

2021 PSLE STANDARD MATHS (ANSWER KEY)

Paper 1

Booklet A (20 marks)

Questions 1 to 10: 1 mark each

Questions 11 to 15: 2 marks each

1.	2	6.	4	11.	4
2.	3	7.	2	12.	1
3.	1	8.	3	13.	4
4.	4	9.	4	14.	3
5.	2	10.	1	15.	3

Booklet B

Question 16 to 20 : 1 mark each

Questions 21 to 30: 2 marks each

Question	Answer
16	483
17	1, 2 and 4
18	$1\frac{13}{15}$
19	0.125
20	$128\pi \text{ cm}^2$
21	<p>Nigel : Helen</p> $\frac{2(x 3)}{5(x 3)} : \frac{3(x 2)}{4(x 2)}$ $\frac{6}{15} : \frac{6}{8} \text{ [M1]}$ <p>$15u - 8u = 7u$ $7u = 28$ $1u = 4$ $15u = 15 \times 4 = \mathbf{60} \text{ [A1]}$</p>
22	<p>Cost of 2 cupboards $\rightarrow \\$y$ Cost a cupboard $\rightarrow \\$\left(\frac{y}{2}\right) \text{ [M1]}$</p>

	<p>Cost a sofa $\rightarrow \\$150 + \\$\left(\frac{y}{2}\right)$ $= \\$(150 + \frac{y}{2})$ [A1]</p>						
23	<p>Area of 1 triangle $\rightarrow \frac{1}{2} \times 16 \text{ cm} \times 8 \text{ cm}$ $= 64 \text{ cm}^2$ [M1]</p> <p>Area of 2 triangles (1 square) $\rightarrow 64 \text{ cm}^2 \times 2 = 128 \text{ cm}^2$ [A1]</p>						
24	<p>$1 - \frac{3}{5} = \frac{2}{5}$</p> <p>Fraction of males $\rightarrow \frac{5}{8} \times \frac{2}{5}$ [M1] $= \frac{1}{4}$</p> <p>Fraction of females $\rightarrow 1 - \frac{3}{5} - \frac{1}{4}$ $= \frac{3}{20}$ [A1]</p>						
25	<p>Number of operating hours for lunch $\rightarrow 3$ Number of operating hours for dinner $\rightarrow 4$ Number of days (from Monday to Friday) $\rightarrow 5$ [M1] Number of operating hours from Monday to Friday $\rightarrow 7 \text{ h} \times 5 \text{ days}$ $= 35 \text{ h}$ [A1]</p>						
26	<p style="text-align: center;">30 kg</p> <div style="text-align: center;"> </div> <p>Lily <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 100px; text-align: center;">1 unit</td><td style="width: 50px; text-align: center;">7 kg</td><td style="width: 50px; text-align: center;">4 kg</td></tr></table></p> <p>Claire <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 100px; text-align: center;">1 unit</td><td style="width: 50px; text-align: center;">7 kg</td></tr></table></p> <p>Beatrice <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 100px; text-align: center;">1 unit</td></tr></table></p> <p>1 u = 30 kg – 7 kg – 4 kg = 19 kg Mass of Claire $\rightarrow 19 \text{ kg} + 7 \text{ kg}$ = 26 kg Mass of Beatrice $\rightarrow 19 \text{ kg}$ Total mass of the 3 girls $\rightarrow 30 \text{ kg} + 26 \text{ kg} + 19 \text{ kg}$ = 75 kg [M1] Average mass of the 3 girls $\rightarrow 75 \text{ kg} \div 3$ = 25 kg [A1]</p>	1 unit	7 kg	4 kg	1 unit	7 kg	1 unit
1 unit	7 kg	4 kg					
1 unit	7 kg						
1 unit							
27	<p>Mass of container filled with blue marbles completely $\rightarrow 1.425 \text{ kg}$ = 1425 g</p>						

