	Class	Number Number
Candidate Name		

# WESTWOOD SECONDARY SCHOOL PRELIMINARY EXAMINATION



Secondary Four Express / Five Normal Academic MATHEMATICS
Paper 2

4048/02 August 2021 2 hours 30 minutes

Candidates answer on the Question Paper.

#### **READ THESE INSTRUCTIONS FIRST**

Write your name, class and index number on all the work you hand in. Write in dark blue or black pen on both sides of the paper.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer all questions.

If working is needed for any question it must be shown with the answer.

Omission of essential working will result in loss of marks.

The use of an approved scientific calculator is expected, where appropriate.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For  $\pi$ , use either your calculator value or 3.142, unless the question requires the answer in terms of  $\pi$ .

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 100.

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This question paper consists of 23 printed pages.

Setter: Mdm Sim Lay Ling

#### Mathematical Formulae

Compound interest

Total amount = 
$$P\left(1 + \frac{r}{100}\right)^n$$

Mensuration

Curved surface area of a cone =  $\pi rl$ 

Surface area of a sphere =  $4\pi r^2$ 

Volume of a cone = 
$$\frac{1}{3} \pi r^2 h$$

Volume of a sphere = 
$$\frac{4}{3} m^{-3}$$

Area of triangle 
$$ABC = \frac{1}{2}ab\sin C$$

Arc length =  $r\theta$ , where  $\theta$  is in radians

Sector area =  $\frac{1}{2}r^2\theta$ , where  $\theta$  is in radians

Trigonometry

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Statistics

Mean = 
$$\frac{\sum fx}{\sum f}$$

Standard deviation = 
$$\sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f}\right)^2}$$

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3
Answer all the questions.

1 (a) Simplify 
$$\frac{1}{6x-4} \div \frac{x+1}{3x^2-5x+2}$$
.

**(b)**  $\sqrt{2x^3 + z} = y^2$ 

(i) Evaluate y when 
$$x = -\frac{1}{2}$$
 and  $z = \frac{5}{2}$ .

Answer 
$$y = \dots$$
 [2]

(ii) Express x in terms of y and z.

Answer 
$$x = x_1 + x_2 + x_3 + x_4 + x_4 + x_5 +$$

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4

(c)	(i)	Express	$x^{2} - 5x - 3$	in the form	$(x+h)^2+k$
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Answer [2]

(ii) Hence, state the coordinates of the minimum point of the graph of  $x^2 - 5x - 3$ .

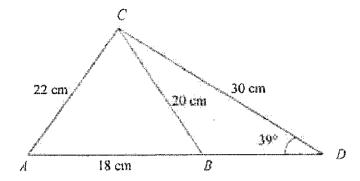
(d) Solve  $\frac{1}{5x+1} + \frac{3}{3x-1} = 2$ :

Answer  $x = \frac{1}{2} \left( \frac{1}{2} \right)^{\frac{1}{2}}$ 

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[3]

2 (a) The diagram shows a triangle ABC with AB produced to D. AB = 18 cm, BC = 20 cm, AC = 22 cm, DC = 30 cm and angle  $ADC = 39^{\circ}$ 



Calculate

(i) angle CAB,

ii)	angle CBD,				
		Answer	четнеми <b>през чен</b> шти зем и изарата чек есе инки че	: <b>1</b>	[2]

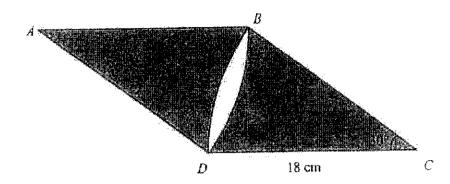
(iii) the area of triangle ACD.

Answer	na kangga da Wangga kata kangga matangga matangga da Managa da Man	[2]
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(b) The diagram shows a rhombus ABCD with sides of length of 18 cm. CBD is a sector of the circle, centre C. ABD is a sector of the circle, centre A. Angle BCD = 30°.



(i) Change 30° to radians, leaving your answer in terms of  $\pi$ .

Answer [1]

(ii) Calculate the shaded area, leaving your answer in the form  $a+b\pi$ , where a and b are integers.

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3 (a) The table shows the currency exchange rate between Singapore dollars (\$) and Thai Baht (THB) at a money changer.

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Before Adam went on a trip to Thailand, he went to the money changer.

(i) He changed \$883 into Thai Baht at the money changer. Calculate how much Thai Baht he received.

Answer THB [1]

(ii) When Adam returned to Singapore, he had 2000 THB left.
He went to the money changer to change 2000 THB to Singapore dollars.
Calculate how much he received.

Answer \$ ...... [1]

(b) The price of a watch at the end of 2019 was 2% lower than at the end of 2018. The price of the watch at the end of 2020 was 5% higher than at the end of 2019.

Calculate the price of the watch at the end of 2020 as a percentage of the price at the end of 2018.

Answel

% [2]

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Water demand in Singapore is currently about 430 million gallons a day with homes (domestic) consuming 45% and the non-domestic sector taking up the rest.

Given that 250 litres is equal to 55 gallons, find the daily amount of water consumption in the domestic sector in litres. Give your answer in standard form.

