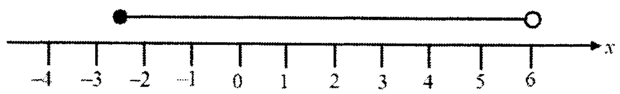
Ngee Ann Secondary School
Secondary 4&5 Mathematics-O
2025 Prelim Examinations Paper 1
Marking Scheme

1		[B1]
2	$-8x-9=6$ $-8x=15$ $x=-\frac{15}{8}$ or $-1\frac{7}{8}$ or -1.875	[B1; no mark for -1.88]
3	$2410\left(1+\frac{r}{100}\right)^6=2660$ $\left(1+\frac{r}{100}\right)^6=\frac{2660}{2410}$ $1+\frac{r}{100}=\left(\frac{2660}{2410}\right)^{\frac{1}{6}}$ $\frac{r}{100}=\left(\frac{2660}{2410}\right)^{\frac{1}{6}}-1$ $r=100\times\left[\left(\frac{2660}{2410}\right)^{\frac{1}{6}}-1\right]$ $r=100\times\left[\left(\frac{2660}{2410}\right)^{\frac{1}{6}}-1\right]$ $=1.66$ (3 s.f.)	[M1] [A1]
4(a)	0.0050500 (5 s.f.)	[B1]
4(b)	5.0500×10^{-3}	[B1; accept 5.05×10^{-3} and allow for ecf]
5	$600=2^3\times3\times5^2$ For the base area to be a square, possible dimensions are $2\times2\times150$, $5\times5\times24$ or $(2\times5)\times(2\times5)\times6$. Smallest possible height is 6 cm.	[M1] [A1]

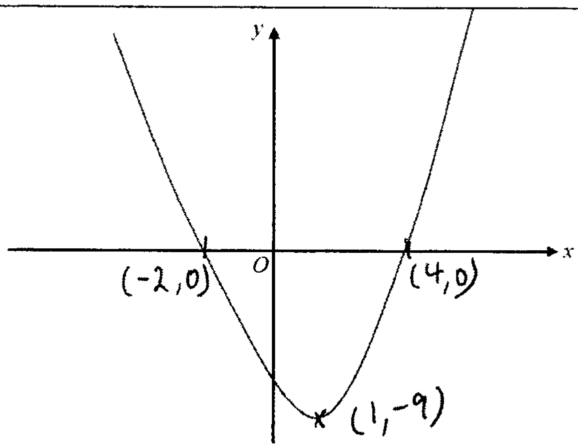
6(a)	$\frac{72}{360}\times 160000$ $= \$32000$	[M1; for $72° \pm 1°$] [A1]
6(b)	The family's annual income in 2024 might be less than that in 2023, such that even though they spent a great proportion of their income on food in 2024 (25% compared to $\frac{72}{360}\times 100\% = 20\%$), the total amount spent on food in 2024 might be less than that in 2023.	[B1; for underlined response. Accept any reasonable response]
7(a)	$-(5x-2y)(-3x+4y)$ $=(-5x+2y)(-3x+4y)$ or $-(-15x^2+20xy+6xy-8y^2)$ $=15x^2-20xy-6xy+8y^2$ $=15x^2-26xy+8y^2$	[M1] [A1]
7(b)	$9ab-12ac+28bc-21b^2$ $=3a(3b-4c)-7b(3b-4c)$ or $3a(3b-4c)+7b(4c-3b)$ $=(3b-4c)(3a-7b)$	[M1] [A1]
8(a)	$2y=3-6x$ $y=-3x+\frac{3}{2}$ Gradient is -3.	[B1]
8(b)	The line in part (a) is parallel to the line in part (b) since they have the same gradient. Also, for the line in part (a), when $x=0$, $y=\frac{3}{2}$. The point (0, 1) does not lie on the line in part (a). Therefore, the two lines will not intersect.	[B1] [B1; must explain that (0, 1) does not lie on the line in part (a). Accept any reasonable response]
9(a)	$BC=\sqrt{4^2-3^2}$ $=\sqrt{7}$ $=2.65$ cm (3 s.f.)	[M1] [A1]
9(b)	$BC^2=\left(\sqrt{7}\right)^2=7$ $BD^2+CD^2=(2)^2+\left(\sqrt{3}\right)^2=7$ Since $BC^2=BD^2+CD^2$, by the Converse of Pythagoras' Theorem, triangle BCD is right-angled.	[Must be two separate lines of working] [B1; alternative method: use Cosine Rule to find angle BDC exactly $90°$]

