

PROMASI MATHEMATICS MODERN

1) Standard Form

Express the following numbers in standard form

1	0.00682		6	$\frac{700 \times 0.00062}{2.8 \times 10^{-5}}$	
2	$9.463 \times 10^{-6} - 8.97 \times 10^{-7}$		7	$\frac{504 \times 7.9 \times 10^{-5}}{0.00048}$	
3	$1.89 \times 10^6 + 3.42 \times 10^5$		8	$\frac{0.000007}{8 \times 10^5}$	
4	$970\,000 - 6.9 \times 10^4$		9	$3.710^6 \times 58\,000$	
5	$\frac{13\,858\,000}{(1.3 \times 10^2)^2}$		10	$4.78 \times 10^4 - 32\,100$	

Round off these numbers to two, three or four significant figures

		Two significant figures	Three significant figures	Four significant figures
1	0.070 798			
2	0.108 9			
3	1 790 600			
4	0.000103 5			
5	850 502			

2) Quadratic Expression and Equation

Factorise all these equation below

1	$2y^2 + 10y + 8$		6	$m^2 + 9m + 18$	
2	$x^2 + 4x + 3$		7	$21m^2 - 30m + 9$	
3	$6b^2 + 48b - 54$		8	$t^2 - 7t + 12$	
4	$5t^2 + 11t - 12$		9	$16q^2 - 49$	
5	$12a^2 + 12a + 3$		10	$c^2 - 14c + 49$	

3) Sets

Diagram 3.1 is a Venn diagram which presents universal set ξ

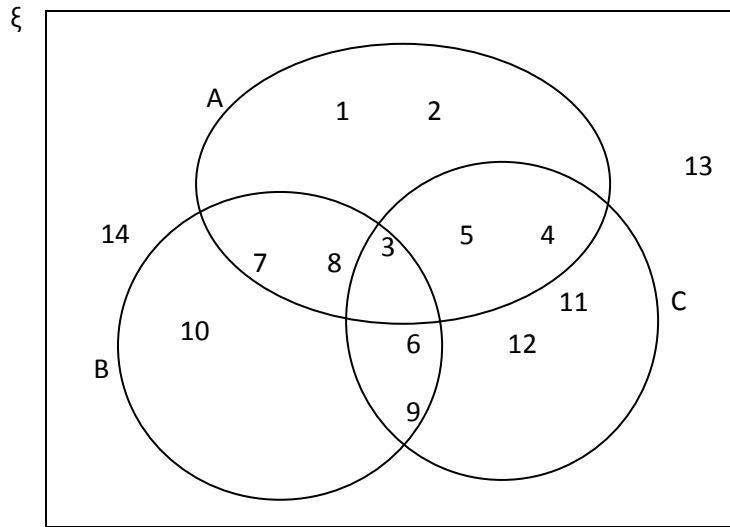


Diagram 3.1

Find :

a. ξ		g. $A \cup B$	
b. $n(\xi)$		h. $n(A \cup B)$	
c. $A \cap B$		i. $A \cap B \cap C$	
d. $N(A \cap B)$		j. $A \cup (B \cap C)$	
e. $B \cap C$		k. C'	
f. $n(B \cap C)$		l. $(A \cup B) \cap C'$	

4) Mathematical Reasoning

Complete each following arguments

1	Premise 1 : All multiples of 6 are even numbers. Premise 2 : 36 is a multiple of 6. Conclusion : _____ _____	4	Premise 1 : _____ _____ Premise 2 : the square root of 16 is an even integer. Conclusion : 16 is an even integer.
2	Premise 1 : If x is an even integer, then x^2 is an even integer. Premise 2 : _____ _____ Conclusion : x is not an even integer.	5	Premise 1 : _____ _____ Premise 2 : 40 is an integer. Conclusion : 40 is a real number.
3	Premise 1 : _____ _____ Premise 2 : 15 is an odd integer. Conclusion : 15^3 is an odd integer.	6	Premise 1 : All rectangles are parallelogram. Premise 2 : _____ _____ Conclusion : $KLMN$ is not a rectangle.

5) Probability

A dice was rolled 90 times. Table 7 shows the result.

Event happening	Frequency	Event happening	Frequency
1	14	4	15
2	16	5	17
3	13	6	15

a. Estimate the probability of getting each of the following numbers.

i.	1		ii.	2	
iii.	3		iv.	4	
v.	5		vi.	6	

6) Circles

Two wheels are linked by a belt as shown in diagram 8. In the diagram AC and BC are common tangents.

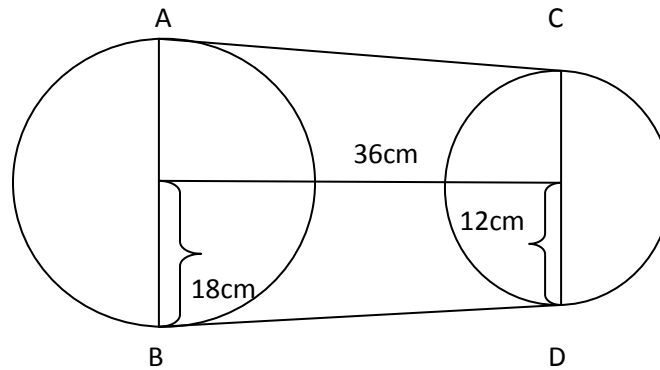


Diagram 8

Find the lengths of AC and BD.

7) Trigonometry

Sketch the graph of $y = 3 \sin \theta$ for $0^\circ \leq \theta \leq 360^\circ$