(d)	1.08×10 <sup>-7</sup> Find <i>k</i> .	metres can be written as			
			4	t	<b>r1</b> 1

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litres

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4	The first	four terms	in n	sequence of numbers	are given belo	w.
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7, =1×2	=2×1	=2×I	= 2
$T_1 = 1 \times 2 + 3 \times 2$	$=2\times(1+3)$	= 2×4	= 8
$7_1 = 1 \times 2 + 3 \times 2 + 5 \times 2$	$=2\times(1+3+5)$	=2×9	= 18
$T_4 = 1 \times 2 + 3 \times 2 + 5 \times 2 + 7 \times 2$	$=2\times(1+3+5+7)$	=2×16	= 32
73		MANAGE LIND VAII	associatement pate

[1]

	the state of the s
)	Complete the row in the above table for $T_5$ .
)	Find an expression, in terms of $n$ , for $T_n$ .
	Answer Charge Basely and Constitution of the C
i)	Evaluate $T_{500}$ .
	Answer
)	$T_n$ and $T_{n+1}$ are consecutive terms in the sequence.
	Find and simplify an expression, in terms, of $p$ , for $T_{p-1} - T_p$ .
	Answer Same Committee Comm
	Explain why two consecutive terms of the sequence cannot have a difference of 4.
	Answer of the second section of the contraction of
	งมา ของและเหตุ การ
i)	The first four terms of another sequence are 8, 18, 32 and 50. By using (i) and (ii) or otherwise, write down an expression, in terms of $n$ , for the $n$ <sup>th</sup> term, $T_n$ of this sequence.
	Answer and the state of the second state of the

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		ndi	ng valu	ies of x a	and $y$ , c	orrect to t	wo decr	mai p <b>ia</b> c	es, are gi	iven in l
elow	'.	1	0.5	1	1.5	7 2	3	4	5	6
	V	1	2.08	-0.67	p	-1,17	0	2.08	4.93	8.5

Find	the value of $\rho$ .
	Answer
Usin 0≤3	g a scale of 2 cm to represent 1 unit on each axis, draw a horizontal x-axis for $x \le 6$ and a vertical y-axis for $-2 \le y \le 9$ .
Use	your graph to find the solutions to the equation $\frac{x^2}{3} + \frac{3}{x} - 5 = 0$ in the range $x \le 6$ .
By d	Answer $x =$ irawing a tangent, find the gradient of the curve at $(4, 2.08)$ .
	Answer Reber and Commission Commi
(i)	On the same axes, draw the line with gradient $\frac{4}{3}$ that passes through the point with coordinates $(3,2)$ .
(ii)	Write down the equation of this line.
	Answer
(iii)	Write down the coordinates of the points where the line intersects the curve in the range $0 \le x \le 6$

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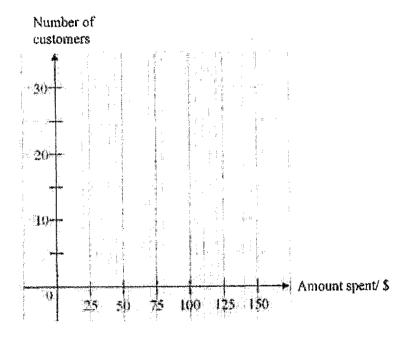
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6 (a) A survey was carried out to find the amount of money spent by 100 customers in a supermarket.

This information was grouped as follows.

Amount spent (in \$x)	Number of customers
0 < r ≤ 25	13
25 < x ≤ 50	23
50 < x ≤ 75	20
$75 < x \le 100$	17
100 <x≤125< td=""><td>11</td></x≤125<>	11
125 < x ≤ 150	16
Total	100

(i) Complete the following histogram to represent the results of the survey.



(ii) Write down the median class.

			[1]
Anguier	 4.24	20° 4° 30°	111

(iii) Write down the modal class.

(iv) Write down an advantage of using a histogram to present the results of the survey.

Inswer	4.5 1 4.4	 	. ,	 	 : < 4 .	 :	i	 	- 1 de 10	 » 4" -	e : . ge	 is :	e	95 5 × 11.	
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[2]

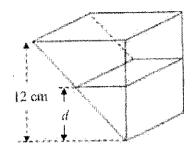
		14
(b)	Ther	has ten coins in a bag. re are four 20¢ coins, three 50¢ coins and three \$1 coins. took two coins from the bag without replacement.
	(i)	Draw a tree diagram to show the probabilities of the possible outcomes.
		[2]
	Find	, as a fraction in its simplest form, the probability that,
	(ii)	the two coins have different denominations,
		Answer
	(iii)	the total value of the two coins is more than a dollar.
		<b>*</b>
		d
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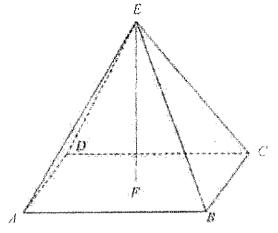
A container is a prism with a cross section in the shape of a right-angled triangle. The container has a height of 12 cm.
 Water is poured into the empty container at a constant rate. It takes 8 minutes to fill the container.
 After t minutes the depth of the water is d cm.
 Find the value of t when d = 6 cm.



Answer  $t = 0.004 \dots 0.000$  [2]

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(b) The diagram shows a pyramid with rectangular base ABCD and vertex E. AB=16 cm, BC=12 cm, AE=BE=CE=DE and the height of the pyramid is 24 cm.



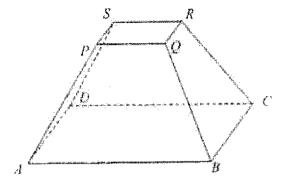
(i) Find the length of BE.