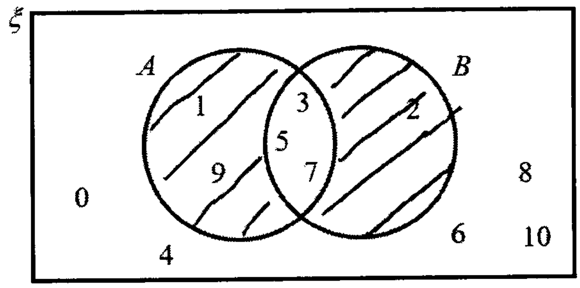
10	$\dfrac{4x^2+19x-30}{32x^3-50x}$ $=\dfrac{(4x-5)(x+6)}{2x(4x-5)(4x+5)}$ or $\dfrac{(4x-5)(x+6)}{x(4x-5)(8x+10)}$ $=\dfrac{x+6}{2x(4x+5)}$	[B1: for numerator] [B1: for denominator] [B1]
11	$\dfrac{x-3}{3}-\dfrac{1-x^2}{2-3x}=1$ $(x-3)(2-3x)-3(1-x^2)=3(2-3x)$ $2x-3x^2-6+9x-3+3x^2=6-9x$ $11x-9=6-9x$ $20x=15$ $x=\dfrac{3}{4}$ or 0.75	[M1: removing denominator] [M1: expand $(x-3)(2-3x)$ correctly] [A1]
12	Each interior angle of pentagon $=\dfrac{(5-2)\times180}{5}$ $=108°$ Each interior angle of octagon $=\dfrac{(8-2)\times180}{8}$ $=135°$ Sum of angles of *a*, *b* and *c* $=(360-108)+2(360-108-135)$ $=486°$	 [M1] [M1] [A1]

13	$d = kt^2$ $320 = k(8)^2$ $k = \frac{320}{64}$ $k = 5$ $80 = 5t^2$ $t^2 = \frac{80}{5} = 16$ $t = \pm\sqrt{16} = 4$ or -4 (N.A.) $t = 4$	 [M1] [A1]
14	Let the amount of money shared by $\$x$. Amy's original share: $\frac{2}{9}x$ Amy's final share: $\frac{3}{4}\left(\frac{2}{9}x\right) = \frac{1}{6}x$ Amy's transferred share: $\frac{1}{4}\left(\frac{2}{9}x\right) = \frac{1}{18}x$ Ben's original share: $\frac{3}{9}x = \frac{1}{3}x$ Ben's final share: $\frac{2}{3}\left(\frac{1}{3}x + \frac{1}{18}x\right) = \frac{7}{27}x$ Ben's transferred share: $\frac{1}{3}\left(\frac{1}{3}x + \frac{1}{18}x\right) = \frac{7}{54}x$ Cal's original share: $\frac{4}{9}x$ Cal's final share: $\frac{4}{9}x + \frac{7}{54}x = \frac{31}{54}x$ Final ratio $= \frac{1}{6}x : \frac{7}{27}x : \frac{31}{54}x$ $= 9 : 14 : 31$	 [M1] [M1] [M1] [A1]

