

1449/2  
**Mathematics**  
**Kertas 2**  
**Oktober 2008**  
 2 ½ jam

Nama:.....  
 Tingkatan:.....



**JABATAN PELAJARAN SEGAMAT**

**PEPERIKSAAN AKHIR TAHUN SETARA SEGAMAT TINGKATAN 4**  
**2008**

**MATHEMATICS**

Kertas 2

Dua jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Tuliskan nama dan tingkatan pada ruang yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa*
3. *Soalan dalam Bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Melayu atau bahasa Inggeris.*
5. *Penggunaan kalkulator yang tidak boleh diprogramkan adalah dibenarkan.*

<i>Untuk Kegunaan Pemeriksa</i>			
Bahagian	Soalan	Markah Penuh	Markah Diperoleh
A	1	3	
	2	4	
	3	3	
	4	4	
	5	4	
	6	4	
	7	6	
	8	5	
	9	5	
	10	5	
	11	9	
B	12	12	
	13	12	
	14	12	
	15	12	
<b>Jumlah</b>			

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used.

## RELATIONS

$$1 \quad a^m \times a^n = a^{m+n}$$

$$2 \quad a^m \div a^n = a^{m-n}$$

$$3 \quad (a^m)^n = a^{m \cdot n}$$

$$4 \quad A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

$$5 \quad P(A) = \frac{n(A)}{n(S)}$$

$$6 \quad P(A') = 1 - P(A)$$

$$7 \quad \text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

8 Midpoint

$$(x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$9 \quad \text{Average speed} = \frac{\text{distance traveled}}{\text{time taken}}$$

$$10 \quad \text{Mean} = \frac{\text{sum of data}}{\text{number of data}}$$

$$11 \quad \text{Mean} = \frac{\text{Sum of (midpoint of interval} \times \text{frequency)}}{\text{Sum of frequencies}}$$

12 Pythagoras Theorem

$$c^2 = a^2 + b^2$$

$$13 \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$14 \quad m = -\left( \frac{y - \text{int ercept}}{x - \text{int ercept}} \right)$$

## SHAPE AND SPACE

1. Area of trapezium =  $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
2. Circumference of circle =  $\pi d = 2\pi r$
3. Area of circle =  $\pi r^2$
4. Curved surface area of cylinder =  $2\pi rh$
5. Surface area of sphere =  $4\pi r^2$
6. Volume of right prism = cross sectional area  $\times$  length
7. Volume of cylinder =  $\pi r^2 h$
8. Volume of cone =  $\frac{1}{3} \pi r^2 h$
9. Volume of sphere =  $\frac{4}{3} \pi r^3$
10. Volume of right pyramid =  $\frac{1}{3} \times \text{base area} \times \text{height}$
11. Sum of interior angles of a polygon =  $(n - 2) \times 180^\circ$
12. 
$$\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$
13. 
$$\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$
14. Scale factor,  $k = \frac{PA'}{PA}$
15. Area of image =  $k^2 \times \text{area of object}$ .

**Section A**  
**Bahagian A**

[ 52 marks]

[52 markah ]

Answer **all** questions in this section.

Jawab **semua** soalan dalam bahagian ini.

1. The given Venn diagrams show set P, Q and R. The universal set  $\xi = P \cup Q \cup R$ .  
Shade the region of

a) the set  $Q \cap R'$  on diagram 1 ( a )

b) the set  $P \cup (Q \cap R)$  on diagram 1( b )

[4 marks]

*Gambarajah Venn di atas menunjukkan set P, set Q dan set R.  
Diberi set  $\xi = P \cup Q \cup R$ . Lorekkan kawasan bagi*

*a) set  $Q \cap R'$  di atas Rajah 1 ( a )*

*b) set  $P \cup (Q \cap R)$  di atas Rajah 1 ( b )*

[4 markah]

Answer/ Jawapan:

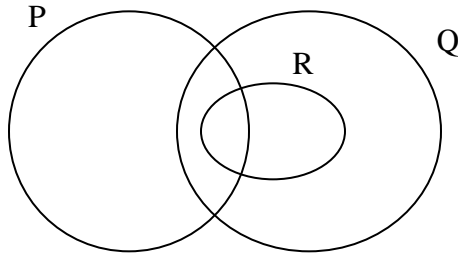


Diagram 1( a )  
Rajah 1 ( a )

