

PHYSICAL SETTING PHYSICS

Tuesday, June 22, 2010 — 9:15 a.m. to 12:15 p.m., only

ANSWER BOOKLET

Student B. Gasser Male
 Sex: Female
 Teacher
 School Grade

Answer all questions in this examination. Record your answers in this booklet.

Part	Maximum Score	Student's Score
A	35	
B-1	15	
B-2	15	
C	20	
Total Written Test Score (Maximum Raw Score: 85)		<input type="text"/>
Final Score (from conversion chart)		<input type="text"/>
Raters' Initials:		
Rater 1		Rater 2

Part A

- | | | |
|----------|----------|----------|
| 1 | 13 | 25 |
| 2 | 14 | 26 |
| 3 | 15 | 27 |
| 4 | 16 | 28 |
| 5 | 17 | 29 |
| 6 | 18 | 30 |
| 7 | 19 | 31 |
| 8 | 20 | 32 |
| 9 | 21 | 33 |
| 10 | 22 | 34 |
| 11 | 23 | 35 |
| 12 | 24 | |

Part A Score

Part B-1

- | | |
|----------|----------|
| 36 | 44 |
| 37 | 45 |
| 38 | 46 |
| 39 | 47 |
| 40 | 48 |
| 41 | 49 |
| 42 | 50 |
| 43 | |

Part B-1 Score

The declaration below must be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature

Flip for Long Answer Solutions →

Part B-2

For Raters Only

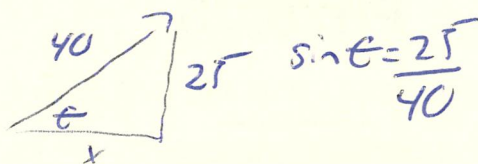
51 25 m/s

[+1]

51

52 38.7 °

[+1]



52

53

$$v_{ix} = v_i \cos \theta$$

$$= 40 \text{ m/s} \cos 38.7^\circ$$

$$= 31.2 \text{ m/s}$$

[+2]

Sub w/ans

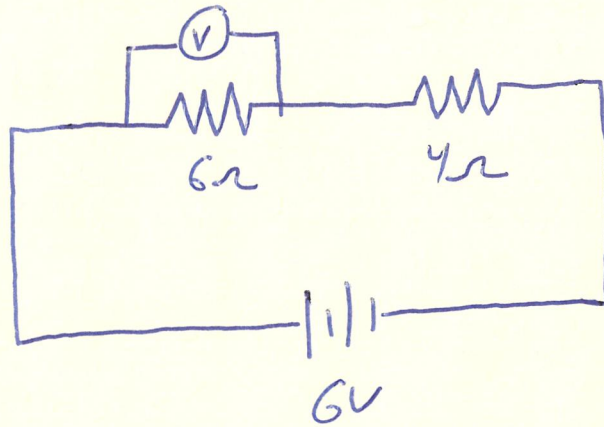
53

54 Energy consumed by friction [+1]

54

(+5)

55



[+2]

55

56

$$X = 250 \times 10^{-2} \text{ m}$$

$$PE_s = 1.25 \times 10^{-2} \text{ J}$$

$$K = ??$$

$$PE_s = \frac{1}{2} K x^2$$

$$.0125 \text{ J} = \frac{1}{2} (K) (.0250 \text{ m})^2$$

$$K = 40 \frac{\text{N}}{\text{m}}$$

[+2]
Sub w/units

No Square $K = 1 \frac{\text{N}}{\text{m}}$

56

57

.0625 Ω [+1]

$$L = 3.5 \text{ m}$$

$$A = 3.14 \times 10^{-6} \text{ m}^2$$

57

58

$$R = \frac{\rho L}{A}$$

$$.0625 \Omega = \frac{\rho (3.5 \text{ m})}{3.14 \times 10^{-6} \text{ m}^2}$$

[+2]
Sub w/units

$$I = 24 \text{ A}$$

$$V = 1.5 \text{ V}$$

$$R = \frac{V}{I} = \frac{1.5 \text{ V}}{24 \text{ A}}$$

$$\rho = 5.60 \times 10^{-8} \Omega \cdot \text{m}$$

[extra]
Sub/w/units

58

(+7)

For Raters
Only

59 6.28 m/s [+1]

$r = 1\text{m}$
 $\frac{10\text{ revs}}{10\text{ sec}}$ Period 1 sec.

59

60

$$F_c = \frac{mv^2}{r}$$

$$\frac{.028\text{ kg} (6.28\text{ m/s})^2}{1\text{ m}}$$

1 m

$$F_c = 1.10\text{ N}$$

Sub v/m/s
[+2]

$$v = \frac{d}{t} = \frac{2\pi r}{1\text{ s}} = \frac{2\pi (1\text{ m})}{1\text{ s}}$$

60

(+3)

Total Score for
Part B-2

Part C

For Raters Only

61-63

[+1]

