

ADDITIONAL MATHEMATICS PAPER 1 2013

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Question	Solution and Mark Scheme	Sub Marks	Total Mark
(a) 64		1	
(b) $f: x \rightarrow x^3$ OR $f(x) = x^3$		1	2
(a) 7		1	
(b) 1	B1: $1 - 4n = -3$	2	3
3 (a) $x+3$		1	
(b) $-30$	B2: $2 - \frac{p}{5} = 8$ B1: $k(5) = 8$	3	4
4	2.907 and $-0.5734$ B2: $\frac{-(-7) \pm \sqrt{(-7)^2 - 4(3)(-5)}}{2(3)}$ B1: $3x^2 - 7x - 5 = 0$	3	3
5 (a) $p = -1, q = 16$		2	
(b) $x = -1$		1	3

25  $X$  is a discrete random variable having a binomial distribution with  $n = 3$ , where  $n$  is the number of trials. Diagram 25 shows the graph of a binomial distribution of  $X$ .

$X$  ialah pemboleh ubah rawak diskret yang mempunyai satu taburan binomial dengan  $n = 3$ , dengan keadaan  $n$  ialah bilangan percubaan. Rajah 25 menunjukkan graf suatu taburan binomial bagi  $X$ .

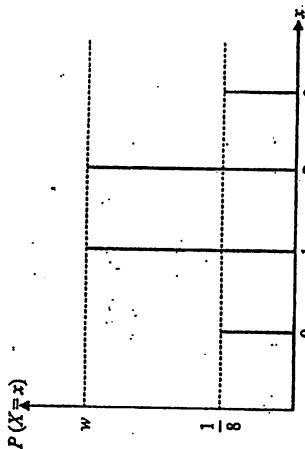


Diagram 25  
Rajah 25

Find  
Cari

- (a)  $P(X > 2)$ ,
- (b) the value of  $w$ ,  
nilai  $w$ .

[3 marks]  
[3 markah]

Answer / Jawapan:

- (a)
- (b)

END OF QUESTION PAPER  
KERTAS SOALAN TAMAT

[Lihat balutana sebelah

21

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23 Siti intends to buy 4 fruits. The fruit seller has 10 durians, 8 papayas and 12 mangoes for sale. Siti ingin membeli 4 biji buah-buahan. Penjual buah mempunyai 10 biji durian, 8 biji betik dan 12 biji mangga untuk dijual.

Find the number of ways Siti can buy the fruits if Cari bilangan cara Siti boleh membeli buah-buahan jika

- (a) there is no restriction on the types of fruits, tiada syarat dikenakan untuk jenis buah-buahan,
- (b) not less than 3 mangoes must be bought. tidak kurang daripada 3 biji mangga mesti dibeli.

[3 marks]  
[3 markah]

Answer / Jawapan :

(a)

(b)

For Examiner's Use

For Examiner's Use

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24 In a game, a pointer is rotated about the centre of a coloured disc as shown in Diagram 24. Dalam suatu permainan, sebatang penunjuk diputarakan ditengah-tengah piring berwarna seperti ditunjukkan dalam Rajah 24.

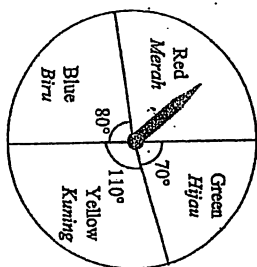


Diagram 23  
Rajah 23

Find the probability that Cari kebarangkalian bahawa

- (c) the pointer stops at the red sector, penunjuk berhenti di sektor berwarna merah,
- (d) the pointer stops at the blue sector for the first rotation and the green sector for the second rotation. penunjuk berhenti di sektor berwarna biru pada putaran pertama dan di sektor berwarna hijau pada putaran kedua.