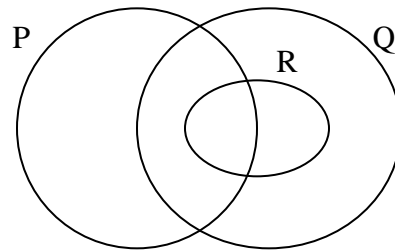


Diagram 1( b )  
Rajah 1 ( b )

2. Solve the quadratic equation  $\frac{2p^2 - 5}{3} = 3p$  .

*Selesaikan persamaan kuadrat*  $\frac{2p^2 - 5}{3} = 3p$  [4 marks]

Answer/ *Jawapan* :

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3. Calculate the value of  $m$  and of  $n$  that satisfy the following simultaneous linear equations:

*Hitungkan nilai  $m$  dan nilai  $n$  yang memuaskan persamaan linear serentak berikut:*

$$2m - 3n = 13$$

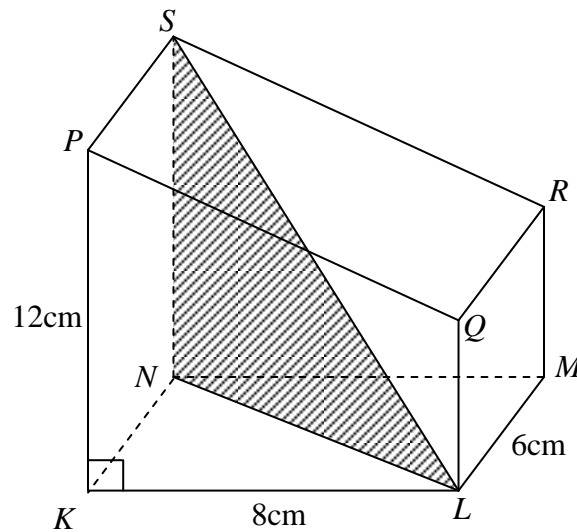
$$4m + n = 5$$

[4 marks]

Answer/ *Jawapan* :

4. Diagram 2 shows a right prism. The base  $KLMN$  is a horizontal rectangle. Trapezium  $PQLK$  is the uniform cross-section of the prism.

*Rajah 2 menunjukkan sebuah prisma tegak. Tapak  $KLMN$  ialah sebuah segiempat tepat yang mengufuk. Trapezium  $PQLK$  ialah keratan rentas seragam prisma itu*



**DIAGRAM 2**

**RAJAH 2**

Identify and calculate the angle between the plane  $SLN$  and the plane  $SRMN$ .

*Kenal pasti dan hitungkan sudut di antara satah  $SLN$  dengan satah  $SRMN$*

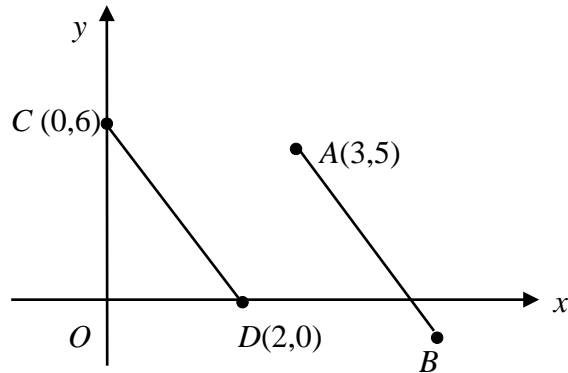
[4 marks]  
[4 markah]

Answer / Jawapan:

5. Diagram 3 shows a straight line  $AB$  and a straight line  $CD$  drawn on a Cartesian plane.

$AB$  is parallel to  $CD$ .

