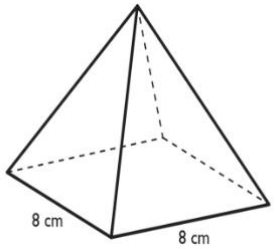
RISHIKUL SANATAN COLLEGE
MATHEMATICS & PHYSICS DEPARTMENT

WORKSHEET 1
APPLIED YEAR 11
Week One

1. When simplified $8^0 \times 2 + 1$ equals ?
2. Make "A" the subject of the formula in

   $S = \frac{EA+V}{D}$.
3. A square pyramid is shown below:



   The length of AB = 8cm, BC = 8 cm and the perpendicular height XE = 30cm. Calculate the volume of this pyramid in cm^3.

4. Tomasi buys a TV on hire purchase. The cash price is $980.00. he pays $245.00 of deposit and 12 monthly installments of $90.00. How much interest is paid by Tomasi?

5. Which property is illustrated by the equation

   $r(s * t) = rs * rt$?

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WORKSHEET 2
APPLIED YEAR 11
Week Two

1. Give one advantage and disadvantage of Hire Purchase.

2. A binary operation * on set $X = \{p, q, r, s\}$ is defined in the table below

*	p	q	r	S
p	s	p	q	r
q	p	q	r	s
r	q	r	s	p
s	r	s	p	q

   i. Is the set closed?

   ii. What is the identity element?

   iii. Give the inverse of all the element in the set X.

   iv. Is the set Associative?

   v. Evaluate

   a. r * s b. (q * r) * s

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WORKSHEET 3
APPLIED YEAR 11
Week Three

1. $2x - (5x + 2) + 7$ is equal to

2. $\frac{x}{2y} + \frac{1}{2y} =$

3. $factorise$

   (a) $10x^2 + 8x$

   $(b)\ x^2 - \frac{1}{16}$

4. Solve

   (a) $(x - 2)(x + 4) = 0$

   (b) $|x - 2| = 5$

   (c) $\frac{x-1}{3} = \frac{1-x}{4}$

   (d) $5 - 3x < 8$

5. Expand and simplify

   $$3(5x + 4) - 2(2x + 3)$$

6. A geometric sequence is given as

   <4,8,16,…>

   a. Calculate the common ratio.

   b. Find the 10^{th} term.

   c. What is the sum of the first 12 terms?

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WORKSHEET 4
APPLIED YEAR 11
Week Four

1. Evaluate $3\begin{pmatrix} 2 & -3 \\ 4 & -5 \end{pmatrix}$

2. Given matrix

   A = $\begin{pmatrix} 4 & -3 \\ -4 & 2 \end{pmatrix}$ and B = $\begin{pmatrix} -1 & -5 \\ 3 & -2 \end{pmatrix}$

   a. What is the order of Matrix A?

   b. Evaluate

      i. 2B + 3A

      ii. BA

   c. Calculate the determinant of Matrix A?

   d. Find the inverse of Matrix A?

3. Calculate the value of

   $$\sum_{n=3}^{5} -2n^2 + 3$$

4. An arithmetic sequence has 3rd term= 12 and a common difference of 2 .

   i. Find the first term?

   ii. What is the sum of the first 18 terms?

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YEAR 11 APPLIED MATHEMATICS

WORKSHEET 5: WEEK 5

STRAND 2: ALGEBRA

1. Expand and simplify:

(a) $5(x - 3y) - 2(x + y)$ (b) $(2x + 1)(3x + 4)$ (c) $(x + 5)^2$

2. Factories completely:

(a) $4m + 8 - mn - 2n$

(b) $x^2 + 5x - 6$

(c) $2x^2 - 18$

(d) $2x^2 + 9x + 4$

3. Solve for x.

(a) $(x - 1)^2 = 9$ (b) $(x + 2)(x + 3)(2x - 1) = 0$ (c) $x^2 - 7x + 10 = 0$

4. Simplify:

(a) $\dfrac{\left(2x^2y^3\right)^2}{8x^3y^5}$

(b) $\dfrac{x^2 - y^2}{x - y}$

(c) $\left(\dfrac{x - \dfrac{1}{x}}{1 + \dfrac{1}{x}}\right)$

(d) $\dfrac{5}{x} + \dfrac{2}{x}$

(e) $\dfrac{a + b}{4a} \times \dfrac{8a^2}{2a + 2b}$

(f) $\dfrac{x^2 + 3x}{x + 2} \div \dfrac{x}{x^2 - 4}$

5. Solve:

(a) $\dfrac{2 - 3x}{4} > 2$

(b) $|2x + 5| = 15$

(c) $\dfrac{x + 3}{2} - \dfrac{x - 3}{3} < 1$

(d)

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WORKSHEET 6: WEEK 6

STRAND 2: ALGEBRA

1. Find the first term, ratio and term indicated for each of the geometric progressions.

a. $1, 4, 7, \ldots, (S_{10})$

b. $8, 6, 4, \ldots, (S_{12})$

f. $6, 8, 10, \ldots, (S_{12})$

g. $2, 2\frac{1}{2}, 3, \ldots, (S_{19})$

2. Find the first term, ratio and term indicated for each of the geometric progression.

a. $1, 3, 9, \ldots, (S_{10})$

b. $4, 8, 16, \ldots, (S_{10})$

f. $0.005, 0.05$

g. $6, 12, 24, ..$

3.What is the inverse of the matrix?

$A.\begin{bmatrix}3 & 6\\3 & 7\end{bmatrix}$ b. $\begin{bmatrix}5 & -1\\-3 & 0\end{bmatrix}$

4.Find the value of x and y.

[i] $\begin{pmatrix}x & 3\\2 & 1\end{pmatrix} = \begin{pmatrix}4 & y\\2 & 1\end{pmatrix}$

[ii] $\begin{pmatrix}x & 3\\2 & 1\end{pmatrix} = \begin{pmatrix}4+y & x-1\\x-2 & 1\end{pmatrix}$

3. If matrix

$A = \begin{bmatrix}3 & 6\\3 & 7\end{bmatrix}$ B = $\begin{bmatrix}5 & -1\\-3 & 0\end{bmatrix}$

Find Matric 2A + B

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WORKSHEET 7: WEEK 7

STRAND 1: BASIC MATHEMATICS

1. In each case, make the letter at the end the subject of the formula

[i] $y = \sqrt{x+3}$, (x)

[ii] $x^2 - y^2 = a^2$, (x)

[iii] $\sqrt{x^2+y^2} = y$, (x)

[iv] $\frac{1}{m} = \frac{1}{s} + \frac{1}{t}$, (s)

2. Simplify the following.

[i] $\frac{3a}{5} \cdot \frac{7ab}{3}$ [ii] $\frac{3a-1}{2b^2}$

3. Operation ---- is defined on the set {1, 2, 3, 4} as shown in the table below

□	1	2	3	4
1	4	3	2	1
2	3	1	4	2
3	2	4	1	3
4	1	2	3	4

i. Is this operation commutative?

ii. Name the identity element, or explain why none exists.

iii. For each element having an inverse, name the element and its inverse.

4. Solve

i. $7k^0$

ii. $(255x)^0$

5. The cash price of a DVD player is $300. The Hire Purchase price is $390. If Fane pays a deposit of 20% followed by 20 equal monthly payments, find how much Fane will pay per month.