	<p>Mass of container when it is $\frac{4}{7}$ filled with blue marbles $\rightarrow 1.161 \text{ kg}$ $= 1161 \text{ g}$</p> <p>Fraction of blue marbles left to fill the container $\rightarrow 1 - \frac{4}{7}$ $= \frac{3}{7}$</p> <p>Mass of $\frac{3}{7}$ of blue marbles only $\rightarrow 1425 \text{ g} - 1161 \text{ g}$ $= 264 \text{ g}$</p> <p>$3 \text{ u} = 264 \text{ g}$ $1 \text{ u} = 88 \text{ g}$ $7 \text{ u} = 616 \text{ g}$ [M1]</p> <p>Mass of empty container $\rightarrow 1425 \text{ g} - 616 \text{ g} = \mathbf{809 \text{ g}}$ [A1]</p>
28	<p>$4 \text{ u} = 20$ $1 \text{ u} = 5$ Length of EB $\rightarrow 5 \times 3 = 15 \text{ cm}$ [M1]</p> <p>Area of shaded part $\rightarrow \frac{1}{2} \times 15 \times 20$ $= \mathbf{150 \text{ cm}^2}$ [A1]</p>
29	<p>$12 - 3 = 9$</p> <p>Number of walls 1 worker had to build more $\rightarrow 4$ Number of walls 9 workers had to build more $\rightarrow 4 \times 9 = 36$ Number of walls 1 worker needed to build $\rightarrow 36 \div 3 = 12$ [M1] Total number of walls needed to be built $\rightarrow 12 \times 12 = 144$ [A1]</p>
30	<p>$100\% - 10\% = 90\%$ Amount of money Wendy spent in January $\rightarrow \frac{90}{100} \times \\1400 $= \\$1260$ [M1]</p> <p>Wendy's monthly salary $\rightarrow \\$1260 + 650$ $= \mathbf{\\$1910}$ [A1]</p>

Paper 2

Questions 1 to 5 : 2 marks each

Question	Answer
1	<p>Y G B</p> $\begin{array}{ccc} 2(x3) & : & 3(x3) & : \\ 6 & : & & : & 5 \end{array}$ <p>-----</p> $6 \quad : \quad 9 \quad : \quad 5 \quad \quad \quad \mathbf{[M1]}$ <p>Total number of units $\rightarrow 6 + 9 + 5 = 20 \text{ u}$ Difference in number of units between yellow and black buttons $\rightarrow 6 \text{ u} - 5 \text{ u} = 1 \text{ u}$ $1 \text{ u} = 20$ Total number of buttons $\rightarrow 20 \times 20 = \mathbf{400 [A1]}$</p>
2	<p>2 painters – 32 walls – 8 hours $\downarrow \div 8 \quad \quad \downarrow \div 8$</p> <p>2 painters – 4 walls – 1 hour $\downarrow \div 2 \quad \quad \downarrow \div 2$</p> <p>2 painters – 2 walls – 30 min [M1] $\downarrow \div 2 \quad \quad \downarrow \div 2$</p> <p>1 painter – 1 wall – 30 min [A1]</p>
3	<p>Amount for a group of 3 50 ¢ coins and 1 \$1 coin $\rightarrow \\$3 \times 50 \text{ ¢} + 1$ $= \\$2.50$</p> <p>Number of groups of \$2.50 $\rightarrow \\$22.50 \div \\$2.50 = 9 \text{ [M1]}$</p> <p>Number of 50 ¢ coins $\rightarrow 9 \times 3 = \mathbf{27 [A1]}$</p>
4	<p> $\left. \begin{array}{l} 1^{\text{st}} \rightarrow 1 \text{ u} \\ 2^{\text{nd}} \rightarrow 1 \text{ u} + 5 \\ 3^{\text{rd}} \rightarrow 1 \text{ u} + 5 + 5 \end{array} \right\} 135$ </p> <p> $3 \times 5 = 15 \text{ [M1]}$ $3 \text{ u} = 135 - 15$ $3 \text{ u} = 120$ $1 \text{ u} = \mathbf{40 [A1]}$ </p>
5	<p> $x13 \left\{ \begin{array}{l} \text{T} \quad : \quad \text{B} \\ +8 \text{ yrs} \left[\begin{array}{l} 2 \text{ u} \quad : \quad 3 \text{ u} \\ 10 \text{ p} \quad : \quad 13 \text{ p} \end{array} \right] +8 \text{ yrs} \end{array} \right\} x10$ </p> <p> \downarrow </p> <p> $+104 \text{ yrs} \left[\begin{array}{l} \text{T} \quad : \quad \text{B} \\ 26 \text{ u} \quad : \quad 30 \text{ u} \\ 130 \text{ p} \quad : \quad 130 \text{ p} \end{array} \right] +80 \text{ yrs}$ </p>