Answer	\$45 B - \$ 6 B B 5 12 3 B B B 14 P 15 P 8 15	cm	[3]

(ii) Calculate the angle DEB.

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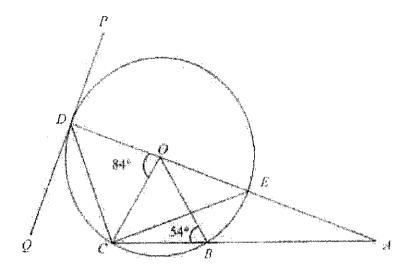
(iii) A smaller, similar pyramid of volume 24 cm<sup>3</sup> is removed from the top of the original pyramid.
 The diagram below shows the solid remaining.



Find the total surface area of the remaining solid.

Answer management of the sections cm<sup>2</sup> [5]

8 (a)



O is the centre of the circle passing through B, E, D and C. Angle  $DOC = 84^{\circ}$  and angle  $CBO = 54^{\circ}$ . PQ is a tangent to the circle at D.

Find, giving reasons for each answer,

(i) angle BAE,

Answer garage and a processor of the file
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(ii) angle QDC,

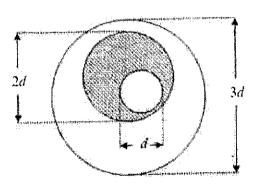
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(iii)	angle	ECB.
12262	1 6 2 4 mg av	12 6 22 4

		Answer	the transfer of the	17.	[2]
(iv)	angle CBE.				
		Answer	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	aş 	[1]

(b) The diagram shows 3 circles with diameters d cm, 2d cm and 3d cm respectively. Find, in terms of  $\pi$  and d, the difference in area between the unshaded region and the shaded region.



	Answer	, ga jarananan ga estan e <b>xx</b>	çm <sup>®</sup>	[3	J

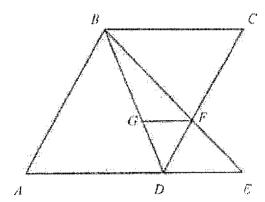
4E5N/4048/02/PRELIMS/2021

(Turn over

9 ABCD is a parallelogram and G is a point on BD.

The line BF produced meets DC at F and AD produced at E.

GF is parallel to AE.



(a)	Show that triangles BCF and EDF are similar.	
	Answer gage of a man and and an analysis of an analysis of an and an analysis of the contraction of the	
	पुरक्तात्म पुरुष्ट्रक म्हण्यून्त्र सम्बर्ध केन्द्र केन्द्र अस्त्रेण स्थाप कर सम्बर्ध कर सक्त सेन्द्र सेन्द्र स्थाप कर है। उन्हर्ण दावा कर सेन्द्र स्थाप कर स्थाप कर स्थाप कर स्थाप कर सेन्द्र सेन्	
	ျှန်းများသည်။ လနှင့် ဖြစ်သန်းမှ အသေးကိုလည်းစေးသော (၁၈ ဗှာရိုချေရှိမြေရသေး ရောရှင်း စေရရာက်သောကေသည်) က ဒီဗက (၅ ကောင်းသေး) က (၁၉၈ ခု ၂၆) ခု (၁၉) ရေ ၂၈ ရက်သေးသော (၁၈ ရှိနှင့်နှင့်သည်။ အသေးကိုလည်းစေးသော (၁၈ ဗှာရိုချေရှိမရှိမရေး) ရေရရက်သောကေသည်။ က ဒီဗက (၅ ကောင်းသေး) က (၅၉) ခု (၁၉) ရေ	•
	অভয়নীজন্মিক স্থানিক নিজ্য সময় কাহত আয়ুল কোন্ত্ৰ প্ৰস্থানিক বুলুক কুইলে সাম কোন্ত্ৰ কাৰ্য্য কৰিব কুৰু কিন্তু সংগ্ৰহণ কৰিব বুলিক স্থানিক সময় কোন্ত্ৰ কৰিব কুৰুক কিন্তু কুইলে সাম কোন্ত্ৰ কুইলে কোন্ত্ৰ কৰিব কুইলে সাম কৰিব	
	ယ်မှာ သည်သော ရေးသောက်သည် မြန်မာကမ္ဘာကို သို့သောတော်မှာ သည်သည်း သည်၍ သည်၍ သည်၍ သည်များကောင် ကောင်းကောင်း ကောင်းက သည်သည်သည် သည်သည် သည်မြန်မာကမ္ဘာကို သည်သည် အမေတို့မှာ သည်သည် သည်၍ သည်၍ သည်များသည် မေသကြားကောင်းသည် သည် မေသည် မေ	[2]
(b)	Name a triangle that is similar to triangle BDE.	
	ANSWEF Spin equilations exception to the contract of the term	F 17
(c)	Given that $AD = 2DE$ , find	
	(i) $\frac{DF}{AB}$	

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(ii)  $\frac{GF}{AE}$ 

Answer [2]

(iii) Area of  $\triangle EDF$ Area of  $\triangle BCD$ 

Answer \_\_\_\_\_\_ [3]

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10 Joe is interested to buy a new car.

He has shortlisted 2 cars, which he intends to drive for 10 years.

The following tables contain specifications of the two cars, interest rates for car loans as well as the applicable road tax.