*Rajah 3 menunjukkan garis lurus  $AB$  dan garis lurus  $CD$  dilukis pada suatu satah Cartesian.  $AB$  adalah selari dengan  $CD$ .*



**Diagram 3**

**Rajah 3**

Find

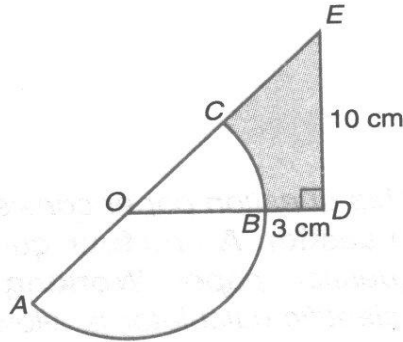
*Carikan*

- the equation of the straight line  $AB$ ,  
*persamaan garis lurus  $AB$*
- the  $x$ -intercept of the straight line  $AB$ .  
*pintasan- $x$  bagi garis lurus  $AB$*

[5 marks]  
[5 markah]

6. In Diagram 4, ABC is a semicircle with centre O. ODE is a right-angled triangle.  $BD = 3$  cm,  $OD = DE = 10$  cm and AOCE is a straight line.

*Dalam Rajah 4, ABC ialah sebuah semibulatan yang berpusat di O. Diberi ODE ialah sebuah segitiga bersudut tegak,  $BD = 3$  cm,  $OD = DE = 10$  cm and AOCE ialah satu garis lurus.*



**Diagram 4**  
**Rajah 4**

By using  $\pi = \frac{22}{7}$ , calculate

*Dengan menggunakan  $\pi = \frac{22}{7}$ , kirakan*

- the perimeter of the whole diagram  
*perimeter seluruh rajah*
- the area of the shaded region  
*luas kawasan yang berlorek*

[6 marks]

Answer / Jawapan:

(a)

(b)



7. (a) State whether each of the following statement is true or false.

*Nyatakan samada pernyataan yang berikut adalah benar atau palsu.*

( i )  $3^2 = 6$  and  $\frac{3}{2} = 1.5$

( ii )  $5 \times 2 = 10$  or  $5 < 2$

(b) Write down Premise II to complete the conclusion in the following arguments:

*Tuliskan Premis II untuk melengkapkan hujah yang berikut:*

Premise I : If  $x$  is greater than zero, then  $x$  is a positive number.

Premise II : \_\_\_\_\_

Conclusion : 8 is a positive number.

(c) Write 2 implications from the following sentence.

*Tuliskan 2 implikasi berdasarkan pernyataan yang berikut.*

“ $x$  is a multiple of 3 if and only if  $x$  can be divided exactly by 3”.

Implication I : \_\_\_\_\_

Implication II : \_\_\_\_\_

[ 6 marks ]

Answer/ Jawapan :

( a ) ( i ) \_\_\_\_\_

( ii ) \_\_\_\_\_

( b ) \_\_\_\_\_

( c ) Implication I : \_\_\_\_\_

Implication II : \_\_\_\_\_

8. A basket contains 32 mangosteens which are either good or rotten.
- ( a ) If a mangosteen is selected at random from the basket, the probability of selecting a good mangosteen is  $\frac{7}{8}$ , find the number of rotten mangosteen in the basket.
- ( b ) 8 good mangosteens and 6 rotten mangosteens are put into the basket. If a mangosteen is selected at random from the basket, find the probability of selecting a good mangosteens.

*Sebuah bakul mengandungi 32 biji manggis yang elok dan yang busuk.*

*( a ) Jika sebiji manggis dipilih secara rawak daripada bakul itu, didapati bahawa kebarangkalian sebiji manggis yang elok terpilih adalah  $\frac{7}{8}$ , cari bilangan manggis yang busuk di dalam bakul itu.*

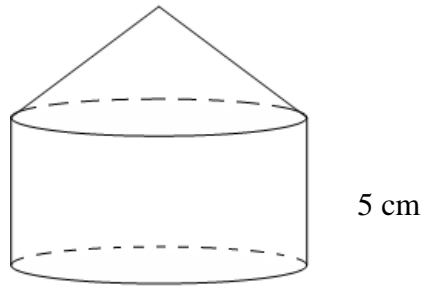
*( b ) 8 biji manggis yang elok dan 6 biji manggis yang busuk dimasukkan ke dalam bakul itu. Jika sebiji manggis dipilih secara rawak daripada bakul itu, cari kebarangkalian bahawa sebiji manggis yang elok dipilih.*

*[5 marks]*

Answer/ Jawapan:

9. Diagram 5 shows a solid formed by joining a cone and a cylinder.

*Rajah 5 menunjukkan sebuah pepejal yang dibentuk daripada cantuman sebuah kon dan sebuah silinder.*



**Diagram 5**  
**Rajah 5**

The diameter of the base of the cone and the diameter of the cylinder are both 14 cm.

