any combination of 2 numbers that give a sum of 500.)

 14. (a) $40\% = \frac{40}{100}$
 $= \frac{2}{5}$
 $\frac{2}{5}$ of the blue beads were used.

 (b)

Blue	left	left	left			
Red	left	45				

 } 285

$$6 \text{ units} = 285 - 45$$

$$= 240 \text{ beads}$$

$$1 \text{ unit} = 240 \div 6$$

$$= 40 \text{ beads}$$

$$4 \text{ units} = 4 \times 40$$

$$= 160 \text{ beads}$$

160 beads were left.

 15. (a) $780 \text{ cm}^3 \div 30 \text{ cm}^2 = 26 \text{ cm}$
 The height of the water level in X was **26 cm**.

 (b) Base area of Y = $30 \text{ cm} \times 9 \text{ cm}$
 $= 270 \text{ cm}^2$

Total base area of X and Y

$$= 30 \text{ cm}^2 + 270 \text{ cm}^2$$

$$= 300 \text{ cm}^2$$

Height of X and Y combined

$$= 780 \text{ cm}^3 \div 300 \text{ cm}^2$$

$$= 2.6 \text{ cm}$$

 $30 \text{ cm} \times 9 \text{ cm} \times 2.6 \text{ cm} = 702 \text{ cm}^3$
 Sam poured **702 cm³** of water into Y.

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16. (a) 120% of savings in January

→ \$60

1% of savings in January

→ $\$60 \div 120$

= \$0.50

100% of savings in January

→ $100 \times \$0.50$

= \$50

Amount of savings in March

$$= \frac{100 - 15}{100} \times \$60$$

= \$51

$$\$50 + \$60 + \$51 = \$161$$

Lily saved **\$161** from January to March.

- (b) Increase in amount of saving

$$= \$51 - \$50$$

$$= \$1$$

$$\frac{\$1}{\$50} \times 100\% = 2\%$$

The percentage increase in the amount Lily saved in March compared to January was **2%**.

17. (a) $19 \div 7 = 2 \text{ R } 5$

Number of boxes of short candles

$$\text{needed} = 2 + 1$$

$$= 3$$

Number of boxes of long candles

$$\text{needed} = 1$$

$$(3 \times \$2.50) + \$3.20$$

$$= \$7.50 + \$3.20$$

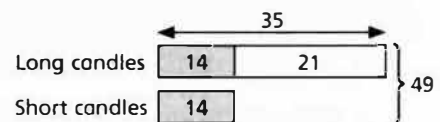
$$= \$10.70$$

Dan will need to spend at least

\$10.70 on the candles.

- (b)

Multiples of 5	25	30	35	40
Less 21	4	9	14	19
Total	29	39	49	59
Is it divisible by 7?	X	X	✓	X



Cost of long candles

$$= (35 \div 5) \times \$3.20$$

$$= \$22.40$$

Cost of short candles

$$= (14 \div 7) \times \$2.50$$

$$= \$5$$

$$\$22.40 + \$5 = \$27.40$$

She paid **\$27.40** for the candles.