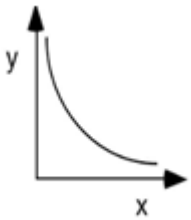
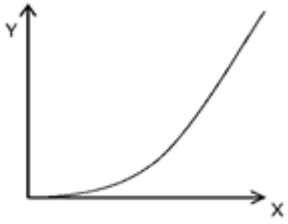
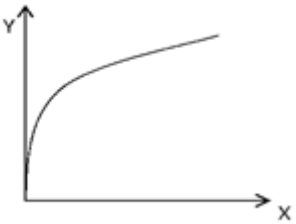
SUVA SANGAM COLLEGE

YEAR 12

PHYSICS

WORKSHEET 3

STRAND 1 MECHANICS

NO.	**CONCEPT IN BRIEF: RELATIONSHIP** **TYPES OF RELATIONSHIPS** (i) Directly proportional (ii) Inversely proportional (iii)Direct square relationships (power of relationship) (iv)Inverse square relationships (root of relationship)
1	Identify the type of relationship shown by the given graphs: **a.**  **b.**  **c.**  **d.** 

	CONCEPT IN BRIEF: RELATIONSHIP **DIRECT SQUARE RELATIONSHIPS** • each quantity varies with direct proportion with respect to the square of the other, i.e. if a variable increases by an amount 'n' then the variable that it is directly proportional to increases by an amount 'n^2' (n squared) Example 1 $A = kB^2$ Basically, if B "DOUBLES" then A "QUADRUPLES", due to the square. If B "triples" then A increases by a factor of NINE.
2	**Use the formula** $F = \frac{mv^2}{r}$ to calculate the value of F if: (i) v is doubled (ii) m is halved and v is doubled
	CONCEPT IN BRIEF: RELATIONSHIP **INVERSE SQUARE RELATIONSHIPS** Each quantity varies with inverse proportion with respect to the square of the other, i.e. if a variable increases by an amount n then the variable that it is inversely proportional to decreases by an amount n^2. **Example 2** $A = \frac{k}{B^2}$ For the inverse square" if B "DOUBLES", then A DECREASES by a factor of FOUR, or it is simply ONE FOURTH its original value. If B "TRIPLES", then A is ONE NINTH its original value.
3	$F = \frac{Gm_1m_2}{r^2}$ What would be the value of F if: a. The distance, r, is doubled: b. Both masses are doubled c. Both the mass m1 and the distance r, are doubled