	$26u + 104 = 30u + 80$ $4u = 24$ $1u = 6$ [M1] $6 \times 2u = 12$ [A1]
6	Annabelle's mass $\rightarrow 14y$ kg Crystal's mass $\rightarrow 14y - 4$ kg [M1] Average mass of 2 children $\rightarrow \frac{14y + (14y - 4)}{2}$ kg [M1] $= (14y - 2)$ kg [A1]
7	Percentage he paid $\rightarrow 100\% - 40\% = 60\%$ Cost of laptop after discount without 7% GST $\rightarrow \$990$ $60\% \rightarrow \$990$ $1\% \rightarrow \$16.50$ $100\% \rightarrow \$1650$ [M1] Cost of laptop before discount with 7% GST $\rightarrow \$1650$ Amount of 7% GST $\rightarrow 7\% \times \$1650$ $= \$115.50$ [M1] $\$1650 + \$115.50 = \$1765.50$ [A1]
8	Radius = 15 cm Circumference of semi-circle $\rightarrow \frac{1}{2} \times 2 \times 3.14 \times 15$ cm $= 47.1$ cm [M1] Perimeter of the shaded part $\rightarrow 47.1 + 15 + 15 + 15 + 15$ [M1] $= 107.1$ cm [A1]
9	Total marks of 38 students (incorrect) $\rightarrow 74 \times 38 = 2812$ [M1] Actual marks of 36 students $\rightarrow 2812 - 75 - 75 = 2662$ Correct average marks of 38 students $\rightarrow 75 \times 38 = 2850$ [M1] Total marks of the students $\rightarrow 2850 - 2662 = 188$ Correct score of 1 student $\rightarrow 188 \div 2 = 94$ [A1]
10	V : T : B $12u : 5u : 9u$ Van has 4 wheels Number of units representing wheels for 12 u of vans $\rightarrow 4 \times 12u = 48u$ [M1] Tricycle has 3 wheels Number of units representing wheels for 5 u of tricycles $\rightarrow 3 \times 5u = 15u$ Bicycle has 2 wheels Number of units representing wheels for 9 u of bicycles $\rightarrow 2 \times 9u = 18u$ [M1] Total no of units representing wheels $\rightarrow 48u + 15u + 18u = 81u$

	$1 u \rightarrow 324 \div 81 = 4$ Number of vans $\rightarrow 4 \times 12 u = 48$ Number of bicycles $\rightarrow 4 \times 9 u = 36$ Total number of vans and bicycles $\rightarrow 48 + 36 = \mathbf{84 [A1]}$
11	Total number of balls at first $\rightarrow 100$ Number of additional volley balls put into the box $\rightarrow 12$ Percentage of soccer balls taken out $\rightarrow 50\%$ Total number of balls in the end $\rightarrow 102$ Number of soccer balls taken out $\rightarrow 100 + 12 - 102$ $= 10 \mathbf{[M1]}$ 50% of soccer balls $\rightarrow 10$ 100% of soccer balls $\rightarrow 10 \times 2 = 20 \mathbf{[M1]}$ Number of soccer balls at first $\rightarrow 20$ Number of volley balls at first $\rightarrow 100 - 20 = 80 \mathbf{[M1]}$ Number of volley balls in the end $\rightarrow 80 + 12 = 92$ Percentage increase in volley balls $\rightarrow \frac{92 - 80}{80} \times 100\%$ $= 15\% \mathbf{[A1]}$
12	Kara's dolls $\rightarrow 5 u$ Grace's dolls $\rightarrow 7 u$ Percentage Kara's dolls in the end $\rightarrow 100\% + 12\% = 112\%$ No of units representing Kara' dolls in the end $\rightarrow \frac{112}{100} \times 5 u = 5.6 u \mathbf{[M1]}$ Percentage of Grace's dolls in the end $\rightarrow \frac{70}{100} \times 7 u = 4.9 u \mathbf{[M1]}$ Difference in the number of units between Kara's and Grace's dolls in the end $\rightarrow 5.6 u - 4.9 u = 0.7 u \mathbf{[M1]}$ $0.7 u \rightarrow 280$ $1 u \rightarrow 400$ Number of dolls Kara had in the end $\rightarrow 400 \times 5.6 u = 2240 \mathbf{[A1]}$
13	$1 - \frac{2}{5} - \frac{1}{3} = \frac{4}{15}$ $\frac{1}{2} \times \frac{4}{15} = \frac{2}{15} \mathbf{[M1]}$ $2 u \rightarrow 240 \text{ cm}^2$ $1 u \rightarrow 120 \text{ cm}^2$ $15 u \rightarrow 1800 \text{ cm}^2 \mathbf{[M1]}$ Length (2B) x Breadth (B) = 1800 cm^2 $2B^2 = 1800 \text{ cm}^2$ $B = 30 \text{ cm} \mathbf{[M1]}$