Specifications of cars

Car	Model 4	Model B
Engine Capacity (cc)	1498	1691
Fuel Type	Petrol	Petrol Electric
Fuel consumption (km/L)	26.3	15.1
Fuel tank Capacity (L)	40	50
Cost	\$104 999	\$87 999
Annual maintenance fee	\$463	\$389
Simple interest rate for car	1.88%	2.18%
loan per annum		

Road Tax Formula

Engine Capacity (EC)	Road Tax Formula (per annum)
EC ≤ 600 cc	S\$400×0.782
600 cc < EC ≤ 1000 cc	$[S$400+0.25\times(EC-600)]\times0.782$
1000 cc < EC ≤ 1600 cc	$[S$500 + 0.75 \times (EC - 1000)] \times 0.782$
1600 cc < EC ≤ 3000 cc	[S\$950+1.5×(EC-1600)]×0.782

(a) Calculate the difference in road tax payable between Model A and Model B.

Answer	\$	a প্ৰায় এইটো ৰূপেতা শালা ৷	ا الأولى بالد	in origin	[2]
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4E5N/4048/02/PRELIMS/2021

Joe estimates that he will travel approximately 20 000 km per year and petrol prices are at \$2,57 per litre.

Joe owns a credit card which gives him a discount of 21% off petrol prices.

The will pay \$35,000 cash for the downpayment for the car and take a car loan for 7 years.

(b) Considering the above factors of owning the two cars, Joe thinks that he will be paying less if he buys Model A instead of Model B. Is Joe correct?

[6]

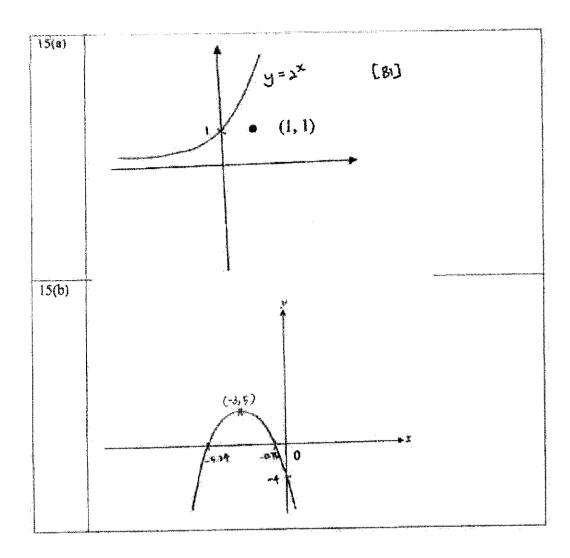
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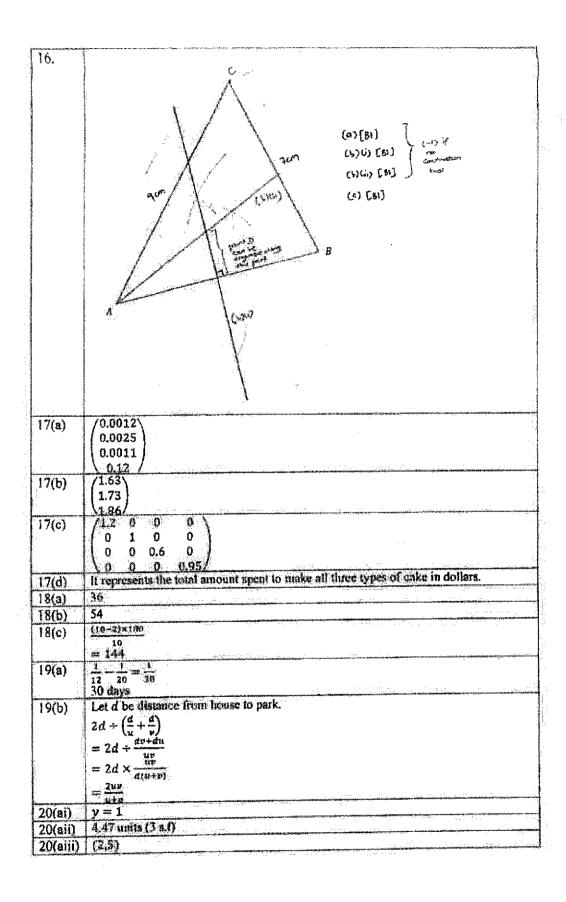
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## 2021 4E5N EMath Prelim PI Marking Scheme

	Solution
1	
2(a)	$2^2 \times 3^3 \times 7$
2(b)	784
A.	The title is biased     → It does not allow reader to make his/her own judgement
· ·	OR 2. Unequal spacing of the data/ Inconsistent Scale/ Not all consecutive data are shown
Addition of American	→ It exaggerates the differences between the data  OR
	<ul> <li>Horizontal axis does not start from zero</li> <li>→ This exaggerates the differences between the data</li> </ul>
4	$S_{12} - S_{11}$ = 4(12) <sup>2</sup> + 15(12) - [4(11) <sup>2</sup> + 15(11)] = 756 - 649 = 107
	$ \begin{array}{c}     -2 - 3(1 - x) \\     \hline     (x - 1)^2 \\     2 - 3 + 3x \\     \hline     (x - 1)^2 \\     \hline     3x - 1 \\     \hline     (x - 1)^2 \end{array} $
6.	$y = k\sqrt[4]{x}$ $\sqrt[4]{343}k - \sqrt[4]{64}k = 4$ $7k - 4k = 4$ $k = \frac{4}{3}$
	$y = \frac{4}{3}\sqrt[3]{x}$
7(a)	243
7(b)	$ \begin{array}{l} 2^{3n} + 2^{3n} = 2^{2+n} \\ 2^{3n+1} = 2^{2+n} \\ 3n+1 = 2+n \\ n = 0.5 \end{array} $
8.	$\frac{70}{190} \times 800000 = \$560000$ $560000 \left(1 + \frac{r}{100}\right)^{30} = 1209508$ $r = 2.60(3\text{s.f.})$
9(a)	Diagram 1

