

AG

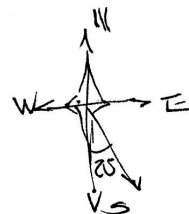
**Kinematics/Vectors Answer Key**

- 1. B
- 2. C
- 3. B
- 4. A
- 5. C
- 6. D
- 7. B
- 8. A
- 9. A
- 10. B
- 11. C
- 12. A
- 13. C
- 14. C
- 15. D
- 16. B
- 17. C
- 18. A
- 19. B
- 20. C
- 21. C
- 22. B

- 23. C
- 24. A
- 25. D
- 26. A
- 27. D
- 28. B
- 29. B
- 30. C
- 31. B
- 32. D
- 33. D
- 34. D
- 35. B
- 36. D
- 37. A
- 38. C
- 39. B
- 40. B
- 41. C
- 42. B

**Written**

- 1. a. 16.5 m/s; b.  $20.6^\circ$  E of S
- 2. a. 3.5 m/s; b. 33 s



HS.

### Projectile Answer Key

- |       |       |
|-------|-------|
| 1. A  | 23. C |
| 2. A  | 24. B |
| 3. B  | 25. C |
| 4. B  |       |
| 5. D  |       |
| 6. B  |       |
| 7. B  |       |
| 8. D  |       |
| 9. B  |       |
| 10. A |       |
| 11. D |       |
| 12. D |       |
| 13. A |       |
| 14. C |       |
| 15. B |       |
| 16. B |       |
| 17. A |       |
| 18. B |       |
| 19. D |       |
| 20. B |       |
| 21. A |       |
| 22. A |       |

### Written +20

- $d_x=61\text{m}; d_y=25\text{m}$
- $t=1.5\text{s}$
- horiz.comp.= $10.7\text{m/s}$ ; vert.comp.= $9.00\text{m/s}$ ;  $t=1.40\text{s}$ ;  $v=11.7\text{m/s}$
- vert.comp.= $-28.3\text{m/s}$ ;  $h=41$
- $v=21.0\text{m/s}$ ;  $\theta=13.2^\circ$  below hor.
- $h=54.5\text{m}$ ;  $d=68.5\text{m}$
- $t=1.49\text{s}$ ;  $d=24.6\text{m}$
- $t=2.91\text{s}$ ;  $v=33.6\text{ m/s}$ ;  $\theta=18^\circ$
- $d=3.18\text{m}$ ;  $v=16.2\text{m/s}$

61

### Dynamics 1 Answer Key

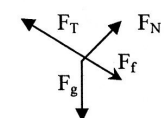
49

- 1. B
- 2. D
- 3. C
- 4. A
- 5. B
- 6. D
- 7. A
- 8. A
- 9. B
- 10. A
- 11. C
- 12. D
- 13. A
- 14. C
- 15. B
- 16. B
- 17. A
- 18. A
- 19. A
- 20. C
- 21. D
- 22. C

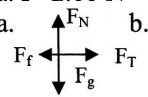
- 23. D
- 24. D
- 25. D
- 26. B
- 27. B
- 28. C
- 29. D
- 30. A
- 31. C
- 32. B
- 33. B
- 34. A
- 35. B
- 36. A
- 37. D
- 38. B
- 39. A
- 40. B
- 41. C
- 42. B
- 43. B
- 44. A
- 45. A
- 46. D
- 47. D
- 48. A

#### Written

13

1. a.  b.  $a=3.2\text{m/s}^2$

2. a.  $F=2.68\text{ N}$  b.  $F=14.7\text{ N}$  c.  $d=16.8\text{m}$

3. a.  b.  $F=6.9\text{ N}$

4. a.  b.  $a=7.29\text{ m/s}^2$

5.  $a=1.66\text{ m/s}^2$

6. a.  $F=50.3\text{ N}$  b.  $F=26.2\text{N}$  c.  $a=2.13\text{ m/s}^2$

(2)