[3 marks]  
[3 markah]

Answer / Jawapan :

(a)

(b)

23

	3
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24

	3
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[Lihat halaman sebelah]

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4

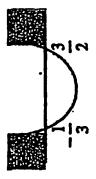
11	(a) $p=7$ (b) 217	$B1 : \frac{11}{2}[2(3)+(11-1)4] - \frac{4}{2}[2(3)+(4-1)4]$ or $\frac{7}{2}[2(19)+(7-1)4]$ OR $19+23+27+31+35+39+43$	1 2 3
12	(a) $\frac{y^2}{x} = -5x+10$ (b) $p=2, q=5$ (both) $B2 : p=2$ or $q=5$	$B1 : \frac{q-0}{1-p} = -5 / q = -5(1)+10$ or $0 = -5p+10$	1 3 4
13	(a) $\frac{3}{4}$ (b) $6y+8x+7=0$ $B1 : y - \frac{3}{2} = -\frac{4}{3}(x+2)$		1 2 3
14		$B1 : 48.19^\circ, 180^\circ, 311.81^\circ / 48^\circ 11', 180^\circ, 311^\circ 49'$ $B3 : 48.19^\circ, 180^\circ$ (both) $B2 : \cos \theta = \frac{2}{3}$ or $\cos \theta = -1$ or $48.19^\circ / 48^\circ 11'$ or $180^\circ$ $B1 : \cos \theta = 3(-\cos^2 \theta) - 1$	4 4
15	(a) 1.047 rad (b) 45.50	$B2 : \frac{1}{2}(6)^2(2.095) + \frac{1}{2}(3)(6)\sin 60^\circ$ $B1 : \frac{1}{2}(6)^2(2.095)$ or $\frac{1}{2}(3)(6)\sin 60^\circ$	1 3 4

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3

6	$x \leq -\frac{1}{3}$ or $x \geq \frac{3}{2}$  $B2 : (3x+1)(2x-3) \geq 0$	3 3
7	$-\frac{5}{3}$ $B2 : 3n+5(n+2) = 2n$ $B1 : 3^{2n}$ or $3^{2(n+2)}$ or $3^{2n}$	3 3
8	$\frac{1-k}{k}$ or $(1-k)\left(\frac{1}{k}\right)$ or $\frac{1}{k} - 1$ $B2 : (\log_p p - \log_p 5) \times \frac{\log_p p}{\log_p 5}$ $B1 : \log_p p - \log_p 5$ or $\frac{1}{\log_p 5}$	3 3
9	(a) 36 (b) 54 $B1 : \frac{*36}{1-\frac{1}{3}}$	1 2 3
10	(a) 1456 (b) 972 $B2 : 1456 - [2(3^5 - 1)]$ or $T_6 = 4(3)^{6-1}$ $B1 : 2(3^5 - 1)$ or $a=4$ and $r=3$	1 3 4

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16 (a)	(3) (4)	1	3
(b)	$\frac{3i+4j}{5}$ B1 : $\sqrt{3^2+4^2}$ or 5	2	3
17 (a)	$5x-8y$	1	
(b)	$\frac{10x+40y}{7}$ B1 : $8y+\frac{2}{7}(5x-8y)$	2	3
18	(1, 6) B2 : $2x+3=5$ or $x=1$ or $y=6$ B1 : $\left(\frac{dy}{dx}\right)_{x=1} = 2x+3$	3	3
19	$72\pi$ B2 : $36\pi \times 2$ B1 : $4\pi r^2$	3	3
20	$\frac{4}{3}$ B2 : $m\left[\frac{4^2}{2}-\frac{1^2}{2}\right]-14=-3m$ B1 : $\frac{mx^2}{2}$ or $\int mx dx - 2 \int g(x) dx$	3	3

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21	$m=\frac{3}{5}, n=-2$ B2 : $m=\frac{3}{5}$ or $n=-2$ B1 : $\frac{6(1-5x)^{-2}}{(-5)(-2)} + \left(\frac{e}{e}\right)$	3	3
22 (a)	5 B1 : $\frac{m+9}{2} = 7$	2	
(b)	3.804 B1 : $\sqrt{\frac{367}{6} - \left(\frac{41}{6}\right)^2}$	2	4
23 (a)	27405	1	
(b)	4455 B1 : ${}^nC_3 \times {}^nC_4 + {}^nC_4$	2	3
24 (a)	$\frac{100}{360} / \frac{5}{18}$	1	
(b)	$\frac{7}{162} / \frac{56}{1296}$ B1 : $\frac{80}{360} \times \frac{70}{360}$	2	3
25 (a)	$\frac{1}{8}$	1	
(b)	$\frac{2}{8}$ B1 : $\frac{1}{8} + m + m + \frac{1}{8} = 1$	2	3

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