	Perimeter = $60 + 60 + 30 + 30 = 180 \text{ cm}$ [A1]
14	<p>Amount earned from 10 tables (1 group) $\rightarrow \\$20 \times 10 + \\$30 = \\$230$ [M1] Number of 10 tables sold (1 group) $\rightarrow \\$3490 \div \\$230 = 15 \text{ groups R } \\40 [M1] Number of tables sold in 15 groups $\rightarrow 10 \text{ bags} \times 15 \text{ groups} = 150$ Amount of money left to earn \$40 $\rightarrow \\$40 \div \\$20 = 2$ [M1] $150 + 2 = 152$ [A1]</p>
15	<p>Breadth of rectangle = $\frac{1}{3} \times 30 = 10 \text{ cm}$ [M1] Base of triangle = $30 - 4 = 26 \text{ cm}$ Area of triangle = $\frac{1}{2} \times 26 \times 10 = 130 \text{ cm}^2$ [M1] Area of semi-circle = $\frac{1}{2} \times 3.14 \times 5 \times 5 = 39.25 \text{ cm}^2$ [M1] Area of shaded part = $130 + 39.25 = 169.25 \text{ cm}^2$ [A1]</p>
16	<p>R : B : G 5 : 6 : 2 (x3) : 3 (x3) [M1] ----- 5 : 6 : 9</p> <p>Total no of units $\rightarrow 5 + 6 + 9 = 20 \text{ u}$ [M1] Fraction of red t-shirts $\rightarrow \frac{5}{20}$ Fraction of red t-shirts left $\rightarrow \frac{2}{20}$ Fraction of red t-shirts given away $\rightarrow \frac{5}{20} - \frac{2}{20} = \frac{3}{20}$ [M1] $3 \text{ u} \rightarrow 12$ $1 \text{ u} \rightarrow 4$ Total no of t-shirts $\rightarrow 4 \times 20 \text{ u} = 80$ [M1] Number of t-shirts left $\rightarrow 80 - 16 = 68 \text{ t-shirts}$ [A1]</p>
17	<p>A : J 40% : 60%</p> <p>Percentage of Adam's share now $\rightarrow \frac{20}{100} \times 40\% \text{ more} \rightarrow 8\% \text{ more}$ $\rightarrow 40\% + 8\% \text{ more} = 48\%$ [M1] $48\% \rightarrow \\$57.60$ $1\% \rightarrow \\$1.20$</p> <p>Percentage of Joe's share now $\rightarrow \frac{20}{100} \times 60\% \text{ more} \rightarrow 12\% \text{ more}$ $\rightarrow 60\% + 12\% \text{ more} = 72\%$ [M1]</p>

$$72\% \rightarrow \$1.20 \times 72 = \$86.40$$

Total percentage Adam and Joe had to pay $\rightarrow 48\% + 72\% = 120\%$

[M1]

Total amount of money Adam and Joe had to pay

$$\rightarrow \$57.60 + \$86.40 = \$144 \text{ **[M1]**}$$

$$120\% \rightarrow \$144$$

$$1\% \rightarrow \$1.20$$

$$100\% \rightarrow \$120 \text{ **[A1]**}$$