9(b)	And the process of the second
7(0)	Special and the special and sp
N N N N N N N N N N N N N N N N N N N	
	$1 \mid V/XIII$
-	
9(c)	10%
10(a)	$\left( \left( \begin{array}{c} 1 \\ 1 \end{array} \right)^{-1} t - 3 \right)$
10(b)	3y(8x-5)-(8x-5)
	=(8x-5)(3y-1)
4	$\frac{\partial \mathcal{D} \mathcal{L}_h}{\partial \mathcal{L}_h} \times 2\pi(32) = 43$
	∠DOL = 76,991°
	$\angle DLO = \frac{100 - 760\%}{2}$
	= 51.5045° ∠OLN = 90°
	Bearing = 90 - 51.5045
1	Bearing = 90 - 31.5043 = 0.38.5°(1 d.p)
. Significant and the second of the second	77.7 (3 s.l)
	197(3-1)
manuscriptore in a	The answers are estimates
	the exact value.
13(a)	11:50 000
13(b)	1 cm : 500 m
12(0)	1 cm <sup>2</sup> : 250 000 m <sup>2</sup>
:	$\frac{\text{50 000}}{259,000} \times 1 = 0.2 \text{ cm}^2$
	$250 000 \times 1 - 0.00 \times 1 \times$
14(a)	AG = BC  (given)
	$Ab = BC \text{ (given)}$ $\angle CHE = \angle ADG \text{ (opp } \angle s \text{ in a parallelogram)}$
	$\Delta ADG \equiv \Delta EHC \text{ (AAS)}$
14(b)	ABH & ADG
1 ,,,,,,	or CBD & CHE
	or GHF & GAD
Control of the Contro	& other acceptable answers



