

APPENDIX

B

Homework Problem Locator

The tables below allow one to readily find homework problem numbers in the eighth edition (8e) of *Physics* relative to the seventh edition (7e). Problems in 8e that have been numerically altered or substantially rewritten from the 7e problem are indicated by a bracket (for example, {8}); and those that have been deleted from 8e are indicated by a minus sign (–). Problems that are new in 8e are also listed.

Chapter 1: Introduction and Mathematical Concepts

New Problems in 8e: 2, 5, 10, 14, 16, 22, 26, 28, 42, 48, 52, 55, and 56					
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	–	26	29	51	12
2	3	27	31	52	–
3	4	28	30	53	35
4	60	29	32	54	6
5	–	30	67	55	37
6	7	31	59	56	49
7	9	32	38	57	23
8	8	33	61	58	64
9	–	34	36	59	43
10	11	35	39	60	–
11	57	36	41	61	33
12	58	37	65	62	20
13	13	38	–	63	69
14	–	39	44	64	{1}
15	18	40	46	65	{15}
16	17	41	45	66	{34}
17	19	42	62	67	{40}
18	68	43	47	68	{24}
19	21	44	–	69	{50}
20	–	45	51		
21	25	46	66		
22	27	47	53		
23	63	48	54		
24	–	49	55		
25	–	50	56		

Chapter 2: Kinematics in One Dimension

New Problems in 8e:		4, 15, 16, 42, 44, 56, 62, 66, and 70			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	30	35	60	68
2	77	31	36	61	69
3	–	32	80	62	–
4	8	33	38	63	71
5	6	34	40	64	72
6	74	35	41	65	–
7	9	36	–	66	7
8	10	37	73	67	25
9	81	38	43	68	50
10	82	39	45	69	3
11	13	40	47	70	17
12	18	41	49	71	32
13	78	42	48	72	37
14	20	43	76	73	11
15	–	44	51	74	12
16	21	45	53	75	59
17	22	46	52	76	39
18	88	47	54	77	85
19	24	48	55	78	64
20	75	49	57	79	87
21	26	50	–	80	23
22	28	51	83	81	{2}
23	27	52	58	82	{5}
24	30	53	61	83	{14}
25	29	54	–	84	{19}
26	79	55	86	85	–
27	31	56	63	86	{46}
28	34	57	65	87	{33}
29	84	58	67	88	{60}
		59	–		

Chapter 3: Kinematics in Two Dimensions

New Problems in 8e:		4, 16, 22, 38, 48, 56, 58, 68, and 74			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	2	12	66	23	26
2	1	13	13	24	29
3	6	14	67	25	71
4	–	15	–	26	30
5	7	16	18	27	33
6	3	17	17	28	72
7	5	18	19	29	31
8	9	19	69	30	36
9	8	20	–	31	35
10	11	21	23	32	37
11	10	22	70	33	–

Chapter 3 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
34	40	50	—	66	32
35	39	51	57	67	73
36	42	52	58	68	41
37	75	53	59	69	—
38	44	54	60	70	61
39	77	55	76	71	43
40	45	56	{62}	72	64
41	47	57	63	73	51
42	46	58	78	74	{14}
43	49	59	65	75	{20}
44	—	60	12	76	{24}
45	79	61	15	77	{28}
46	50	62	—	78	{34}
47	53	63	21	79	{54}
48	52	64	25		
49	55	65	27		

Chapter 4: Forces and Newton's Laws of Motion

New Problems in 8e:		3, 10, 12, 16, 22, 36, 42, 50, 58, 68, 70, 74, 80, and 86			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	28	32	55	61
2	100	29	33	56	110
3	4	30	114	57	63
4	6	31	35	58	64
5	103	32	—	59	65
6	7	33	37	60	—
7	8	34	38	61	67
8	—	35	39	62	69
9	9	36	40	63	71
10	—	37	—	64	72
11	11	38	43	65	73
12	14	39	99	66	—
13	98	40	46	67	76
14	15	41	47	68	78
15	17	42	48	69	77
16	18	43	112	70	79
17	19	44	49	71	75
18	95	45	51	72	96
19	24	46	52	73	—
20	—	47	54	74	—
21	25	48	56	75	111
22	26	49	53	76	81
23	27	50	55	77	83
24	106	51	—	78	84
25	29	52	57	79	85
26	30	53	{59}	80	87
27	105	54	60	81	89

