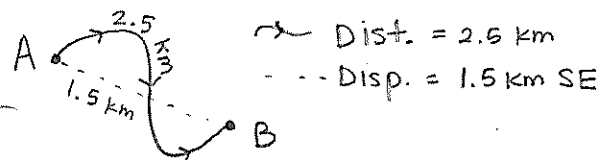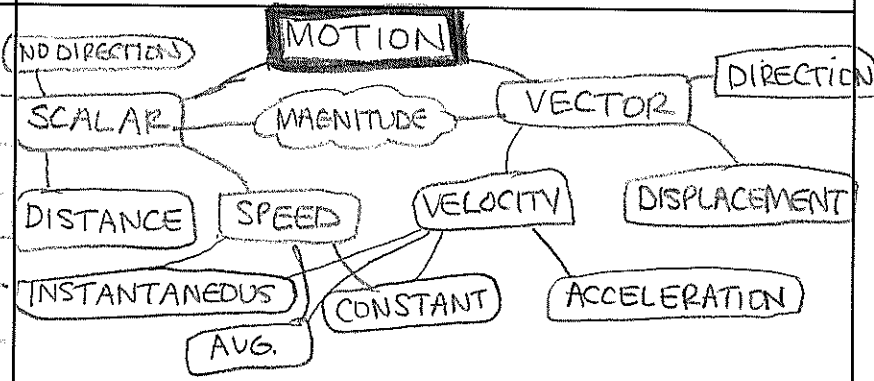| NAME: Mrs. Sjuts	DATE: Wed, Sept. 15, 2021

TOPIC:

ESSENTIAL QUESTION: How do you describe motion qual./quant. w/respect to dist/ displacement, speed/velocity, and accel (Obj 1)? How do you create & interpret p vs t, s vs. t, v vs. t motion graphs of objects (Obj 2)

QUESTIONS AND CONNECTIONS:

Variable	symbol	units	Equation	S or V
dist	d	m		S
disp	X	m(dir)		V
time	t	sec, hr		S
Speed	s	m/s	$s = \frac{d}{t}$	S
Velocity	v	m/s dir	$v = \frac{x}{t}$	V
accel	a	m/s² dir	$a = \frac{v_f - v_i}{t}$	V

A ⟶ 2.5 km / 1.5 km ⟶ B

~ Dist. = 2.5 km
--- Disp. = 1.5 km SE

Pos. vs Time Graph

a. no motion/at rest
b. moving away at constant rate
c. coming toward ref. pt at const. rate

Velocity vs. Time Graph

a. const. v pos dir ⎫
b. const. a in pos. dir (↑v) ⎬ moving away from ref pt.
c. const a in pos. dir (↓v) ⎭

d. const v neg dir ⎫
e. const a neg dir (↑v) ⎬ moving toward ref. pt.
f. const a neg dir (↓v) ⎭

Accel vs Time

X. zero a, const. v
Y. constant a, pos dir
Z. ↑a, pos dir

P. const a, neg dir

NOTES:

MOTION

NO DIRECTION — SCALAR — MAGNITUDE — VECTOR — DIRECTION

DISTANCE   SPEED   VELOCITY   DISPLACEMENT

INSTANTANEOUS   CONSTANT   ACCELERATION
AVG.

$speed = \frac{distance}{time}$ $velocity = \frac{displacement}{time}$

→ Units: m/s, mi/hr   → Units: m/s west, mi/hr South

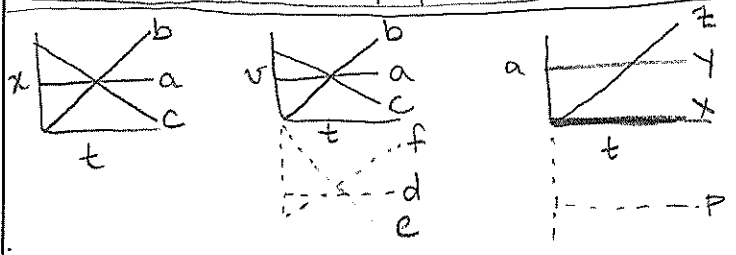$acceleration = \frac{v_f - v_i}{t}$ or $\frac{\Delta v}{t}$

→ Units: m/s/s West, mi/hr/s East

(graphs: x vs t with b, a, c) (v vs t with b, a, c, f, d, e) (a vs t with Z, Y, X, P)

$\frac{d}{s \mid t}$ $\frac{v_f - v_i}{a \mid t}$

d = 10 m $\frac{10 m}{5 s}$ = 2 m/s
t = 5 s
S = ?

x = 10 m N $\frac{10 m N}{5 s}$ = 2 m/s N
t = 5 s
v = ?

Snail comes to rest after traveling at a rate of 2 m/s away from the rock. It took 2 seconds to stop. What is the accel?

$a = \frac{0 m/s - 2 m/s}{2 s}$ = $\frac{-1 m/s^2}{\text{away from rock}}$

or 1 m/s² toward rock