MECHANICS 1

CHAPTER 3 : VERTICAL MOTION

When an object is in free fall, we take acceleration to be gravity → $9.8ms^{-2}$

Normal contact forces keeps the object in vertical equilibrium / balances other vertical forces.

CHAPTER 1 : SUVAT EQUATIONS

S	Displacement	$S = UT$
U	Initial velocity	$V = U + AT$
V	Final velocity	$S = UT + \frac{1}{2}AT^2$
A	Acceleration	$V^2 = U^2 + 2AS$
T	Time	$S = \frac{1}{2}(U+V)T$ $S = VT - \frac{1}{2}AT^2$

CHAPTER 4 : RESOLVING FORCES ON A SLOPE

Creating triangles to resolve forces;

SOHCAHTOA

CHAPTER 6 : MOTION DUE TO GRAVITY

If an object is in freefall (see chapter 3), if it is moving upward $a = -g$.

CHAPTER 7 : NEWTON'S THIRD LAW

For every force there is an equal and opposite reaction

Possible Qu could involve pulleys.

CHAPTER 2 : FORCES AND MOTION

Newton's second Law (N2L) : $F = ma$

Force — mass — acceleration

With Force being the net force;

FORWARD - BACKWARD

CHAPTER 5 : FRICTION

$F_{lim} = \mu R$

F_{lim} — Friction; μ — coefficient of friction; R — normal contact force

The value of μ should be between 0 and 1.

CHAPTER 8 : MOMENTUM

Impulse momentum equation : $m(v-u)$ (m — mass; v — final velocity; u — initial velocity)

Conservation of momentum (COM) states that the total momentum remains the same **after** a collision as it was **before**.

CHAPTER 11 : GENERAL MOTION IN A STRAIGHT LINE

If acceleration isn't constant, then we can no longer use SUVAT;

D — Displacement

differentiate ↓

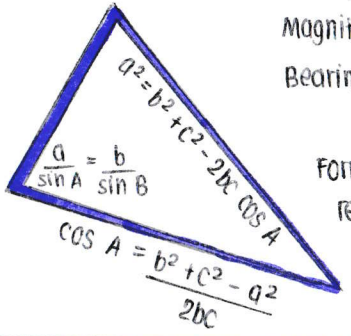
V — velocity

integrate ↑ / differentiate ↓

A — Acceleration

CHAPTERS 9 + 10 : COMBINING AND SPLITTING FORCES, FORCES IN EQUILIBRIUM

Use of Triangle rules;



Magnitude = force / size of force

Bearing = angle of force from vertical or horizontal.

Form triangles to calculate resultant forces, or use vectors.