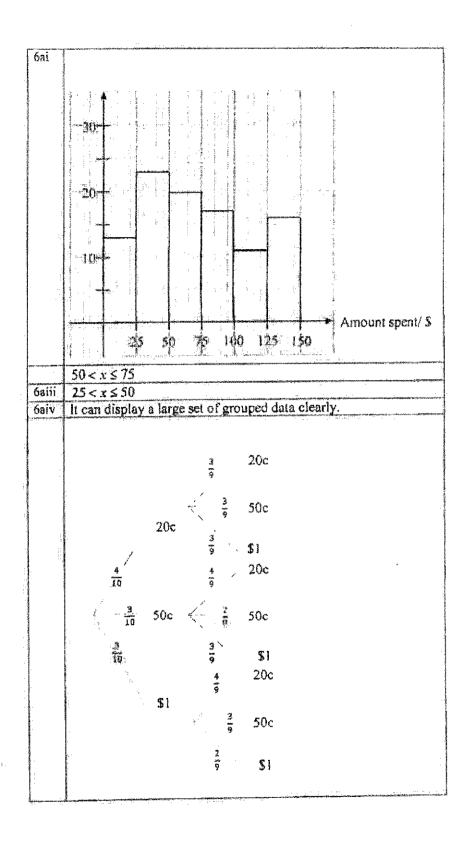


7000	
20(6)	$\frac{1}{2} \times 4 \times (CH + 6) = \frac{1}{2} \times 6 \times 4 \times 2$
	CH = 6 units
	0 = -4 - 6 = -10
21(a)	$1\frac{1}{4}$ m/s <sup>2</sup>
21(b)	$\frac{1}{2} \times 15 \times 20 + \frac{1}{2} \times 25 \times (\nu + 20) = 825$
	v = 34
21(c)	Distance (m)
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	15 40 60
4	Time (s)
22(a)	$-9 < 2x - 1 & 2x - 1 \le 15$
	$-8 < 2x & 2x \le 16$
	$-4 < x & x \le 8$
and it	$-4 < x \le 8$
22(b)	3y - (y - 5) = 11 3y - y + 5 = 11
	y = 3
-	Subst $y = 3$ : $x = 3 - 5 = -2$
	x = -2, y = 3
22(c)	Infinite number of solutions
***************************************	Because $2x + 3y = 2$ and $x + 1.5y = 1$ are the same line geometrically, hence, they intersect at infinite number of points.
23(a)	
**************************************	<del>2</del>
	30 = 20 cm
23(b)	$\frac{1}{9} \times 27 = $12$
23(c)	
	$\frac{3}{22} \times 5400 = 1600  \text{cm}^3$
24(ai)	33 marks
24(aii)	37 – 26
24/6/10	= 11 marks 32 marks
24(aiii) 24(aiv)	30.5 marks
24(b)	Geography test was more difficult
27(0)	because the median marks for Geography is lower than that of History.
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3ci $\frac{430 \times 10^{16}}{55} \times 250 = 1954545455$ $45\% \times 1954545455$ $= 8.795 \times 10^{8} (4 \text{ s.f.})$ $= 8.80 \times 10^{8} (3 \text{ s.f.})$ 3cii $1.08 \times 10^{7} \text{ m} = 0.108 \mu \text{m}$ 4i $T_{5} = 1 \times 2 + 3 \times 2 + 5 \times 2 + 7 \times 2 + 9 \times 2$ $= 2 \times (1 + 3 + 5 + 7 + 9)$ $= 2 \times 25$ $= 50$ 4ii $T_{p-1} - T_{p}$ $= 2(p+1)^{2} - 2p^{2}$ $= 2(p^{2} + 2p + 1 - p^{2})$ $= 2(2p+1)$ $= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ $p \text{ is not an integer}$ 5vi $T_{n} = 2(n+1)^{2}$ 5a $-1.25$ 5b Drawing of graph $5c = 0.55 \text{ to } 0.65, 3.5 \text{ to } 3.6$ 5d $1.98 \text{ to } 2.98$ Sci Drawing of the line  5eii $y = \frac{4}{3}x - 2$ Seiii $(1, -0.67), (4.9, 4.4)$	1 - 1	
$45\% \times 1954545455$ $= 8.795 \times 10^{8} (4 \text{ s.f.})$ $= 8.80 \times 10^{8} (3 \text{ s.f.})$ 3cii $1.08 \times 10^{-7} \text{m} = 0.108 \mu \text{m}$ 4i $T_{5} = 1 \times 2 + 3 \times 2 + 5 \times 2 + 7 \times 2 + 9 \times 2$ $= 2 \times (1 + 3 + 5 + 7 + 9)$ $= 2 \times 25$ $= 50$ 4ii $T_{n} = 2n^{2}$ 4iii $T_{500} = 500000$ 4iv $T_{n-1} - T_{n}$ $= 2(p + 1)^{2} - 2p^{2}$ $= 2(p^{2} + 2p + 1 - p^{2})$ $= 2(2p + 1)$ $= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ $p \text{ is not an integer}$ 5vi $T_{n} = 2(n + 1)^{2}$ 5a $-1.25$ 5b Drawing of graph 5c $0.55 \text{ to } 0.65, 3.5 \text{ to } 3.6$ 5d  i.98 to 2.98 5ci Drawing of the line 5eii $y = \frac{4}{3}x - 2$	3C1	
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$= 2 \times (1+3+5+7+9)$ $= 2 \times 25$ $= 50$ 4ii $T_{b} = 2n^{2}$ 4iii $T_{con} = 500000$ 4iv $T_{p-1} - T_{p}$ $= 2(p+1)^{2} - 2p^{2}$ $= 2(p+1)^{2} - 2p^{2}$ $= 2(2p+1)$ $= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ $p \text{ is not an integer}$ 5vi $T_{a} = 2(n+1)^{3}$ 5a $-1.25$ 5b Drawing of graph 5c 0.55 to 0.65, 3.5 to 3.6 5d 1.98 to 2.98 5ci Drawing of the line 5eii $y = \frac{4}{3}x - 2$	3cii	$1.08 \times 10^{-7} \text{m} = 0.108 \mu \text{m}$
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$4ii  T_{y} = 2n^{2}$ $4iii  T_{soi} = 500000$ $4iv  T_{p-1} - T_{p}$ $= 2(p+1)^{2} - 2p^{2}$ $= 2(p^{2} + 2p + 1 - p^{2})$ $= 2(2p+1)$ $= 4p + 2$ $4v  \text{When } 4p + 2 = 4$ $p = \frac{1}{2}$ $p \text{ is not an integer}$ $5vi  T_{y} = 2(n+1)^{2}$ $5a  -1.25$ $5b  \text{Drawing of graph}$ $5c  0.55 \text{ to } 0.65,  3.5 \text{ to } 3.6$ $5d  1.98 \text{ to } 2.98$ $5ci  \text{Drawing of the line}$ $5eii  y = \frac{4}{3}x - 2$	C III I	$=2\times(1+3+5+7+9)$