Chapter 4 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
82	90	95	5	108	116
83	91	96	104	109	93
84	92	97	31	110	118
85	117	98	28	111	119
86	94	99	107	112	–
87	21	100	108	113	{44}
88	–	101	109	114	{20}
89	97	102	62	115	{23}
90	13	103	82	116	–
91	45	104	–	117	{41}
92	2	105	113	118	{88}
93	101	106	34	119	{66}
94	102	107	115		

Chapter 5: Dynamics of Uniform Circular Motion

New Problems in 8e:				6, 22, 24, 38, 39, and 42	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	22	25	43	15
2	3	23	27	44	34
3	51	24	29	45	4
4	5	25	{28}	46	18
5	–	26	30	47	9
6	53	27	33	48	19
7	8	28	50	49	55
8	57	29	32	50	36
9	10	30	56	51	11
10	58	31	35	52	12
11	49	32	–	53	23
12	13	33	–	54	60
13	52	34	37	55	61
14	16	35	40	56	{7}
15	54	36	41	57	{2}
16	17	37	–	58	{14}
17	59	38	44	59	{20}
18	21	39	43	60	{31}
19	–	40	46	61	{45}
20	26	41	47		
21	–	42	48		

Chapter 6: Work and Energy

New Problems in 8e:				8, 10, 14, 16, 30, 36, 46, 52, 68, 75, and 87	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	76	4	6	7	8
2	3	5	79	8	81
3	4	6	7	9	11

Chapter 6 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
10	–	36	42	62	70
11	12	37	41	63	71
12	15	38	44	64	74
13	–	39	43	65	73
14	17	40	–	66	72
15	–	41	85	67	–
16	18	42	47	68	1
17	19	43	86	69	–
18	21	44	50	70	78
19	23	45	–	71	5
20	22	46	51	72	29
21	25	47	53	73	9
22	24	48	56	74	82
23	27	49	55	75	83
24	28	50	84	76	57
25	–	51	59	77	45
26	32	52	60	78	49
27	31	53	58	79	61
28	33	54	–	80	{2}
29	80	55	63	81	{20}
30	35	56	62	82	{38}
31	34	57	65	83	{54}
32	77	58	66	84	{64}
33	39	59	67	85	{13}
34	40	60	–	86	{26}
35	37	61	69	87	{48}

Chapter 7: Impulse and Momentum

New Problems in 8e:				4, 16, 28, 40, 48, 52, and 62	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	19	22	37	43
2	56	20	25	38	47
3	–	21	61	39	45
4	6	22	63	40	46
5	5	23	65	41	–
6	7	24	26	42	49
7	58	25	–	43	60
8	9	26	29	44	64
9	10	27	54	45	19
10	{11}	28	31	46	32
11	12	29	55	47	33
12	14	30	34	48	3
13	13	31	35	49	17
14	15	32	37	50	8
15	57	33	39	51	21
16	–	34	–	52	51
17	53	35	41	53	23
18	59	36	44	54	–

Chapter 7 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
55	24	59	{18}	63	{50}
56	—	60	{20}	64	{38}
57	27	61	{30}	65	{42}
58	{2}	62	{36}		

Chapter 8: Rotational Kinematics

New Problems in 8e:		4, 6, 22, 36, 48, 50, 60, and 76			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	27	33	53	62
2	3	28	35	54	61
3	5	29	37	55	63
4	—	30	—	56	64
5	—	31	69	57	65
6	9	32	38	58	20
7	10	33	40	59	67
8	11	34	71	60	47
9	12	35	42	61	39
10	13	36	43	62	70
11	15	37	44	63	41
12	17	38	45	64	72
13	16	39	46	65	28
14	75	40	48	66	74
15	19	41	68	67	—
16	66	42	—	68	18
17	21	43	{49}	69	{2}
18	23	44	51	70	{7}
19	—	45	52	71	{8}
20	25	46	54	72	{34}
21	26	47	53	73	{24}
22	27	48	56	74	{58}
23	29	49	55	75	{14}
24	30	50	57	76	{32}
25	73	51	—		
26	31	52	59		

