

Methodist Girls' School Prelim Exam 2020

Math Paper 1 Answer Key :

1(a) $0.409, \frac{22}{50}, 0.\dot{4}, 44.5\%$

(b) $\pi, 2\sqrt{3}$

2(a) $2^4 \times 3^2 \times 5 \times 7$

(b) 35

3.
$$\frac{3x-1}{(x-3)(2x+1)}$$

4(a) $\frac{1}{2}(2x-y^2)(2x+y^2)$ or $\frac{1}{2}\left(x-\frac{1}{2}y^2\right)\left(x+\frac{1}{2}y^2\right)$

(b) $(2a-1)(8a-5b)$

5. The number of new infections in March (10 000) is twice the number of new infections in April (5000). Due to the vertical axis starting at 4000 and heights of the bars, the differences are exaggerated, making the numbers in March look more than twice that of April.

6. $p = 8$

7(a) $-(x+4)^2 + 6$

(b) $x = -1.55$ or -6.45

8. $9y^8$

9. 2.28×10^9 litres

10. 1.5 litres

11. 4 marbles

12(a) $-1.5 < x \leq 5$

(b) $x \leq 3\frac{2}{7}$

13(a) 5.6 cm

(b) 0.695 km^2

14(a) $\begin{pmatrix} 38000 & 2700 \\ 33000 & 2560 \end{pmatrix}$

(b) The elements represent the total basic wages and total fringe benefits paid to the staff in the shops at Glow@Clementi and Glow@Tampines respectively.

(c) \$40970 ; \$35816

15(a) 2.5 m/s

(b) 0 m/s²

(d) 28.8 km/h

16(a) $A(-3, 0), B(4, 0), C(0, -12)$

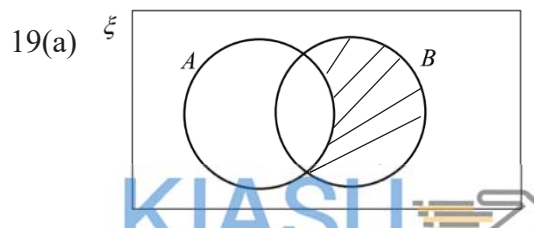
(b) 12.4 units

(c) $y = 3x - 12$

17. $p = 3, q = -1$

18(a) $\frac{p}{\sqrt{p^2 + 1}}$

(b) $-\frac{1}{\sqrt{p^2 + 1}}$



(b)(i) {2, 3, 5, 7, 11, 13}

(ii) $\frac{3}{5}$

(iii) {1, 4} or {1} or {1, 9} or {4} or {4, 9} or {9}

20(a) $a < 0, n = \text{positive odd integer} \geq 3$

(b) $a > 0, n = \text{negative even integer} \leq -2$

21(a) 11 marks

(b) 30 marks

- (c) (i) Agree because the median mark for Class 4A is 63, lower than the median mark for Class 4B which is 68.
(ii) Answer Disagree because the upper quartile in 4B, 76 marks, is higher than that of 4A, 72 marks.

22(a)(i) 108°

(ii) 36°

23(a)(i) 60°

(ii) 30°

(iii) 40°

(iv) 20°

24(a) 5 cm

(b) 8.1 kg

Math Paper 2 Answer Key :

1(a)(i) $x = 0$ or 10

(ii) $y = 4 \pm \sqrt{r^2 - (x - 5)^2}$

(b) $1\frac{3}{10}$ or 1.3

(c) $k = 2$

2(a) S\$2542

(b) \$27061

(c) \$241.88

3(a)(i) $\frac{5\pi}{24}$ radians

(ii) $\frac{5\pi}{3}$ cm

(iii) $\frac{20\pi}{3}$ cm²

3(b) 0.73 cm^2

4(a)(i) 1.775 m

(ii) 0.15 m

(iii) 1.88 m

(b) $h = 4, k = 8$

(c)(i) 1.77 m

(ii) 0.109 m

(d) decrease

(f)(i) $\frac{21}{59}$

(ii) $\frac{38}{59}$

5(a)(i) 42.2 m

(ii) 72.9°

(iii) 129.1°

(b) 1250 m^2

(d) 16.6°

6(a) $\frac{1000}{x}$

(b) $\left(\frac{1000}{x} - 2\right)(x+1)$

(d) 8.42 or -59.42

(e) 119 litres

7(a) $T_5 = 3^6 + 6 = 735$

(b) $T_n = 3^{n+1} - 2 + (n-1)2$ or $T_n = 3^{n+1} + 2n - 4$

8(a) $p = 31$

(c) $1.8 \leq x \leq 3.3$

(d) $5.7 \text{ to } 6.5$

(e) 1.6 , 5.7

9(a) 452 cm^3

(b) 7.43 cm

(c)(i) 8.4853 cm

(ii) 144 cm^3

10(a)(i) 125°

(ii) 55°

(iii) 110°

(iv) 250°

(c) 78.75 cm^2

11(a)(i) 0.866 m

(ii) 6.93 m

(b) 2 workers

