

TEST 1

- (a) 9.46205×10^3 (b) 4.07×10^1
(c) 6.2×10^{-4}
- (a) 6 (b) 3 (c) 2
- (a) 9×10^{-10} (b) 4×10^{-19}
- (a) $0.0232 \frac{\text{km}}{\text{s}}$ (b) 50 m^3
- (a) 147.79 (b) 22.50 (c) 1.8×10^{-3}
(d) 5.373
- $10/158.20^\circ$
- $-7.0i - 5.9j$
- (a) 79 km (b) $7.0 \frac{\text{km}}{\text{hr}}$ (c) $63/17.22^\circ \text{ km}$
(d) $5.6/17.22^\circ \frac{\text{km}}{\text{hr}}$
- 8.62 kg
- $1.66 \times 10^{-3} \text{ m}^3$

TEST 2

- $30/94.19^\circ$
- (a) 102 km (b) $7.29 \frac{\text{km}}{\text{hr}}$
(c) $73.8/122.83^\circ \text{ km}$ (d) $5.27/122.83^\circ \frac{\text{km}}{\text{hr}}$
- 33.5 kg
- $60 \frac{\text{kg}}{\text{m}^3}$; Yes
- $T_1 = 662 \text{ N}$; $T_2 = 396 \text{ N}$
- (a) -191°C (b) 285°C
- $+0.89 \frac{\text{km}}{\text{s}^2}$
- $43 \frac{\text{km}}{\text{hr}}$
- 0.19
- Yes

TEST 3

- $10/216.31^\circ$
- $36i + 22j$
- $3.33 \times 10^{-3} \text{ m}^3$
- $T_1 = 389 \text{ N}$; $T_2 = 284 \text{ N}$
- (a) 76 N (b) 7.7 kg
- 5 N
- 0.2 N·m; Negative (counterclockwise) torque
- (a) $-2.5 \frac{\text{m}}{\text{s}^2}$ (b) $-10 \frac{\text{m}}{\text{s}^2}$ (c) 70 m
- $3/80^\circ \frac{\text{m}}{\text{s}^2}$
- (a) $1 \times 10^9 \text{ joules}$ (b) $4 \times 10^6 \text{ watts}$

TEST 4

- $T_1 = 120 \text{ N}$; $T_2 = 98 \text{ N}$
- 344 K
- 6.5 N·m; Negative (counterclockwise) torque
- $+3.3 \frac{\text{m}}{\text{s}^2}$
- (a) 2380 joules (b) 9.9 watts
- (a) $+0.83 \frac{\text{m}}{\text{s}}$ (b) $+0.55 \frac{\text{m}}{\text{s}}$
- 2200 N
- $F_A = 34.3 \text{ N}$; $F_B = 85.7 \text{ N}$
- (a) 166 N (b) 2.00 (c) 12.0 m (d) 1990 J
(e) 1990 J
- 17,900 J

TEST 5

- $1300/150^\circ \text{ N}$
- $34 \frac{\text{m}}{\text{s}^2}$
- 2140 N
- (a) 1640 N (b) 3.00
- (a) 17 N (b) 3.8
- 110 N
- $T_1 = 383 \text{ N}$; $T_2 = 220 \text{ N}$
- (a) $-3.2 \frac{\text{m}}{\text{s}^2}$ (b) 160 m
- 3.5 food calories
- 52,000 J

TEST 6

- 280 N
- (a) 31 N (b) 150 N
- (a) 3800 N (b) 2.000
- $T_1 = 266 \text{ N}$; $T_2 = 292 \text{ N}$
- (a) $-15 \frac{\text{m}}{\text{s}}$ (b) 620 m
- (a) 7.2 N·s to the right (b) $11 \frac{\text{m}}{\text{s}}$
- (a) $+46i \frac{\text{kg}\cdot\text{m}}{\text{s}}$ (b) $+620i \text{ N}$
- (a) $+24 \frac{\text{m}}{\text{s}^2}$ (b) 19 m
- 2.5 m
- (a) 6.39 s (b) $-62.6 \frac{\text{m}}{\text{s}}$

Physics

First Edition

Problem Set Answers

problem set 1

1. 6.52×10^{-5} 2. 4.7632×10^2 3. 4.75×10^8 4. 3.76×10^{-4} 5. 5.10×10^{-4}
6. 7.42×10^{-6} 7. 6 8. 5 9. 2 10. 6 11. 4 12. 3 13. 5.33×10^7
14. 2.06706×10^{-2} 15. 2×10^{-5} 16. 6×10^{-22} 17. 3×10^{-31} 18. 1×10^{-10}
19. 1×10^{-19} 20. 40

problem set 2

1. 3×10^{15} 2. 6×10^{25} 3. 20 4. 5×10^{38} 5. 3×10^{50} 6. $2.4 \times 10^{-2} \text{ mi}^2$
7. $9.29 \times 10^4 \text{ cm}^2$ 8. 35 yd 9. $2.7 \times 10^{-2} \frac{\text{km}}{\text{s}}$ 10. 3 m^3 11. 4.9804×10^6
12. 3.2065×10^7 13. 9.474302×10^5 14. 6.8492×10^1 15. 50.9 16. 6.7
17. 1.2×10^{-2} 18. 7.65 19. 41 20. 2.38

problem set 3

1. $F_x = -41$; $F_y = 11$ 2. $7/236.31^\circ$ 3. $14i + 8.0j$ 4. $19i + 2.0j$
5. $-35i + 3.9j$ 6. 6×10^{-3} 7. 1 8. 2×10^9 9. 6 10. $3.00 \times 10^{-14} \text{ mi}^3$
11. 750.0 cm^3 12. $200 \frac{\text{in.}}{\text{s}}$ 13. $0.178 \frac{\text{ft}}{\text{s}}$ 14. 9.357×10^7 15. 4.310×10^{-5}
16. 3 17. 6 18. 3.005×10^2 19. 9.42×10^{11} 20. 16.554