Chapter 9: Rotational Dynamics

New Problems in 8e:		4, 7, 16, 28, 36, 40, 43, 50, 54, 62, 64, and 70			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	3	8	—	15	15
2	1	9	9	16	19
3	2	10	10	17	—
4	5	11	72	18	22
5	—	12	11	19	20
6	69	13	13	20	25
7	8	14	17	21	75

Chapter 9 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
22	74	43	49	64	12
23	27	44	48	65	39
24	76	45	51	66	24
25	—	46	52	67	23
26	30	47	53	68	26
27	79	48	78	69	65
28	33	49	55	70	57
29	71	50	—	71	29
30	34	51	58	72	47
31	32	52	60	73	{14}
32	37	53	59	74	{18}
33	—	54	—	75	{21}
34	38	55	63	76	{35}
35	73	56	—	77	{50}
36	41	57	77	78	{61}
37	—	58	66	79	{43}
38	42	59	68	80	{56}
39	45	60	67		
40	44	61	6		
41	46	62	31		
42	80	63	—		

Chapter 10: Simple Harmonic Motion and Elasticity

New Problems in 8e:		16, 22, 26, 34, 38, 44, 46, 52, 70, 72, and 82			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	24	—	47	—
2	79	25	{27}	48	54
3	7	26	32	49	80
4	4	27	29	50	55
5	5	28	30	51	56
6	3	29	31	52	58
7	9	30	28	53	59
8	—	31	33	54	78
9	10	32	35	55	60
10	12	33	—	56	61
11	11	34	39	57	63
12	13	35	37	58	64
13	14	36	88	59	65
14	74	37	41	60	66
15	—	38	42	61	86
16	17	39	—	62	71
17	18	40	43	63	69
18	19	41	76	64	—
19	19	42	45	65	—
20	23	43	48	66	73
21	83	44	49	67	15
22	—	45	50	68	75
23	91	46	51	69	—

Chapter 10 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
70	77	78	67	86	{25}
71	57	79	87	87	{82}
72	2	80	40	88	–
73	53	81	89	89	{47}
74	81	82	90	90	{62}
75	21	83	24	91	{36}
76	84	84	92	92	{92}
77	85	85	{6}		

Chapter 11: Fluids

New Problems in 8e:		2, 16, 18, 26, 36, 38, 46, 54, 70, 82, and 90			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	–	36	37	71	77
2	89	37	39	72	92
3	5	38	43	73	81
4	91	39	87	74	80
5	3	40	40	75	84
6	100	41	94	76	–
7	7	42	45	77	71
8	9	43	–	78	62
9	10	44	47	79	41
10	12	45	97	80	24
11	11	46	50	81	1
12	15	47	51	82	4
13	14	48	53	83	–
14	13	49	102	84	78
15	17	50	–	85	27
16	96	51	55	86	44
17	19	52	58	87	59
18	–	53	57	88	–
19	85	54	60	89	49
20	88	55	95	90	28
21	20	56	86	91	30
22	23	57	61	92	6
23	–	58	65	93	71
24	25	59	63	94	52
25	93	60	67	95	103
26	31	61	68	96	76
27	29	62	101	97	{8}
28	98	63	69	98	{22}
29	99	64	–	99	{42}
30	32	65	73	100	{56}
31	33	66	74	101	{64}
32	–	67	72	102	{66}
33	35	68	104	103	{48}
34	34	69	75	104	{83}
35	38	70	79		

Chapter 12: Temperature and Heat

New Problems in 8e: 8, 14, 16, 30, 46, 54, 56, 60, 62, 66, 76, and 78					
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	35	39	69	—
2	2	36	40	70	77
3	3	37	41	71	79
4	5	38	42	72	82
5	6	39	44	73	81
6	—	40	92	74	80
7	7	41	—	75	83
8	9	42	45	76	84
9	85	43	47	77	12
10	10	44	50	78	86
11	11	45	49	79	61
12	13	46	53	80	88
13	—	47	51	81	89
14	15	48	55	82	90
15	—	49	—	83	—
16	18	50	—	84	43
17	19	51	57	85	93
18	98	52	58	86	94
19	21	53	59	87	70
20	22	54	63	88	72
21	23	55	87	89	97
22	26	56	—	90	20
23	100	57	64	91	99
24	27	58	65	92	25
25	91	59	67	93	101
26	28	60	96	94	102
27	29	61	95	95	{4}
28	32	62	68	96	{17}
29	31	63	69	97	{34}
30	33	64	—	98	{48}
31	35	65	71	99	{60}
32	36	66	73	100	{78}
33	38	67	74	101	{24}
34	37	68	75	102	{52}

