YEAR 12 MATHS – WORKSHEET 6

1. Rohan bought a television set on the following **terms**:

- $100 deposit.
- 12 monthly installments of $125.

The **total amount** he paid for the television set was

    A. $1975   B. $100

    C. $125   D. $1600

2. The table given below shows the result of set S= {0 , 1 , 2 , 3, 4 } under the operation 'addition modulo 5'.[Hint: example 1, page15]

$\oplus$	0	1	2	3	4
0	0	1	2	3	4
1	1	2	3	4	0
2	2	3	4	0	1
3	3	4	0	**P**	**Q**
4	4	0	1	**R**	**S**

(i) What is the identity element. _____

(ii) Is it closed?_____

(iii) Give the values of P, Q, R and S.

P -_____

Q -_____

R -_____

S -_____

(iv)Is this system a group? [Hint: four conditions on page 13]

3. The table below shows the results of an operation * on a set S = {a, b, c, d}

*	a	b	c	d
a	c	a	d	b
b	a	b	c	d
c	d	c	b	a
d	b	d	a	c

(i)   What is the **identity** element? _____

(ii)   Give the **inverse** of d ?_____

(iii)   Is the set **closed**? Give a reason for your

        answer._____

(iv) Evaluate a * (c * b).

4. Solve the equation $3x^2 - 2x - 3 = 0$ using the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

5. Simplify: $\frac{2^{n-1} \times 8^{n-2}}{4^{2n-4}}$ [Hint: example 3, page 23]

6. Find the sum of the first 12 terms of this sequence 32, 16, 8,....

[Hint: use $s_n = \dfrac{a(1-r^n)}{1-r}$,]

7. Simplify : $\dfrac{\log 8}{\log 4}$ [Hint: example 7, page 28]

8. Simplify: $\sqrt{12} - \sqrt{75} + \sqrt{48}$ [Hint: example 2d, page35]

The end