15(a)	$15 \times 5.8 = 5 \times 14.4 + 10x$ $10x = 15$ $x = 1.5$	[M1] [A1]
15(b)	Median would be more appropriate because the mean would be affected by the outlier of 50 points. The player who scored 50 points contributed about 69% of all points scored by starting players.	[B1: must mention outlier of 50 points. Accept any reasonable response]
16(a)	$AC = 2a$ $BD = 2d$ Area of rhombus $= \frac{1}{2}(2a \times 2d)$ $= 2ad$	[B1]
16(b)	Area of triangle *PQS* $= \frac{1}{2}(x \times 2y)$ $= xy$ $MR = 3x$ Area of triangle *RQS* $= \frac{1}{2}(3x \times 2y)$ $= 3xy$ Area of kite $= xy + 3xy$ $= 4xy$	 [M1] [A1]

17(a)	$\left(\dfrac{625x^4}{y^8}\right)^{-\frac{1}{4}}$ $=\dfrac{\frac{1}{5}x^{-1}}{y^{-2}}$ $=\dfrac{y^2}{5x}$	[M1: for either $\frac{1}{5}$, x^{-1}, y^{-2}] [A1]
17(b)	$243^a = 3^8 + 3^8 + 3^8$ $3^{5a} = 3^8(1+1+1)$ $3^{5a} = 3^8(3)$ $3^{5a} = 3^9$ By comparing indices, $5a = 9$ $a = \frac{9}{5}$ or $1\frac{4}{5}$ or 1.8	[M1: for getting 3^{5a} or 3^9] [A1]
18(a)	When $x \neq h$, $(x-h)^2 > 0$ and $y=(x-h)^2+k>k$. When $x=h$, $(x-h)^2=0$ and $y=(x-h)^2+k=k$. (Or mention that coeff of x^2 is positive) So, y has its minimum value of k when $x=h$.	[B1: for highlighted part]
18(b)	Since the graph of $y=(x-h)^2+k$ is symmetrical about the vertical line passing through its minimum point, $h=\dfrac{-2+4}{2}$ $h=1$ (shown)	[B1]
18(c)	Sub $x=4$, $y=0$, $h=1$, $0=(4-1)^2+k$ $k=-9$ Min. value of y is -9.	[B1]

18(d)		[C1: correct shape] [P1: correct coordinates for x-intercepts and min pt; must be coordinates]
19(a)	When $n=1$, $\frac{3}{2}(1)(1-3)=-3$ So, $T_1=-3$ When $n=2$, $\frac{3}{2}(2)(2-3)=-3$ So, $T_1+T_2=-3$ $-3+T_2=-3$ $T_2=0$ When $n=3$, $\frac{3}{2}(3)(3-3)=0$ So, $T_1+T_2+T_3=0$ $-3+0+T_3=0$ $T_3=3$ First 3 terms: -3, 0, 3	[B1: one correct term] [B1: all terms correct]
19(b)	$T_1=-3$ Common difference = 3 $T_n=-6+3n$	[B1]
19(c)	Since $T_n=-6+3n=3(n-2)$, each term in the sequence is a multiple of 3.	[B1: must show factorization]

20	$\angle CDA = 180° - 119°$ ($\angle$ s in opp. segments) $= 61°$ $\angle OAT = 90°$ (tan $\perp$ rad) $\angle OAD = 29°$ (base $\angle$s of isos. Δ) So, $\angle DAT = 90° - 29°$ $= 61°$ Since $\angle CDA = \angle DAT$, they are <u>alternate angles</u> and lines CD and ST are parallel	[B1: with reason] [B1: with reason for tan $\perp$ rad] [A1]
21(ai)	$A' \cap B' = \{0, 4, 6, 8, 10\}$	[B1]
21(aii)		[B1]
21(bi)	12, 16	[B1: do not accept {12, 16}]
21(bii)	$P = \{16\}$ $Q = \phi$ $R = \{12, 16\}$ So, $(P \cup Q) \cap R' = \phi$ $\therefore n[(P \cup Q) \cap R'] = 0$	 [B1]

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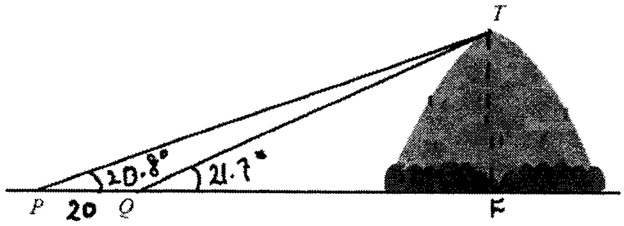


Method 1

Let distance QF be x m.