4/0

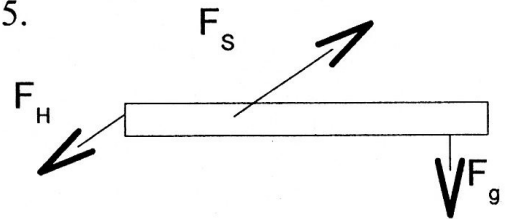
### Dynamics 1 Answer Key

1. D
2. D
3. B
4. C
5. A
6. C
7. C
8. D
9. B
10. B
11. C
12. B
13. B
14. C
15. C
16. A
17. A
18. C
19. A
20. C
21. C
22. C

23. A
24. B
25. D
26. A
27. B
28. C
29. A
30. B
31. D
32. D
33. C
34. A
35. B
36. C
37. C
38. A
39. B
40. ~~B~~

### Written

1.  $F=1.5 \times 10^2 \text{ N}$
2.  $F=2.7 \times 10^2 \text{ N}$
3.  $F=76 \text{ N}$
4.  $m=3.8 \text{ kg}$
- 5.



- $x=.49 \text{ m}$
6.  $x=.31 \text{ m}$

50

**Momentum Answer Key**

- 1. D
- 2. C
- 3. C
- 4. B
- 5. C
- 6. D
- 7. D
- 8. B
- 9. C
- 10. B
- 11. B
- 12. C
- 13. C
- 14. A
- 15. B
- 16. D
- 17. D
- 18. B
- 19. D
- 20. A
- 21. A
- 22. C

- 23. C
- 24. C
- 25. D
- 26. B
- 27. B
- 28. B
- 29. A
- 30. C
- 31. C
- 32. A
- 33. C
- 34. B
- 35. D
- 36. B
- 37. B
- 38. B
- 39. D
- 40. D
- 41. B
- 42. D
- 43. D
- 44. D
- 45. D
- 46. A
- 47. A
- 48. C
- 49. B

49

**Written**

- optional.*
- 1.  $v=16.7 \text{ m/s}$ ,  $40.3^\circ \text{ N of E}$
  - 2. a)  $3.8\text{e}5 \text{ kg}\cdot\text{m/s}$  b)  $2.3\text{e}4 \text{ N}\cdot\text{s}$
  - 3. a)  $v=5.5 \text{ m/s}$ , b)  $\theta=32^\circ$
  - 4. a)  $v=56 \text{ m/s}$  b)  $42^\circ \text{ N of E}$

7

v

163

## Energy Answer Key

- |      |      |
|------|------|
| 1.C  | 26.C |
| 2.B  | 27.C |
| 3.B  | 28.A |
| 4.B  | 29.B |
| 5.C  | 30.C |
| 6.B  | 31.A |
| 7.D  | 32.B |
| 8.B  | 33.C |
| 9.A  | 34.B |
| 10.A | 35.C |
| 11.C | 36.C |
| 12.B | 37.B |
| 13.A | 38.C |
| 14.D | 39.C |
| 15.D | 40.C |
| 16.C | 41.C |
| 17.B | 42.A |
| 18.A | 43.B |
| 19.B | 44.B |
| 20.C | 45.D |
| 21.D | 46.B |
| 22.A | 47.C |
| 23.D | 48.C |
| 24.B | 49.D |
| 25.D | 50.  |

**Written:**

1.  $v=1.94\text{m/s}$

2.  $h=1.15\text{e-}1\text{m}$

3.a)  $E=-1.16\text{e}4\text{J}$

b)  $F=1.93\text{e}2\text{N}$

4.

5.

6.

HA

H

53

# Circular Motion

## Answer Key

- |      |      |
|------|------|
| 1.B  | 26.C |
| 2.B  | 27.B |
| 3.A  | 28.C |
| 4.A  | 29.C |
| 5.A  | 30.A |
| 6.B  | 31.D |
| 7.B  | 32.B |
| 8.A  | 33.C |
| 9.C  | 34.D |
| 10.D | 35.D |
| 11.B | 36.C |
| 12.C | 37.A |
| 13.D | 38.D |
| 14.C | 39.C |
| 15.B | 40.C |
| 16.C | 41.A |
| 17.A | 42.C |
| 18.A | 43.D |
| 19.B | 44.A |
| 20.D | 45.B |
| 21.B | 46.C |
| 22.B | 47.B |
| 23.D | 48.A |
| 24.B | 49.B |
| 25.B | 50.  |

### Written:

1.  $W=3.5e9J$

2.  $R=4.3e7m$

3.a)  $v=7.51e3m/s$  ( $7.55e3m/s$ )

b)  $E=-1.18e12J$

4.