Chapter 13: The Transfer of Heat

New Problems in 8e: 4, 8, 12, 24, 26, and 34					
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	35	8	11	15	18
2	36	9	—	16	23
3	1	10	42	17	21
4	—	11	41	18	22
5	5	12	16	19	—
6	9	13	17	20	37
7	7	14	43	21	27

Chapter 13 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
22	38	30	30	38	{10}
23	39	31	29	39	–
24	31	32	40	40	{20}
25	33	33	14	41	–
26	44	34	13	42	{28}
27	3	35	19	43	{6}
28	2	36	–	44	{32}
29	25	37	{15}		

Chapter 14: The Ideal Gas Law and Kinetic Theory

New Problems in 8e:				10, 12, 22, 40, 44, 46, and 48	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	23	27	45	52
2	5	24	29	46	53
3	3	25	64	47	54
4	2	26	32	48	–
5	6	27	31	49	49
6	7	28	33	50	37
7	9	29	57	51	35
8	–	30	36	52	59
9	–	31	38	53	60
10	11	32	58	54	41
11	13	33	39	55	61
12	15	34	–	56	63
13	16	35	62	57	30
14	17	36	42	58	{4}
15	19	37	–	59	{18}
16	20	38	43	60	{14}
17	21	39	45	61	{34}
18	55	40	–	62	–
19	23	41	47	63	{8}
20	24	42	56	64	{26}
21	25	43	50		
22	28	44	51		

Chapter 15: Thermodynamics

New Problems in 8e:				2, 8, 32, 36, 44, 46, 54, 70, 80, and 96	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	3	8	11	15	17
2	–	9	9	16	16
3	1	10	13	17	19
4	6	11	91	18	23
5	5	12	14	19	83
6	7	13	15	20	20
7	–	14	18	21	24

Chapter 15 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
22	26	48	90	74	82
23	25	49	53	75	21
24	95	50	—	76	84
25	31	51	57	77	85
26	29	52	58	78	64
27	30	53	59	79	77
28	—	54	60	80	—
29	100	55	62	81	69
30	37	56	61	82	55
31	35	57	65	83	12
32	34	58	88	84	92
33	39	59	63	85	40
34	38	60	67	86	72
35	—	61	68	87	27
36	98	62	89	88	41
37	97	63	71	89	42
38	93	64	—	90	—
39	43	65	73	91	50
40	47	66	94	92	33
41	45	67	74	93	{4}
42	86	68	78	94	{10}
43	—	69	76	95	{22}
44	49	70	75	96	{48}
45	99	71	87	97	{56}
46	52	72	—	98	{66}
47	51	73	{79}	99	{28}
				100	{81}

Chapter 16: Waves and Sound

New Problems in 8e: 2, 20, 24, 38, 50, 58, 64, 68, 70, 78, 82, and 84					
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	19	19	37	41
2	3	20	22	38	42
3	—	21	23	39	43
4	4	22	—	40	47
5	97	23	25	41	45
6	—	24	26	42	46
7	98	25	27	43	44
8	8	26	29	44	48
9	9	27	28	45	49
10	104	28	30	46	—
11	11	29	100	47	51
12	12	30	{32}	48	96
13	93	31	90	49	53
14	14	32	34	50	55
15	16	33	35	51	—
16	17	34	—	52	56
17	15	35	37	53	57
18	—	36	{39}	54	59

Chapter 16 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
55	61	74	79	93	101
56	60	75	–	94	–
57	62	76	81	95	73
58	95	77	83	96	10
59	102	78	85	97	105
60	66	79	87	98	106
61	65	80	88	99	107
62	67	81	89	100	71
63	69	82	33	101	109
64	108	83	91	102	110
65	–	84	76	103	{18}
66	72	85	13	104	{40}
67	103	86	94	105	{36}
68	74	87	63	106	{54}
69	75	88	52	107	–
70	92	89	5	108	–
71	77	90	7	109	{21}
72	80	91	–	110	{86}
73	99	92	31		