$\tan 20.8° = \dfrac{TF}{20+x}$ [M1]

$(20+x)\tan 20.8° = TF$

$x = \dfrac{TF - 20\tan 20.8°}{\tan 20.8°}$

$\tan 21.7° = \dfrac{TF}{x}$ [M1]

$x = \dfrac{TF}{\tan 21.7°}$

So, $\dfrac{TF - 20\tan 20.8°}{\tan 20.8°} = \dfrac{TF}{\tan 21.7°}$ [M1]

$TF\tan 21.7° - 20\tan 20.8°\tan 21.7° = TF\tan 20.8°$

$TF\tan 21.7° - TF\tan 20.8° = 20\tan 20.8°\tan 21.7°$

$TF(\tan 21.7° - \tan 20.8°) = 20\tan 20.8°\tan 21.7°$

$TF = \dfrac{20\tan 20.8°\tan 21.7°}{\tan 21.7° - \tan 20.8°}$

= 167 m (3 s.f.) [A1]

Method 2:

$\angle PQT = 180° - 21.7°$ (adj $\angle$s on a st. line)

$= 158.3°$

$\angle PTQ = 180° - 158.3° - 20.8°$ ($\angle$ sum of Δ)

$= 0.9°$

By Sine Rule,

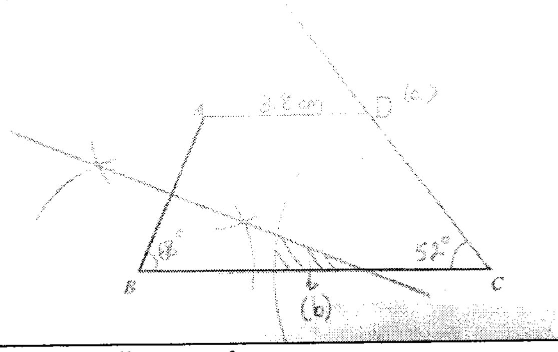
$\dfrac{PT}{\sin 158.3°} = \dfrac{20}{\sin 0.9°}$ [M1]

$PT = \dfrac{20\sin 158.3°}{\sin 0.9°}$

$= 470.79555$ [M1]

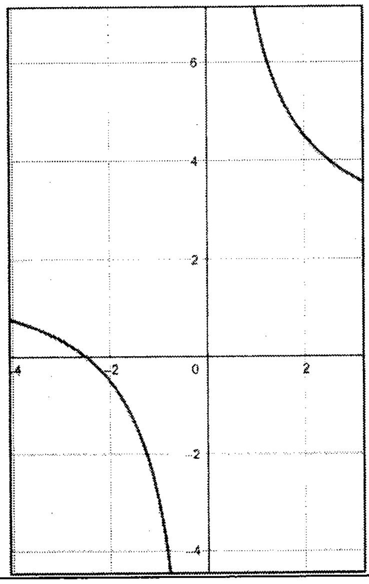
	$\sin 20.8° = \frac{TF}{470.79555}$ $TF = 470.79555 \sin 20.8°$ $= 167$ m (3 s.f.)	[M1] [A1]
23(a)	$\mathbf{P} = \begin{pmatrix} 5 & 4 & 6 \\ 8 & 7 & 9 \end{pmatrix}$	[B1]
23(b)	$\mathbf{T} = \begin{pmatrix} 5 & 4 & 6 \\ 8 & 7 & 9 \end{pmatrix} \begin{pmatrix} 120 \\ 80 \\ 100 \end{pmatrix}$ $= \begin{pmatrix} 1520 \\ 2420 \end{pmatrix}$	[B2: B1 for each of the element]
23(c)	The elements in **T** represent the total cost ($1520) and the total revenue ($2420; or selling price) respectively of the cakes sold by the shop in July.	[B1: not necessary to state the values of the elements; do not accept the term "earnings"]
23(d)	$\mathbf{Q} = \begin{pmatrix} -1 & 1 \end{pmatrix}$	[B1]
24(a)	Volume of one cup $= \frac{1}{3}\pi\left(\frac{6.9}{2}\right)^2 (9.1)$ $= 113.4248$ $= 113$ cm^3 (3 s.f.)	[B1]
24(b)	18.9 l = 18 900 cm^3 Max number of cups $= \frac{18900}{113.4248}$ $= 166.63$ = 166 cups that are completely filled	[M1] [A1]
24(c)	Let the curved surface area of smaller cone (i.e. cup) be A_1, t and that of larger cone (i.e. cup + frustrum) be A_2. By similar cones, $\left(\frac{d_2}{d_1}\right)^2 = \frac{A_2}{A_1} = 2$ $\frac{d_2}{d_1} = \sqrt{2}$	[M1]