5.

6.

49.

4.

Estat:

SH

**Unit 6 Key**

- |      |      |
|------|------|
| 1.C  | 26.B |
| 2.B  | 27.D |
| 3.D  | 28.B |
| 4.D  | 29.A |
| 5.C  | 30.B |
| 6.B  | 31.B |
| 7.D  | 32.D |
| 8.C  | 33.A |
| 9.B  | 34.C |
| 10.C | 35.B |
| 11.A | 36.B |
| 12.C | 37.A |
| 13.C | 38.D |
| 14.D | 39.C |
| 15.D | 40.B |
| 16.D | 41.D |
| 17.C | 42.A |
| 18.B | 43.C |
| 19.C | 44.B |
| 20.C | 45.C |
| 21.D | 46.A |
| 22.B | 47.D |
| 23.B | 48.A |
| 24.C | 49.B |
| 25.C | 50.A |

**Written:**

- |   |    |
|---|----|
| 1.a) $r = 2.2e-14m$                       | 4. |
| b) conservation energy, need more kinetic |    |
| 2.a) $v = 1.16e7$ or $1.2e7m/s$           | 5. |
| b) $F = 7.2e-17N$                         |    |
| 3.  | 6. |

SO

H



Handwritten scribbles and the number 56.

Unit 7 Answer Key

Handwritten number 50.

- |      |      |
|------|------|
| 1.D  | 26.B |
| 2.C  | 27.B |
| 3.A  | 28.B |
| 4.A  | 29.C |
| 5.D  | 30.C |
| 6.A  | 31.A |
| 7.A  | 32.C |
| 8.B  | 33.D |
| 9.A  | 34.A |
| 10.A | 35.B |
| 11.C | 36.D |
| 12.B | 37.C |
| 13.C | 38.A |
| 14.D | 39.C |
| 15.B | 40.C |
| 16.B | 41.B |
| 17.A | 42.C |
| 18.D | 43.C |
| 19.C | 44.B |
| 20.D | 45.B |
| 21.D | 46.C |
| 22.A | 47.C |
| 23.B | 48.B |
| 24.D | 49.B |
| 25.C | 50.A |

Written:

- |  |    |
|--|----|
| 1. a) $I=4.4A$ b) $R=2.7\Omega$ c) $P=52.8W$ d) bulb | 4. |
| 2. a) $emf= 11.9 V, 12 V$ b) $P=.166W$               | 5. |
| 3.   | 6. |

Handwritten number 6.

EM

12

Answer Key

24

- |      |      |
|------|------|
| 1.A  | 26.D |
| 2.D  | 27.C |
| 3.A  | 28.C |
| 4.C  | 29.A |
| 5.C  | 30.A |
| 6.C  | 31.C |
| 7.D  | 32.B |
| 8.C  | 33.A |
| 9.C  | 34.D |
| 10.D | 35.A |
| 11.A | 36.D |
| 12.A | 37.B |
| 13.A | 38.C |
| 14.B | 39.B |
| 15.C | 40.B |
| 16.D | 41.D |
| 17.A | 42.C |
| 18.D | 43.B |
| 19.B | 44.A |
| 20.A | 45.C |
| 21.B | 46.D |
| 22.B | 47.C |
| 23.A | 48.D |
| 24.B | 49.B |
| 25.B | 50.  |

Written:

- |                                    |    |
|------------------------------------|----|
| 1. $I=21.8A$                       | 4. |
| 2. a) $B=3.41e-2T$ b) $r=6.73e-2m$ | 5. |
| 3.                                 | 6. |

13