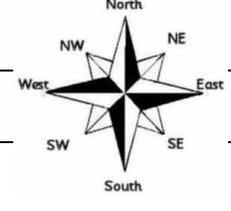


IMPORTANT: Carefully fill-in your name, student ID number, and section number.

الاسم (بالعربية)		ID #		Sec.	
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Simple calculators are allowed. You may scribble your calculations on the sides and back of this test paper.

$v_{avg} = \frac{s}{t}$	$v_{avg} = \frac{v_f + v_i}{2}$	$a = \frac{v_f - v_i}{t}$	$v_f = v_i + a.t$ $v_f = a.t; (v_i = 0)$	$s = v_i.t + \frac{1}{2} a.t^2$ $s = \frac{1}{2} a.t^2; (v_i = 0)$	
$v_f^2 - v_i^2 = 2 a.s$	$F = m.a$ or $a = F/m$	Weight = $F_w = m.g$	$F_f = \mu.F_N$	$v_f = \sqrt{2 g \cdot h}$	
$F_{A \text{ on } B} = F_{B \text{ on } A}$	$g = 10 \text{ m/s}^2$	$1 \text{ m/s} = 3.6 \text{ km/h}$	Pythagorean Rule: $R^2 = X^2 + Y^2$; $R = \sqrt{X^2 + Y^2}$		
1 giga (G) = 10^9	1 mega (M) = 10^6	1 micro (μ) = 10^{-6}	1 nano (n) = 10^{-9}	1 liter = 1000 cm^3	
$W = F \cdot s \cdot \cos \theta$; $W = Fs; (\theta = 0)$ or $W = mgs$	$P = W / t$ or $P = mgs/t$	$v = \sqrt{2 g \cdot h}$	$E_p = m.g.h$ $E_k = \frac{1}{2} m.v^2$ $F_s = \frac{1}{2} m.v^2$	$E_p + E_k = \text{constant}$ (energy conservation)	
$T_K = T_C + 273$	$T_C = T_K - 273$	$T_C = \frac{5}{9} (T_F - 32^\circ)$	$T_F = \frac{9}{5} T_C + 32^\circ$	$c_{\text{water}} = 1 \text{ kcal/kg} \cdot ^\circ\text{C}$	
1 cal = 4.19 J	1 hp = $\frac{3}{4}$ kW	$Q = c.m.\Delta T$	fusion (melting): $Q = m.L_f$	vaporization: $Q = m.L_v$	