	$\frac{V_2}{V_1}=\left(\frac{d_2}{d_1}\right)^3$ $=\left(\sqrt{2}\right)^3$ $V_2=\left(\sqrt{2}\right)^3\times 113.4248$ $=320.81378$ Volume of frustrum shaped cup $=320.81378-113.4248$ $=207\ \text{cm}^3$ (3 s.f.)	 [M1] [M1] [A1]
25(a)	Position of median $=\frac{22+1}{2}$ $=11.5$ Median $=\frac{2+3}{2}$ $=2.5$	[B1]
25(b)	The student's claim is true because there are 6 missing data in the dot diagram. If all the 6 students scored 0 goal (or 1 goal), the modal number of goals scored would be 0 (or 1) instead of 2.	[B1: student must provide an example where the mode is 0 or 1]
25(ci)	0	[B1]
25(cii)	$\frac{4}{22}=\frac{2}{11}$	[B1]
25(ciii)	$\frac{11}{22}=\frac{1}{2}$	[B1]

26(a)	1 cm : 20 000 cm 1 cm: 200 m 3.8 cm : 760 m 	[M1: construction of 52° line or 3.8 cm arc from *A*] [A1: complete quadrilateral and labeling of *D*]
26(b)	Refer to diagram above.	[M1: construction of perpendicular bisector or 5 cm arc from *C*] [A1: correct shaded region]
26(c)	$\angle ABC = 68°$ Length of pathway $= \frac{68}{360} \times 2\pi(400)$ $= 475\text{ m}$ (3 s.f.)	[M1] [A1]

Ngee Ann Secondary School
Secondary 4&5 Elementary Mathematics-O
2025 Prelim paper 2
Marking Scheme

Qn No.	Qn Part	Solutions	Marks (Remarks)	Total
1	(a)(i)	$x=\frac{3h^2(y+b)}{b}-1$ $2=\frac{3h^2(0+5)}{5}-1$ $3=3h^2$ $h^2=1$ $h=\pm1$	M1: substitution A1: both answers	[2]
	(a)(ii)	$x=\frac{3h^2(y+b)}{b}-1$ $xb=3h^2\left(y+b\right)-b$ $xb=3h^2y+3h^2b-b$ $xb+b-3h^2b=3h^2y$ $b(x+1-3h^2)=3h^2y$ $b=\frac{3h^2y}{x+1-3h^2}$	M1: Multiply denominator throughout M1: Grouping and factorising b A1	[3]
	(b)	$6x-3y=16---(1)$ $9x+2y=11---(2)$ $(1)\times2$ $12x-6y=32$ $(2)\times3$ $27x+6y=33$ $39x=65$ $x=1\frac{2}{3}$ $6\left(1\frac{2}{3}\right)-3y=16$ $y=-2$	M1: Substitution/ Elimination A1 A1	[3]
	(c)	$\frac{19x+3}{2x^2-5x-3}+\frac{2}{x-3}=7$		