4ii $T_n = 2n^2$ 4iii $T_{soi} = 500000$ 4iv $T_{p-1} - T_p$ $= 2(p+1)^2 - 2p^2$ $= 2(p^2 + 2p + 1 - p^2)$ = 2(2p+1) = 4p + 2 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ p is not an integer 5vi $T_n = 2(n+1)^2$ 5a -1.25 5b Drawing of graph 5c 0.55 to 0.65, 3.5 to 3.6 5d 1.98 to 2.98 Sci Drawing of the line		= 2 × 25
4iii $T_{500} = 500000$ 4iv $T_{p-1} - T_p$ $= 2(p+1)^2 - 2p^2$ $= 2(p^2 + 2p + 1 - p^2)$ $= 2(2p+1)$ $= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ p is not an integer  5vi $T_n = 2(n+1)^2$ 5a $-1.25$ 5b Drawing of graph  5c 0.55 to 0.65, 3.5 to 3.6  5d  1.98 to 2.98  Sci Drawing of the line  5eii $y = \frac{4}{3}x - 2$		= 50
4iv $T_{p-1} - T_p$ $= 2(p+1)^2 - 2p^2$ $= 2(p^2 + 2p + 1 - p^2)$ = 2(2p+1) = 4p + 2 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ p is not an integer 5vi $T_n = 2(n+1)^2$ 5a $-1.25$ 5b Drawing of graph 5c (1.55 to 0.65, 3.5 to 3.6) 5d I .98 to 2.98 5ci Drawing of the line 5eii $y = \frac{4}{3}x - 2$	4ii	$T_{\rm g}=2n^2$
$= 2(p+1)^{2} - 2p^{2}$ $= 2(p^{2} + 2p + 1 - p^{2})$ $= 2(2p+1)$ $= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ p is not an integer  5vi $T_{n} = 2(n+1)^{3}$ 5a $-1.25$ 5b Drawing of graph  5c $0.55$ to $0.65$ , $3.5$ to $3.6$ 5d  1.98 to 2.98  5ci Drawing of the line  5eii $y = \frac{4}{3}x - 2$	4111	$T_{\rm soi} = 500000$
$= 2(p^{2} + 2p + 1 - p^{2})$ $= 2(2p + 1)$ $= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ p is not an integer  5vi $T_{n} = 2(n + 1)^{2}$ 5a $-1.25$ 5b Drawing of graph 5c 0.55 to 0.65, 3.5 to 3.6  5d 1.98 to 2.98  5ci Drawing of the line  5eii $y = \frac{4}{3}x - 2$	4iv	T <sub>1</sub> - T <sub>1</sub>
$= 2(2p+1)$ $= 4p+2$ 4v When $4p+2=4$ $p = \frac{1}{2}$ p is not an integer  5vi $T_n = 2(n+1)^2$ 5a $-1.25$ 5b Drawing of graph  5c 0.55 to 0.65, 3.5 to 3.6  1.98 to 2.98  5ci Drawing of the line  5eii $y = \frac{4}{3}x - 2$	B-000-00 H M000-00-00	$=2(p+1)^2-2p^2$
$= 4p + 2$ 4v When $4p + 2 = 4$ $p = \frac{1}{2}$ p is not an integer  5vi $T_n = 2(n+1)^3$ 5a $-1.25$ 5b Drawing of graph 5c 0.55 to 0.65, 3.5 to 3.6  5d 1.98 to 2.98 5ci Drawing of the line  5eii $y = \frac{4}{3}x - 2$	march 111 112 935 975 98	$=2(p^2+2p+1-p^2)$
4v When $4p+2=4$ $p = \frac{1}{2}$ p is not an integer  5vi $T_n = 2(n+1)^2$ 5a -1.25  5b Drawing of graph  5c 0.55 to 0.65, 3.5 to 3.6  5d 1.98 to 2.98  5ci Drawing of the line  5eii $y = \frac{4}{3}x - 2$		=2(2p+1)
$p = \frac{1}{2}$ p is not an integer  5vi $T_n = 2(n+1)^3$ 5a		
p is not an integer     5vi   $T_n = 2(n+1)^2$     5a	4v	When $4p+2=4$
p is not an integer     5vi   $T_n = 2(n+1)^2$     5a	**************************************	
5vi $T_n = 2(n+1)^2$ 5a -1.25 5b Drawing of graph 5c 0.55 to 0.65, 3.5 to 3.6 5d 1.98 to 2.98 5ci Drawing of the line 5eii $y = \frac{4}{3}x - 2$	NA PARTICIPATOR AND	- L
58 -1.25 50 Drawing of graph 5c 0.55 to 0.65, 3.5 to 3.6 5d 1.98 to 2.98 5ci Drawing of the line 5eii $y = \frac{4}{3}x - 2$	-	Application of the second control of the sec
Sb Drawing of graph  5c 0.55 to 0.65, 3.5 to 3.6  5d  1.98 to 2.98  5ci Drawing of the line  5eii $y = \frac{4}{3}x - 2$		
5c 0.55 to 0.65, 3.5 to 3.6  Sd 1.98 to 2.98  Sci Drawing of the line  Seii $y = \frac{4}{3}x - 2$	Linnania	A STATE OF THE PROPERTY OF THE
Sd 1.98 to 2.98  Sci Drawing of the line  Seii $y = \frac{4}{3}x - 2$	Simple of the second	
5ci Drawing of the line $y = \frac{4}{3}x - 2$	ł	Fire which the street was the street with the street was the stree
$\int Seii \qquad y = \frac{4}{3}x - 2$	1	1.98 to 2.98
$y = \frac{1}{3}x - 2$	Sci	Drawing of the line
J	Seii	4
Seiii (1,-0,67),(4.9, 4.4)	- A-1-1000	
	Sein	(1,-0,67),(49,44)