The volume of the solid is  $924 \text{ cm}^3$ . By using  $\pi = \frac{22}{7}$ , calculate the height, in cm, of the cone.

*Diameter tapak kon dan diameter silinder ialah 14cm. Isipadu pepejal itu ialah*

*$924 \text{ cm}^3$ . Dengan menggunakan  $\pi = \frac{22}{7}$ , hitungkan tinggi, dalam cm, kon itu.*

[4 marks]

[4 markah]

*Answer / Jawapan:*

10. ( a ) Round off 28 288 correct to three significant figures.

*Bundarkan 28 288 betul kepada tiga angka bererti.*

( b ) Find the value of  $1.38 + 8.13 \div 0.3$ , and state your answer correct to two significant figures.

*Cari nilai bagi  $1.38 + 8.13 \div 0.3$ , dan nyatakan jawapan anda betul kepada dua angka bererti.*

( c ) Find the value of  $\frac{6.48 \times 10^{-2}}{(3 \times 10^{-3})^2}$ , and state your answer in standard form.

*Cari nilai bagi  $\frac{6.48 \times 10^{-2}}{(3 \times 10^{-3})^2}$ , dan nyatakan jawapan anda dalam bentuk piawai.*

( d ) State  $3.02 \times 10^{-3}$  as a single number.

*Nyatakan  $3.02 \times 10^{-3}$  sebagai satu nombor tunggal*

[6 marks]

[6 markah]

*Answer / Jawapan:*

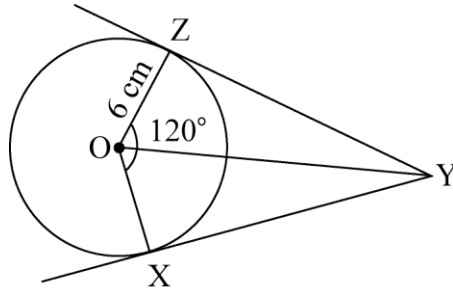
a)

b)

c)

d)

11.



**Diagram 6**  
**Rajah 6**

In the Diagram 6, XY and ZY are the tangents to the circle with centre O.

Calculate

- ( a ) the length of XY in cm.
- ( b ) the area of the quadrilateral OXYZ.

*Dalam Rajah 6, XY dan ZY adalah dua tangen kepada bulatan yang berpusat di O.  
Hitungkan*

- ( a ) panjang XY dalam cm
- ( b ) luas segiempat OXYZ

[ 4 marks ]

Answer/ Jawapan :

**Section B**  
**Bahagian B**

[ 48 marks]

[48 markah ]

Answer **all** questions in this section.

Jawab **semua** soalan dalam bahagian ini

12.The data in table 1 below shows the marks obtained by 60 pupils in a test.

Data di bawah menunjukkan markah yang diperolehi oleh 60 pelajar dalam satu ujian.

43	54	27	24	67	57	46	46	45	42
58	64	75	56	64	56	48	24	63	45
66	31	64	58	49	41	29	34	32	51
24	28	34	27	63	49	28	29	53	73
35	47	56	50	57	26	52	54	60	37
54	35	64	64	54	34	75	64	27	46

**Table 1**  
**Jadual 1**

- a) Based on the data in Table 1, complete Table 2 complete in the answer space  
*Berdasarkan data dalam Jadual 1, lengkapkan Jadual 2 pada ruang jawapan.*  
( 4 marks )
- b) Based on Table 1,calculate the estimated mean mark obtained by a pupils for the test  
*Berdasarkan jadual 1, hitung min anggaran markah yang diperolehi oleh pelajar tersebut.*  
( 3 Marks )
- c) For this part of question,use graph paper.  
By using a scale of 2 cm to 10 marks on the horizontal axis and 2 cm to 2 pupils on the vertical axis,draw a histogram for the data. ( 4 marks)

c) *Gunakan kertas graf untuk bahagian ini.*

*Dengan menggunakan skala 2 cm bersamaan 10 markah untuk paksi-x dan 2 cm bersamaan 2 pelajar untuk paksi-y, lukiskan satu histogram bagi data tersebut .*