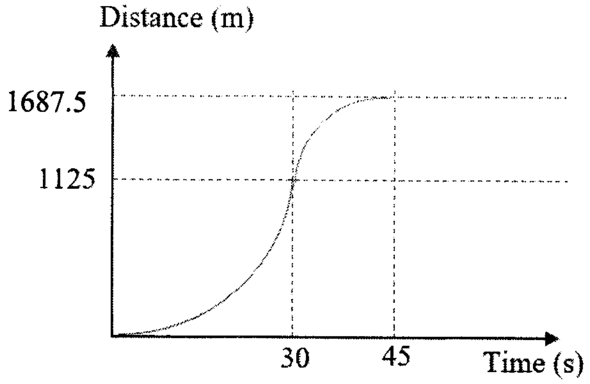
		$\frac{19x+3}{(2x+1)(x-3)}+\frac{2}{x-3}=7$ $19x+3+2(2x+1)=7(2x^2-5x-3)$ $19x+3+4x+2=14x^2-35x-21$ $14x^2-58x-26=0$ $x=\frac{58\pm\sqrt{(-58)^2-4(14)(-26)}}{2(14)}$ $x=-0.41$ or $x=4.55$	M1 M1 A1	[3]
2	**(a)**	5.3	B1	[1]
	(b)	Refer to graph 	B2: correct points plotted B1: any one error B1: Smooth curve	[3]
	(c)	$a=0.3$; $b=3.7$	B1, B1	[2]
	(d)	− 1.13 to − 1.39	M1: drawing of correct tangent A1: Within the range	[2]
	(e)	$2+\frac{5}{x}=\frac{5-x}{4}$ $8+\frac{20}{x}=5-x$ $8x+20=5x-x^2$		

		$x^2+3x+20=0$ $A=1$ and $B=-3$	B1, B1	[2]
3	**(a)**	$\frac{1500}{x}$	B1	[1]
	(b)	$\frac{1500}{x-50}$	B1	[1]
	(c)	$\frac{1500}{x-50}-\frac{1500}{x}=2\frac{1}{2}$ $1500x-1500(x-50)=\frac{5}{2}(x^2-50x)$ $3000x-3000(x-50)=5(x^2-50x)$ $3000x-3000x-150000=5x^2-250x$ $5x^2-250x+150000=0$ $x^2-50x+30000=0$ (Shown)	M1: Correct equation AG1	[2]
	(d)	$x^2-50x+30000=0$ $(x+150)(x-200)=0$ $x=200$ or $x=-150$	M1: factorisation or other method A1, A1	[3]
	(e)	$\frac{200}{\pi}=63.7$ cm (3 sf)	B1	[1]

4	(a)(i)	29 min	B1	[1]
	(a)(ii)	$34-23$ $=11$ min	M1 A1	[2]
	(a)(iii)	$\frac{80-44}{80}\times 100\%$ $=45\%$	M1 A1	[2]
	(b)	The new cumulative frequency curve will meet the given curve at the median. However, <u>the gradient</u> of the new cumulative frequency curve <u>from the lower quartile to upper quartile will be less steep</u> as compared to given curve.	B1	[1]
	(c)(i)	$\frac{26}{80}\times\frac{25}{79}=\frac{65}{632}$	B1	[1]
	(c)(ii)	$\frac{26}{80}\times\frac{14}{79}\times 2$ $=\frac{91}{790}$	M1 A1	[2]
5	(a)(i)	$\overrightarrow{DB}=16\mathbf{p}-5\mathbf{q}$	B1	[1]
	(a)(ii)	$\overrightarrow{DP}=\frac{1}{4}(16\mathbf{p}-5\mathbf{q})$ $\overrightarrow{AP}=\overrightarrow{AD}+\overrightarrow{DP}$ $=5\mathbf{q}+\frac{1}{4}(16\mathbf{p}-5\mathbf{q})$ $=\frac{15}{4}\mathbf{q}+4\mathbf{p}$	M1 A1	[2]
	(b)	$\overrightarrow{DC}=\frac{4}{3}\overrightarrow{AB}$ $\overrightarrow{BC}=\overrightarrow{BA}+\overrightarrow{AP}+\overrightarrow{DC}$ $=-16\mathbf{p}+5\mathbf{q}+\frac{64}{3}\mathbf{p}$ $=\frac{16}{3}\mathbf{p}+5\mathbf{q}$ $\overrightarrow{BC}=\frac{4}{3}(\frac{15}{4}\mathbf{q}+4\mathbf{p})$	M1: find $\overrightarrow{BC}$	