Chapter 17: The Principle of Linear Superposition and Interference Phenomena

New Problems in 8e:				4, 26, 28, 48, and 56	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	58	22	–	43	50
2	2	23	29	44	52
3	–	24	–	45	27
4	1	25	53	46	42
5	55	26	32	47	5
6	8	27	59	48	–
7	7	28	34	49	47
8	61	29	33	50	3
9	11	30	60	51	31
10	15	31	37	52	36
11	13	32	40	53	9
12	12	33	63	54	62
13	16	34	43	55	39
14	18	35	41	56	{6}
15	17	36	54	57	{14}
16	21	37	45	58	{24}
17	19	38	46	59	{30}
18	20	39	57	60	{35}
19	22	40	–	61	{44}
20	23	41	51	62	{10}
21	25	42	49	63	{38}

Chapter 18: Electric Forces and Electric Fields

New Problems in 8e:		2, 8, 12, 38, 44, 52, and 56			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	—	28	33	55	29
2	4	29	35	56	16
3	1	30	36	57	65
4	3	31	37	58	31
5	5	32	67	59	—
6	7	33	39	60	68
7	—	34	41	61	15
8	9	35	42	62	70
9	11	36	74	63	71
10	—	37	73	64	22
11	13	38	46	65	—
12	18	39	45	66	43
13	69	40	49	67	25
14	64	41	47	68	28
15	17	42	—	69	{6}
16	19	43	53	70	{14}
17	21	44	50	71	{10}
18	72	45	51	72	{30}
19	75	46	54	73	{34}
20	23	47	55	74	{40}
21	24	48	—	75	{20}
22	26	49	57	76	{48}
23	27	50	58		
24	76	51	61		
25	63	52	60		
26	32	53	59		
27	66	54	62		

Chapter 19: Electric Potential Energy and the Electric Potential

New Problems in 8e:		10, 22, 24, 36, 38, 52, 56, and 60			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	61	15	17	29	31
2	1	16	19	30	35
3	2	17	—	31	—
4	58	18	21	32	39
5	5	19	23	33	37
6	7	20	26	34	65
7	8	21	25	35	40
8	—	22	—	36	44
9	11	23	27	37	57
10	12	24	66	38	42
11	15	25	28	39	45
12	14	26	68	40	63
13	59	27	33	41	47
14	62	28	32	42	48

Chapter 19 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
43	51	52	4	61	{16}
44	54	53	49	62	[20]
45	53	54	18	63	{6}
46	64	55	—	64	{34}
47	55	56	41	65	{46}
48	—	57	—	66	{50}
49	13	58	29	67	{9}
50	3	59	67	68	—
51	43	60	30		

Chapter 20: Electric Circuits

New Problems in 8e: 2, 16, 30, 36, 44, 56, 72, 78, 82, 86, 94, and 98					
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	—	37	38	73	—
2	1	38	40	74	112
3	110	39	41	75	79
4	4	40	42	76	83
5	5	41	—	77	85
6	7	42	45	78	84
7	6	43	43	79	—
8	8	44	46	80	88
9	9	45	47	81	87
10	11	46	122	82	89
11	12	47	49	83	115
12	14	48	50	84	91
13	15	49	51	85	92
14	113	50	54	86	—
15	—	51	57	87	97
16	17	52	53	88	93
17	18	53	55	89	95
18	20	54	—	90	99
19	121	55	59	91	109
20	124	56	60	92	100
21	22	57	61	93	123
22	108	58	64	94	102
23	24	59	63	95	103
24	25	60	66	96	105
25	27	61	65	97	104
26	28	62	67	98	106
27	31	63	117	99	107
28	29	64	70	100	23
29	—	65	71	101	—
30	32	66	—	102	3
31	34	67	73	103	111
32	33	68	75	104	81
33	35	69	74	105	13
34	37	70	76	106	114
35	—	71	77	107	90
36	39	72	—	108	116

Chapter 20 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
109	69	115	101	121	{80}
110	118	116	21	122	{96}
111	119	117	{10}	123	{58}
112	120	118	{26}	124	{68}
113	19	119	{52}		
114	48	120	{62}		