*( 4marks)*

d) Based on your histogram in 12(c), state one piece of information about the histogram

*Berdasarkan histogram anda di 12 (c ), nyatakan satu maklumat berkaitan dengan histogram tersebut.*

*(1 marks)*

Answer/Jawapan

( a)

Marks <i>Markah</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik Tengah</i>
21 - 30	11	25.5
31 - 40		

**Table 2**

**Jadual 2**

( b)

( c ) Refer graph

*Rujuk graf*

(d)

13 (a)

Score	1	2	3	4	5	6
Number of students	4	6	8	7	3	2

The frequency table shows the scores obtained by 30 students in a quiz.

Find

- (i) the mode
- (ii) the mean of the distribution ( 3 Marks )

Jadual frekuensi di atas menunjukkan markah yang diperolehi oleh 30 pelajar dalam satu kuiz.

Cari :

- (i) mod
- (ii) purata ( 3 markah )

Answer/ Jawapan:

( i )

(ii)



13 b)

Marks <i>Markah</i>	Frequency <i>Frekuensi</i>	Cumulative frequency <i>Kekerapan longgokan</i>	Upper boundary <i>Sempadan atas</i>
30 – 34	5		
35 – 39	6		
40 – 44	9		
45 – 49	16		
50 – 54	18		
55 – 59	4		
60 – 64	2		

**Table 3**  
**Jadual 3**

13 b) The frequency table 3 shows the marks scored by 60 students in a test  
*Jadual frekuensi dalam Jadual 3 menunjukkan markah yang diperolehi oleh 60 orang pelajar dalam ujian.*

( i ) Construct a cumulative frequency table for the above data

*Bina satu jadual kekerapan longgokan bagi data di atas.*

( ii ) Using a scale of 2 cm to 5 marks on the x-axis and 2 cm to 5 student on the y-axis, draw an ogive based on the table in (b)

*Dengan menggunakan skala 2 cm bersamaan 5 markah untuk paksi-x dan 2cm bersamaan 5 pelajar untuk paksi-y, lukiskan graf ogif berdasarkan jadual (b)*

13 c) From the ogive, find

*Daripada graf ogif tersebut, dapatkan*

i) The median

*median*

Answer/ Jawapan

( 3 marks)

ii) The lower quartile

*Kuartil pertama.*

Answer/ Jawapan

( 3 marks )

14. (a) Given that  $\tan x = \frac{24}{7}$ , find the value of  $\sin x - \cos x$ .

*Diberi  $\tan x = \frac{24}{7}$ , cari nilai bagi  $\sin x - \cos x$ .*

(b) Given that  $\tan \theta = 0.4453$  and  $180^\circ \leq \theta \leq 360^\circ$ , find the value of  $\theta$ .

*Diberi  $\tan \theta = 0.4453$  dan  $180^\circ \leq \theta \leq 360^\circ$ , cari nilai  $\theta$ .*

[4 marks]  
[4 markah]

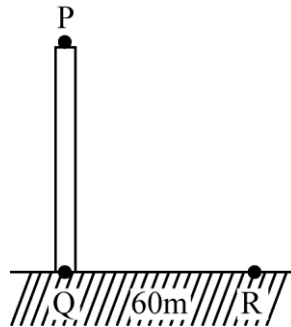
Answer / Jawapan:

(a)

(b)

15 a) In the diagram 7 below, PQ is a straight line on a horizontal plane QR.

Dalam Rajah 7, PQ adalah satu garis lurus pada permukaan satah mengufuk QR.



**Diagram 7**

**Rajah 7**

Given that the angle of elevation from the top, point P towards R is  $59^\circ$ , calculate the length of PQ.

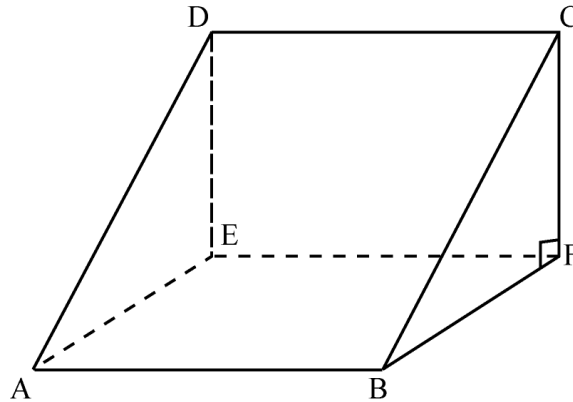
Diberi sudut dongakan daripada puncak P kepada R ialah  $59^\circ$ , kira panjang PQ.