		$= \frac{4}{3}\overrightarrow{AP}$ Since $\overrightarrow{BC} = \frac{4}{3}\overrightarrow{AP}$, they are parallel.	A1	[2]
	(c)	$\measuredangle APB = \measuredangle\ CBD$ (alternate $\measuredangle$, $AP//BC$) $\measuredangle ABP = \measuredangle\ CDB$ (alternate $\measuredangle$, $AB//DC$) Triangle *APB* is similar to Triangle *CBD* by *AA* similarity. Triangle *APB* : Triangle *BCD* $3^2 : 4^2$ $9 : 16$ OR $\frac{\text{Area of Triangle } APB}{\text{Area of Triangle } BAD} = \frac{3}{4}$ $\frac{\text{Area of Triangle } BAD}{\text{Area of Triangle } BCD} = \frac{3}{4}$ $\frac{\text{Area of Triangle } APB}{\text{Area of Triangle } BAD} \times \frac{\text{Area of Triangle } APB}{\text{Area of Triangle } BAD}$ $= \frac{3}{4} \times \frac{3}{4}$ $= \frac{9}{16}$	B1: Any correct line B1: All correct A1 M1: Any of the ratio M1 A1	[3]
	(d)	Since Triangle *APD* and Triangle *APB* have common height, Triangle *APD* : Triangle *APB* 1 : 3 Triangle *APD* : Trapezium *ABCD* 3 : 28 (Since 16 + 9 +3 = 28) OR	 M1 A1	

		$\dfrac{\text{Area of Triangle } APD}{\text{Area of Triangle } BAD} \times \dfrac{\text{Area of Triangle } BAD}{\text{Area of Trapezium } ABCD}$ $= \dfrac{1}{4} \times \dfrac{3}{7}$ $= \dfrac{3}{28}$	M1 A1	[2]
(6)	**(a)**	$\measuredangle POS = \measuredangle QOR$ (vertically opposite $\measuredangle$) $OS = OR$ (radii of circle) $\measuredangle OSP = \measuredangle ORQ$ (tangent $\perp$ radius) Triangle *PSO* is congruent to Triangle *QRO* (ASA). $\measuredangle ORQ = \measuredangle OSP(\tan \perp rad)$ $OQ = OP$ (radii of circle) $OR = OS$ (radii of circle) Triangle *PSO* is congruent to Triangle *QRO* (RHS).	B1: For any line B1: All correct	[2]
	(b)(i)	$QR = \sqrt{8^2 - 4.36^2}$ $= 6.707488353$ Area of triangle: $\dfrac{1}{2} \times 4.36 \times 6.707488353$ $= 14.6$ cm^2 (3 sf)	M1 M1 A1	[3]
	(b)(ii)	Shaded circular area: $\pi(8)^2 - \pi(4.36)^2$ $= 141.3415101$ $\measuredangle ROQ = \cos^{-1}\left(\dfrac{4.36}{8}\right)$ $= 0.9944072121$ Area of sector: $\dfrac{1}{2}(4.36)^2(0.9944072121)$ $=9.451641669$ Total shaded area: $141.34151 - 2(14.62232461 - 9.451641669) +$ $2(9.451641669)$ $= 149.9034$ cm^2 $= 150$ cm^2 (3 sf)	M1 M1 M1 A1	[4]

