# Chapter 11 (Simple Harmonic Motion & Waves)

## Homework Check A (collected on 11A Mini-Test Day)
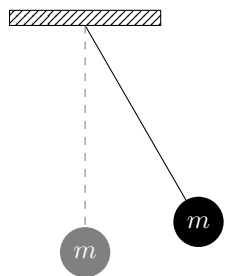


**Simple Harmonic Motion**   pp. 322-323 #1, 2, 5, 6, 8, 9, 11, 13, 14, 17, 18, 20 ...Complete by March 7

> STAMP HERE 5 POINTS

**Simple Pendulum**   pp. 324-325 #27, 29, 30, 64 ...............................Complete by March 11

> STAMP HERE 5 POINTS

**Conceptual Questions**   p. 320-321 #1, 4, 5, 6, 7 ...............................Complete by test day
>    THESE QUESTIONS SHOULD HAVE AT LEAST ONE FULL SENTENCE OF EXPLANATION

> STAMP HERE 5 POINTS

**Misconceptual Questions**   pp. 321-322 #1, 2, 3, 6, 7, 8, ........................Complete by test day
>    YOU DO NOT NEED TO GET THIS ONE STAMPED, BUT THESE ARE GOOD REVIEW FOR YOUR TEST!

**Bonus Problems!**   #19 .............................................Turn in separately on test day!

**Mini-Test will be on March 14 ($\pi$.2025)**

## Equations

$$F_S = -kx \qquad KE = \frac{1}{2}mv^2 \qquad PE_e = \frac{1}{2}kx^2 \qquad PE_g = mgy$$

$$f_s = \frac{1}{2\pi}\sqrt{\frac{k}{m}} \qquad f_p = \frac{1}{2\pi}\sqrt{\frac{g}{L}} \qquad \omega = 2\pi f \qquad x(t) = A\sin\left(\omega t + \phi\right)$$

# Answers

1. 0.84 m
2. 1.36 Hz
5. $k = 653$ N/m;
   $f = 2.63$ Hz;
   $A = 2.1$ cm
6. 0.14 N/m; 2.83 Hz
8. $x = 0.28\sin(36.0t)$;

$t = 0.04$ s & 0.13 s
9. 2.25 m & 3.5 m;
   0.25 Hz & 0.5 Hz;
   4 s & 2 s
11. $A/\sqrt{2}$
13. 0.23 sec
14. 0.650 m; 1.34 Hz;

Total = 17.2 J;
PE = 5.26 J;
KE = 11.92 J
17. $\sqrt{3}$
18. 59 N/m; 0.060 J
20. 5.5 cm; 0.59 m/s
27. 3.0 sec

29. 1.8 sec; 0.56 Hz
30. 1.4 sec
64. (a) 0.59 Hz;
    (b) 0.55 m/s;
    (c) 0.046 J

## Misconceptual Answers

1. E          2. A, C, D          3. C          6. E          7. C          8. A

# Homework Check B (collected on 11B Mini-Test Day)
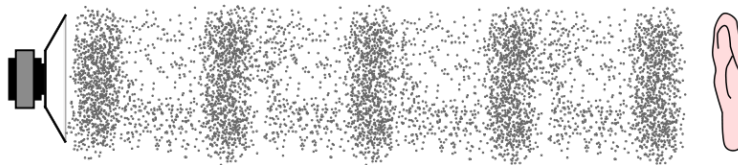


**Waves**   p. 324 #35, 36, 38 ................................................... Complete by Apr 8

Stamp
Here
2 Points

**Standing Waves, Resonance**   pp. 324-325 #49, 51, 52 ........................... Complete by Apr 10

Stamp
Here
3 Points

**Interference; Beats (From Ch 12)**   p. 355 #46, 47 .............................. Complete by Apr 11

Stamp
Here
2 Points

**Conceptual Questions**   ...................................................... Complete by test day
    Ch 11 (pp. 320-321) #13, 22
    Ch 12 (p. 353) #5, 11, 13, 14, 17

Stamp
Here
3 Points

**Misconceptual Questions**   .................................................. Complete by test day
    Ch 11 (pp. 321-322) #10, 11, 12, 15
    Ch 12 (p. 353) #12, 13
    You do not need to get this one stamped, but these are good review for your test!

**Bonus Problems!**   #39 ................................................ Turn in separately on test day!

**Mini-Test will be on Mon, Apr 14**

# Equations

$$v = f\lambda \qquad\qquad f_n = \frac{nv}{2L} = nf_1 \qquad\qquad f_{BEAT} = |f_1 - f_2|$$

# Answers

35. 2.3 m/s
36. 1.22 m
38. 190 m to 545 m; 2.8 m to 3.4 m
49. 440 Hz; 880 Hz; 132 Hz; 1760 Hz

51. 60 Hz; 120 Hz; 180 Hz
52. 0.102 m
46. 0.5 Hz
47. 18.5 kHz or 28.5 kHz

## Misconceptual Answers (Ch 11)

1. E
2. A, C, D
3. C

6. E
7. C
8. A

10. A
11. D
12. D

15. A

## Misconceptual Answers (Ch 12)

2. D

7. E

8. E

9. C