problem set 4

1. (a) 80 km (b) $20 \frac{\text{km}}{\text{hr}}$ (c) $63/108.43^\circ \text{ km}$ (d) $16/108.43^\circ \frac{\text{km}}{\text{hr}}$
2. (a) 13 km (b) $9.8/-66.04^\circ \text{ km}$ (c) $6.5 \frac{\text{km}}{\text{hr}}$ (d) $4.9/-66.04^\circ \frac{\text{km}}{\text{hr}}$ 3. 4530 N
4. 1000 kg 5. 10.7 kg 6. $1.04 \times 10^{-3} \text{ m}^3$ 7. $4.5 \times 10^{-2} \text{ kg}$ 8. $67 \frac{\text{kg}}{\text{m}^3}$; Yes
9. $F_x = -2.2$; $F_y = 21$ 10. $F_x = 77$; $F_y = -21$ 11. $24/124.99^\circ$ 12. $50/39.81^\circ$
13. $-5i + 20j$ 14. 30 15. 1×10^{20} 16. 7×10^6 17. $7.45 \frac{\text{km}}{\text{hr}}$ 18. $8700 \frac{\text{cm}}{\text{min}}$
19. $43,560 \text{ ft}^2$ 20. 3.035×10^{38} 21. 28,000 cm 22. 94 cm

problem set 5

1. $T_1 = 8.11$; $T_2 = 8.69$ 2. $T_1 = 117 \text{ N}$; $T_2 = 152 \text{ N}$ 3. $T_1 = 230 \text{ N}$; $T_2 = 281 \text{ N}$
4. (a) 90 km (b) $60/-131.19^\circ \text{ km}$ (c) $20 \frac{\text{km}}{\text{hr}}$ (d) $20/-131.19^\circ \frac{\text{km}}{\text{hr}}$
5. (a) 328 mm (b) $235/125.99^\circ \text{ mm}$ (c) $41.0 \frac{\text{mm}}{\text{min}}$ (d) $29.4/125.99^\circ \frac{\text{mm}}{\text{min}}$
6. (a) 816 kg (b) 8000 N 7. $1000 \frac{\text{kg}}{\text{m}^3}$; No 8. 1150 N 9. 62.4 kg 10. 150 kg
11. $D_x = -103$; $D_y = 72.3$ 12. $E_x = 23$; $E_y = 13$ 13. $14/147.65^\circ$ 14. $-59i - 60j$
15. $338/0.85^\circ$ 16. 1×10^{-2} 17. -9 18. 640 cm 19. $-3000 \frac{\text{m}}{\text{s}}$ 20. $3.3 \frac{\text{m}}{\text{s}}$

Physics

Testing Schedule

Test to be administered:	Covers material up through:	Give after teaching:
Test 1	Lesson 4	Lesson 8
Test 2	Lesson 8	Lesson 12
Test 3	Lesson 12	Lesson 16
Test 4	Lesson 16	Lesson 20
Test 5	Lesson 20	Lesson 24
Test 6	Lesson 24	Lesson 28
Test 7	Lesson 28	Lesson 32
Test 8	Lesson 32	Lesson 36
Test 9	Lesson 36	Lesson 40
Test 10	Lesson 40	Lesson 44
Test 11	Lesson 44	Lesson 48
Test 12	Lesson 48	Lesson 52
Test 13	Lesson 52	Lesson 56
Test 14	Lesson 56	Lesson 60
Test 15	Lesson 60	Lesson 64
Test 16	Lesson 64	Lesson 68
Test 17	Lesson 68	Lesson 72
Test 18	Lesson 72	Lesson 76
Test 19	Lesson 76	Lesson 80
Test 20	Lesson 80	Lesson 84
Test 21	Lesson 84	Lesson 88
Test 22	Lesson 88	Lesson 92
Test 23	Lesson 92	Lesson 96
Test 24	Lesson 96	Lesson 100
Test 25	Lesson 100	Lesson 100

- Write these numbers in scientific notation:
 - 9462.05
 - 407×10^{-1}
 - 0.00062
- State the number of significant digits in each of these measurements:
 - 2633.00 cm^3
 - 16.4 km
 - 0.00062 mi
- Simplify and write your answer to one significant digit:
 - $$\frac{(0.0086 \times 10^{-2})(1.2 \times 10^8)}{(2 \times 10^8)(60,000)}$$
 - $$\frac{(40 \times 10^{-10})(42 \times 10^{-4})}{(97,400)(425)}$$
- Use unit multipliers to convert:
 - 52.0 miles per hour to kilometers per second
 - 66 cubic yards to cubic meters
- The following numbers are measurements. Add, subtract, multiply, or divide, as indicated, and round each result to the proper number of significant digits.
 - $(101.65 + 46.137)$
 - $(23.12 - 0.6213)$
 - $\frac{52.8 \times 10^6}{3.0 \times 10^{10}}$
 - $(53.41 \times 10^{-1}) + (323.7 \times 10^{-4})$
- Write $-10i + 4j$ in polar form.
- Write the result of the following in rectangular form: $16/\underline{185}^\circ + 10.0/\underline{333}^\circ$
- Amadeus drove due north for 6.2 hours at 3.0 kilometers per hour. Then he drove $\overline{60}$ kilometers due east at 12 kilometers per hour.
 - How far did he travel?
 - What was his average speed?
 - What was his displacement?
 - What was his average velocity?
- The weight of an object is 84.6 newtons. What is the mass of the object?
- A block of gold weighs 314 newtons. If the density of gold is 19,300 kilograms per cubic meter, what is the volume of the block?