( 5 marks)

Answer / Jawapan:

15b ) The diagram 8 below shows a prism.

*Rajah 8 menunjukkan sebuah prisma*



**Diagram 8**  
**Rajah 8**

State all  
*Nyatakan*

- (a) horizontal planes,  
*Satah mengufuk*
- (b) vertical planes,  
*Satah menegak*
- (c) inclined planes.  
*Satah condong*

( 3 marks)

Answer / *Jawapan:*

- (a)
- (b)
- (c)

**THE END OF QUESTIONS**  
**KERTAS SOALAN TAMAT**

**Scheme of Marking**

<b>Qs.</b>	<b>Parts</b>	<b>Steps of working/ answer</b>	<b>Marks</b>
1	( a )		B2
	( b )		B2
2		<p>Able to rewrite the equation into general form Of quadratic equation: <math>2p^2 - 9p - 5 = 0</math></p> <p>Able to factorised (at least one correct factor) <math>(2p + 1)(p - 5) = 0</math></p> <p><math>p = \frac{-1}{2}</math> or <math>p = 5</math></p>	K1 K1 N1N1
3		<p>The method of <u>substitution</u> or <u>elimination</u> is seen</p> <p><math>7n = -21</math> <math>n = -3</math> <math>4m + (-3) = 5</math> <math>4m = 8</math> <math>m = 2</math></p> <p>Any linear equation with one unknown is seen</p>	K1 K1

		$7n = -21$ or $4m = 8$ Both values are correct $\therefore m = 2, n = -3$	N1N1
4.		$\angle LNM$  $\tan \angle LNM$  $= \frac{6}{8}$ or equivalent  $36.87^\circ$ or $36^\circ 52'$	P1  K1  K1  N1
5.	(a)	$m_{AB} = \frac{6-0}{0-2}$ or $-3$  $\frac{y-(5)}{x-3} = -3$ or $5 = -3(3) + c$ or equivalent  $y = -3x + 4$	P1  K1  N1
	(b)	$0 = -3x + 14$  $= \frac{14}{3}$	K1  N1
6.	(a)	$\sqrt{200}$ or $\frac{135}{360} \times 2 \left(\frac{22}{7}\right) 7$ is seen  Perimeter = $7 + \sqrt{200} + 10 + 3 + \frac{135}{360} \times 2 \left(\frac{22}{7}\right) 7$ $\therefore$ Perimeter = 50.64 cm	K1  K1 N1
	(b)	$\frac{1}{2} \times 10 \times 10$ or $\frac{45}{360} \left(\frac{22}{7}\right) 7^2$ is seen  The Area (shaded region) $= \frac{1}{2} \times 10 \times 10 - \frac{45}{360} \left(\frac{22}{7}\right) 7^2$ $= 30.75 \text{ cm}^2$	K1  N1

7.	( a ) ( i ) ( ii ) ( b ) ( c )	False True  Premis II : <u>8 is greater than zero.</u>  Implication I : <u>If x is a multiple of 3 ,</u> <u>then x can be divided exactly by 3.</u>  Implication II : <u>If x can be divided exactly by 3,</u> <u>then x is a multiple of 3.</u>	B1 B1  B2  B1  B1
8.	( a )          ( b )	$\frac{7}{8} = \frac{x}{32}$ or $\frac{1}{8} = \frac{y}{32}$ is seen $x = 28$ or $y = 4$ $\therefore$ There are 4 rotten mangostein  $P(\text{Good}) = \frac{n(\text{Good})}{n(S)} = \frac{x}{46}$ is seen $= \frac{18}{23}$	K1          N1          K2          N1
9.		Volume of cylinder = $\frac{22}{7} \times 7^2 \times 5 = 770$  Volume of cone = $\frac{1}{3} \times \frac{22}{7} \times 7^2 \times t = \frac{154}{3}t$  $770 + \frac{154}{3}t = 924$  $t = 3 \text{ cm}$	K1          K1          K1          N1
10.	( a )       ( b )	28300  $1.38 + 8.13 \div 0.3$ $= 1.38 + 27.1$ $= 28.48$ $= 28 \text{ (2 s.f)}$	B1          K1          N1