7	**(a)(i)**	$75 \div 30 = 2\frac{1}{2}$ m/s^2	B1	[1]
	(a)(ii)	$75 \div 5 = 15$ s	B1	[1]
	(a)(iii)		B1: correct shape for both sections B1: correct values on both axes	[2]
	(b)(i)	For 70 m/s, Time for acceleration: $70 \div 2\frac{1}{2} = 28$ min Time for deceleration: $70 \div 5 = 14$ min Distance covered by 70 m/s $\frac{1}{2} \times 28 \times 70 + \frac{1}{2} \times 70 \times 14 = 1470$ m The plane will be able to decelerate safely if the speed of the aircraft is 70m/s as the distance covered would be less than 1600 m.	M1 M1 M1 A1: Must include comparison with 1600 m	[4]
	(b)(ii)	V_1 would be lower as there are less friction, and the runway is of a fixed length.	B1	[1]
8	**(a)**	Angle *ABD*: 180° – 76° – 50° = 54° Bearing of *D* from *B*: 360° – 54° – 76° = 230°	M1 A1	[2]
	(b)	Let *AX* be the shortest distance.		

		$AX = 55\sin 54°$ $= 44.49593469$ $\tan\theta = \frac{10}{44.49593469}$ $\theta = 12.66618°$ $= 12.7°$	M1 M1 A1	 [3]
	(c)	$\frac{BD}{\sin 76°} = \frac{55}{\sin 50°}$ $BD = \frac{55\sin 76°}{\sin 50°}$ $= 69.664711$ m Area of park: $\frac{1}{2}\times 55\times 69.664711\times\sin 54° + \frac{1}{2}\times 30\times 69.664711\times\sin 130$ $= 2350.392187$ $= 2350\text{ m}^2$	M1 M1,M1: Area of each triangle A1	 [4]
	(d)	$BC = \sqrt{30^2 + 69.664711^2 - 2(30)(69.664711)\cos 130°}$ $= 91.86919365$ m $\frac{AD}{\sin 54°} = \frac{55}{\sin 50°}$ $AD = \frac{55\sin 54°}{\sin 50°}$ $= 58.08531749$ m Perimeter: 55 +30 +91.86919365 +58.08531749 = 234.9545111 I disagree with Tony as the perimeter is less than 240m.	M1: Find BC M1: Find AD A1: Need concluding statement with comparsion with 240 m	 [3]
9	(a)	$9880 - 1480 - 10 - 5 = \$8385$	B1	[1]

	(b)	Based on lowest rate, 54 000 × 1.280108 = SGD 69 125.83 OR Based on highest rate, 54 000 × 1.31154 = SGD 70 823.16 OR Based on average rate, 54 000 × ((1.280108+1.31154)/2) = SGD 69 974.50	 M1 A1	[2]
	(c)	Only Cash Components: Buyer Stamp Duty: 1800 + 180 000×0.02+ 640 000×0.03+ 300 000×0.04 = $36 600 Booking Fee: 0.05 × 1 300 000 = $65 000 Total: 3000 + 500 + 36 600 + 65 000 = $105 100	M1: BSD M1: Booking Fee A1	[3]
	(d)	Assumption: Mr Sim used current account and matured fixed deposit to pay for the condominium. Outstanding amount: 0.95×1 300 000 = $1 235 000 Assuming that the contribution from his June pay is negligible Remaining amount to be covered by Bank loan 1 235 000 – 350 000 – (69 974.50 – 5100) = $820 125.50 Interest over 20 years: $\frac{820125.50 \times 3.3 \times 20}{100}$ = $541 282.83	M1: Find loan amount M1: Interest	

		Suggested condo instalment: $\dfrac{541282.83+820125.50}{20\times12}$ $= \$5672.53$ Loan limit: $0.75\times1\ 300\ 000 = \$\ 975\ 000 > \$820$ 125.50 Salary limit: $0.55 \times 9880 = \$5434 < \$5672.53 + 550$ Mr Sim will not secure a bank loan as he does not meet the salary limit.	M1: Instalment M1 M1 A1: correct conclusion with correct LL and SL	[6]