Scale

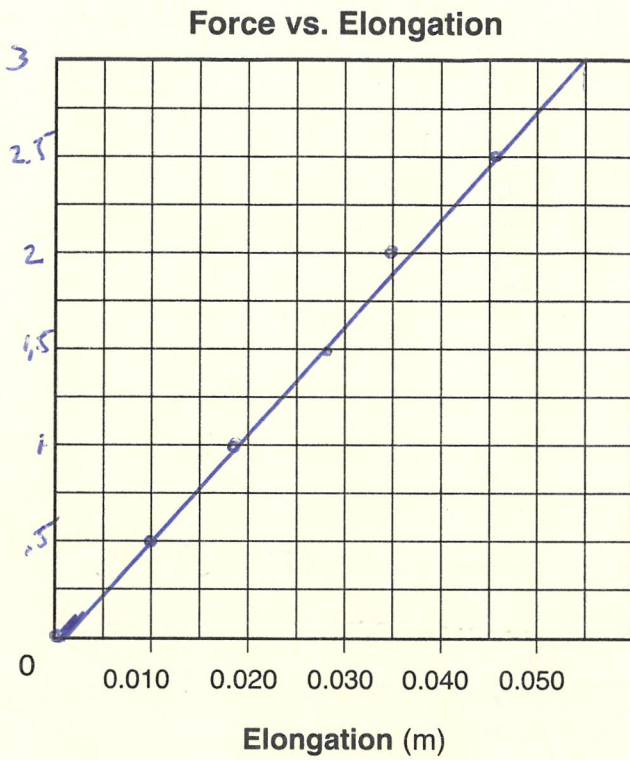
[+1]

Data Pts

[+1]

Line of Best Fit

Force (N)



61

62

63

64

$$F = kx$$

$$3N = k(0.055m)$$

$$k = 54 \frac{N}{m}$$

sub w/units

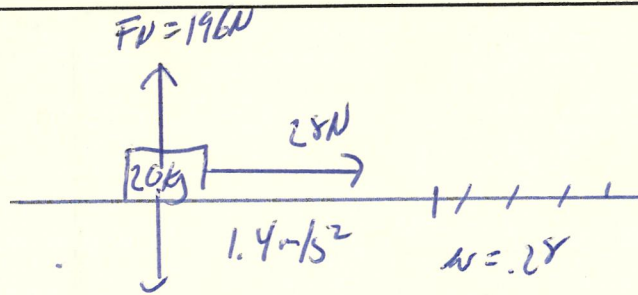
[+2]

64

+5

For Raters Only

65



Sub w/units
[+2]

$$F_w = mg$$

$$20\text{ kg} (9.8\text{ m/s}^2)$$

$$196\text{ N}$$

$$F = ma$$

$$= 20\text{ kg} \cdot 1.4\text{ m/s}^2$$

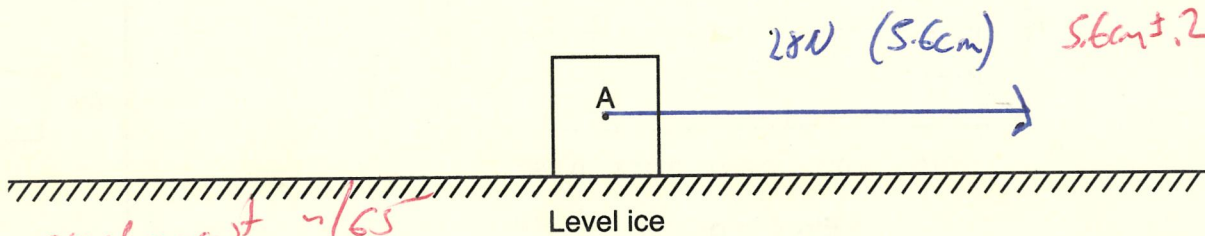
$$= 28\text{ N}$$

65

2

66

[+1]



$$\frac{1\text{ cm}}{5\text{ N}} = \frac{x}{28\text{ N}}$$

$$x = 56\text{ cm}$$

66

1

67

196 N or 200 N

N

[+1]

67

1

68

$$F_f = \mu F_N$$

$$= .28 (196\text{ N})$$

$$= 54.9\text{ N} \text{ or } 56\text{ N}$$

Sub w/units

[+2]

68

2

consistent w/ 67

+6

Most SC
Jared 9/2

69 50 [1]

70 $n_1 \sin \theta_1 = n_2 \sin \theta_2$
 $1.00 \sin 50^\circ = 1.7 \sin \theta$
 $\sin \theta = .51069$
 $\theta = 31^\circ$

[2] sub w/units

71 50 [1]

72 1.24 eV [+1]

$n=d \quad n=e$
 $E_{photon} = E_i - E_f$
 $-4.95 \text{ eV} - (-3.71 \text{ eV})$

73 1.98×10^{-19} J [+1]

74 $E = hf$
 $1.24 \text{ eV} \times \frac{1.6 \times 10^{-19} \text{ J}}{1 \text{ eV}} =$

$\frac{1.98 \times 10^{-19} \text{ J}}{6.63 \times 10^{-34}} = \frac{6.63 \times 10^{-34} \text{ J s } f}{6.63 \times 10^{-34}}$

$f = 2.98 \times 10^{14} \text{ Hz}$

sub w/units
[2]

75 Infrared [+1]

(+9)

+9

Total Score for Part C