	(c)	$\frac{6.48 \times 10^{-2}}{(3 \times 10^{-3})^2}$ $= \frac{6.48 \times 10^{-2}}{9 \times 10^{-6}}$ $= \frac{6.48}{9} \times 10^{-2-(-6)}$ $= 0.72 \times 10^4$ $= 7.2 \times 10^3$	K1																					
	(d)	0.00302	N1																					
11.	(a)	$\tan 60^\circ = \frac{xy}{6}$ or $xy = 6 \tan 60^\circ$ is seen $\therefore XY = 10.39 \text{ cm}$	K1 N1																					
	(b)	The area of OXYZ = $2 \left( \frac{1}{2} \times 6 \times 10.39 \right)$ $= 62.34 \text{ cm}^2$	K1 N1																					
12	(a)	<table border="1"> <thead> <tr> <th>Marks</th> <th>Frequency</th> <th>Midpoint</th> </tr> </thead> <tbody> <tr> <td>21-30</td> <td>11</td> <td>25.5</td> </tr> <tr> <td>31-40</td> <td>8</td> <td>35.5</td> </tr> <tr> <td>41-50</td> <td>13</td> <td>45.5</td> </tr> <tr> <td>51-60</td> <td>15</td> <td>55.5</td> </tr> <tr> <td>61-70</td> <td>10</td> <td>65.5</td> </tr> <tr> <td>71-80</td> <td>3</td> <td>75.5</td> </tr> </tbody> </table>	Marks	Frequency	Midpoint	21-30	11	25.5	31-40	8	35.5	41-50	13	45.5	51-60	15	55.5	61-70	10	65.5	71-80	3	75.5	N4
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61-70	10	65.5																						
71-80	3	75.5																						
	(b)	$\frac{25.5(11) + 35.5(8) + 45.5(13) + 55.5(15) + 65.5(10) + 75.5(3)}{11 + 8 + 13 + 15 + 10 + 3}$ 47.83 marks	K2 N1																					
	(c)	Axes drawn in correct direction, uniform and correct scales for $20.5 \leq x \leq 80.5$ and $0 \leq y \leq 15$  *6 bar correctly drawn Note: 5 or 4 bar correctly drawn, award 1 mark Smooth and continuous bar using a given scale	P1  K2 N1																					
	(d)	15 pupils have marks between 51-60	P1																					



13	(a)	(i) mode = 3 (ii) mean = 3.17	P1 K1N1																		
	(b i)	<table border="1"> <thead> <tr> <th>Cumulative frequency</th> <th>Upper boundary</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>29.5</td> </tr> <tr> <td>5</td> <td>34.5</td> </tr> <tr> <td>11</td> <td>39.5</td> </tr> <tr> <td>20</td> <td>44.5</td> </tr> <tr> <td>36</td> <td>49.5</td> </tr> <tr> <td>54</td> <td>54.5</td> </tr> <tr> <td>58</td> <td>59.5</td> </tr> <tr> <td>60</td> <td>64.5</td> </tr> </tbody> </table>	Cumulative frequency	Upper boundary	0	29.5	5	34.5	11	39.5	20	44.5	36	49.5	54	54.5	58	59.5	60	64.5	N2
		Cumulative frequency	Upper boundary																		
		0	29.5																		
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36		49.5																			
54		54.5																			
58	59.5																				
60	64.5																				
(c i)	Median = 48	K2N1																			
(c ii)	Lower quartile = 42	K2N1																			
14	(a)	$\sin x = \frac{24}{25}$ or $\cos x = \frac{7}{25}$	K1																		
		$\frac{17}{25}$	N1																		
	(b)	$\theta = 24^\circ$ $\theta = 180 + 24$ $= 204^\circ$	K1 N1																		
15	(a)	$\tan 59^\circ = \frac{PQ}{60}$ PQ = 99.86m	K4N1																		
		a) plane ABFE b) plane BCF, ADE and CDEF c) Plane ABCD	P3																		