6bii	$1 - \frac{4}{10} \times \frac{3}{9} - \frac{3}{10} \times \frac{2}{9} - \frac{3}{10} \times \frac{2}{9}$
	10 9 10 9 10 9
	11
	15
6biii	$\frac{4}{10} \times \frac{3}{9} + \frac{3}{10} \times \frac{3}{9} + \frac{3}{10}$
A TOTAL CONTRACT	<u>8</u> <u>15</u>
and the second s	A CONTROL OF A CON
7bi	
and the second s	
-	
and the state of t	
7bii	
es-a-versas	$\tan \angle FEB = \frac{10}{24}$
	$\angle DEB = 2 \times \tan^{-1} \left( \frac{10}{24} \right)$
	= 45.2°

7biii	Volume of original pyramid = $\frac{1}{3} \times 16 \times 12 \times 24$
	= 1536
National Communication (National Communication)	$(\frac{l_1}{l_2})' = \frac{24}{1536}$ $\frac{l_1}{l_2} = \frac{1}{4}$
	Perpendicular Height of face $AEB = \sqrt{26^2 - 8^2}$
	= √612
	Perpendicular Height of face $BEC = \sqrt{26^2 - 6^2}$ = $\sqrt{640}$
	Area of 4 triangular faces of original pyramid
	$= 2 \times \frac{1}{2} \times 16 \times \sqrt{612} + 2 \times \frac{1}{2} \times 12 \times \sqrt{640}$
	Area of 4 triangular faces of smaller pyramid
	$= \frac{1}{16} \times \text{Area of 4 triangular faces of original pyramid}$
	Area of 4 trapeziums
	$= \frac{15}{16} \times \text{Area of 4 triangular faces of original pyramid}$
	Total surface area
	$= \frac{15}{16} \times (2 \times \frac{1}{2} \times 16 \times \sqrt{612} + 2 \times \frac{1}{2} \times 12 \times \sqrt{640}) + 4 \times 3 + 16 \times 12$
	= 860cm <sup>2</sup>
Sai	$OCB = 54^{\circ}$ (base $\angle$ of isos. $\triangle$ )
	$BAE = 84^{\circ} - 54^{\circ} \text{ (ext. } \angle \text{ of } \triangle \text{)}$
8aii	= 30°
0011	$ODC = \frac{180^{\circ} - 84^{\circ}}{2} \text{ (base } \angle \text{ of isos } \Delta\text{)}$
	= 48°
	$QDC = 90^{\circ} - 48^{\circ} \text{ (tan } \bot \text{ rad)}$
V. St. on Comment of the	= 42°
8aiii	$DEC = \frac{84^{\circ}}{2} \ ( \angle \text{ at centre} = 2 \times \angle \text{ at circumference} )$
	= 42°
	$ECB = 54^{\circ} - 42^{\circ}$ (base $\angle$ of isos $\triangle$ )
	=12°

<u> </u>	AND
8aiv	$CBE = 180^{\circ} - 48^{\circ}$ ( $\angle$ in opp. segment)
	= 132°
86	Shaded Region
popular annual de maria de mar	$=\pi d^2 - \pi (\frac{d}{2})^2$
	$=\frac{3\pi d^2}{4}$
- Article - Arti	Unshaded Region
CS207 1/10-00 JAVA	$=\pi(\frac{3d}{2})^2 - \frac{3\pi d^2}{4}$
	$\frac{9\pi d^2}{4} \frac{3\pi d^2}{4}$
THE REAL PROPERTY AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PER	$=\frac{3\pi d^2}{2}$
	Difference between shaded and Unshaded Region
And the second of the second o	$3\pi d^2$ $3\pi d^2$
W. C	$\frac{3\pi d^2}{2} \frac{3\pi d^2}{4}$
#	$=\frac{3\pi d^2}{1}$
Ann sacrassive	
9ai	ZBCF = ZEIF (Alt. Zs)
	$\angle BFC = \angle EFD$ (Vert. opp. $\angle s$ )
	Triangles BCF and EDF are similar by AA similarity test.
9aii	Trange #GF
9bi	DF 1
	AB 3
9bii	GF GF DE
Military	AE DE AE
And Address 1990s.	2 1
	$\frac{1}{3} = \frac{2}{3} \times \frac{1}{3}$
· ·	$=\frac{2}{9}$
and organization	G .

```
Area of \triangle EDF \pm Area of \triangle EDF
9biii
        Area of ABCD Area of ABCD
        Area of AEDF _ (1)
         Area of MEAB 3
        Area of AEDF
         Arca of \Delta EAB 9
        \frac{\text{Area of } \Delta EDF}{\text{Area of } ABFD} = \frac{1}{8}
        \frac{\text{Area of } \Delta EDF}{\text{Area of } \Delta BCF} = \left(\frac{1}{2}\right)
        Area of \triangle BDF
Area of \triangle BCF
        Area of ΔΕΟΓ 1
Area of ΑΒΟΒ 12
        [500+0.75\times(1498-1000)]\times0.782
10a
        =683.077
        [950+1.5\times(1691-1600)]\times0.782
        = 849.643
        849.643 - 683.077
        =166.566
        =166.57
10b
        Model A
        104999 - 35000 = 69999
        interest = \frac{69999 \times 1.88 \times 7}{}
                              100
        =9211.8684
        104999 + 9211.8684 = 114210.8684
        petrol
        \frac{20000}{2000} \times 2.57 \times 79\% = 1543.95
        1543.95 \times 10 = 15439.50
        Total cost = 114210.8684 + 15439.50 + 683.077 \times 10 + 463 \times 10
        = 141111.1821
        Model B
```

87999 - 35000 = 52999Interest =  $\frac{52999 \times 2.18 \times 7}{100}$ = 8087.6474
87999 + 8087.6474 = 96086,6474
petrol  $\frac{20000}{15.1} \times 2.57 \times 79\% = 2689.139073$   $\frac{2689.139073 \times 10}{15.1} = 26891.39073$ Total cost = 96086.6474 + 26891.39073 + 849.643 × 10 + 389 × 10 = 135364.4681

Joe is wrong. The total cost of owning Model A is higher than

Model B.