Chapter 21: Magnetic Forces and Magnetic Fields

New Problems in 8e:			4, 18, 24, 32, 44, 58, 64, and 66		
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	3	30	78	59	67
2	72	31	35	60	68
3	—	32	37	61	69
4	5	33	40	62	70
5	1	34	39	63	71
6	7	35	41	64	2
7	74	36	45	65	54
8	83	37	75	66	8
9	11	38	42	67	43
10	79	39	—	68	53
11	15	40	46	69	—
12	12	41	47	70	36
13	13	42	49	71	14
14	17	43	51	72	59
15	—	44	50	73	25
16	21	45	85	74	63
17	19	46	56	75	9
18	22	47	73	76	—
19	—	48	55	77	52
20	26	49	77	78	{6}
21	23	50	76	79	{16}
22	27	51	57	80	{20}
23	81	52	60	81	{34}
24	28	53	80	82	{48}
25	29	54	—	83	{10}
26	31	55	61	84	{62}
27	—	56	82	85	{38}
28	30	57	65		
29	33	58	84		

Chapter 22: Electromagnetic Induction

New Problems in 8e:			2, 12, 28, 32, 42, 48, 56, and 64		
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	4	6	7	9
2	3	5	5	8	8
3	—	6	7	9	10

Chapter 22 (continued)

<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
10	11	35	71	60	66
11	–	36	40	61	69
12	15	37	–	62	22
13	13	38	44	63	41
14	14	39	43	64	20
15	17	40	45	65	33
16	16	41	46	66	60
17	19	42	47	67	75
18	72	43	82	68	57
19	21	44	50	69	25
20	70	45	49	70	38
21	23	46	51	71	79
22	24	47	53	72	80
23	77	48	55	73	81
24	27	49	54	74	–
25	–	50	76	75	{4}
26	29	51	–	76	{18}
27	31	52	58	77	{34}
28	73	53	59	78	{26}
29	–	54	74	79	{52}
30	36	55	61	80	{62}
31	35	56	63	81	{30}
32	78	57	–	82	{68}
33	37	58	65		
34	39	59	67		

Chapter 23: Alternating Current Circuits

New Problems in 8e:				4, 10, 28, 30, and 52	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	43	20	46	39	23
2	5	21	25	40	11
3	3	22	50	41	13
4	2	23	27	42	22
5	–	24	–	43	39
6	7	25	29	44	26
7	8	26	31	45	–
8	–	27	–	46	{6}
9	9	28	35	47	{12}
10	48	29	33	48	{20}
11	47	30	37	49	{32}
12	14	31	34	50	{36}
13	15	32	38	51	{24}
14	16	33	51	52	{40}
15	19	34	42		
16	44	35	41		
17	45	36	18		
18	49	37	1		
19	21	38	17		

Chapter 24: Electromagnetic Waves

New Problems in 8e:				2, 8, 14, 18, 34, and 42	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	—	22	23	43	51
2	1	23	53	44	10
3	3	24	26	45	25
4	4	25	27	46	36
5	5	26	29	47	41
6	6	27	61	48	32
7	49	28	56	49	57
8	7	29	33	50	46
9	9	30	—	51	59
10	52	31	35	52	60
11	11	32	54	53	31
12	13	33	37	54	62
13	—	34	39	55	{12}
14	19	35	—	56	{24}
15	15	36	55	57	{28}
16	17	37	43	58	{30}
17	16	38	45	59	{40}
18	21	39	47	60	{44}
19	20	40	58	61	{38}
20	—	41	—	62	{48}
21	22	42	50		

Chapter 25: The Reflection of Light: Mirrors

New Problems in 8e:				10, 14, 34, 35, and 47	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	17	37	33	—
2	6	18	40	34	20
3	2	19	21	35	24
4	39	20	25	36	9
5	5	21	41	37	31
6	7	22	38	38	32
7	—	23	27	39	29
8	42	24	44	40	33
9	—	25	45	41	12
10	36	26	43	42	{8}
11	—	27	—	43	{4}
12	13	28	46	44	{22}
13	15	29	—	45	{26}
14	17	30	16	46	{11}
15	{18}	31	19	47	{30}
16	23	32	3		

Chapter 26: The Refraction of Light: Lenses and Optical Instruments

New Problems in 8e:		2, 18, 26, 38, 48, 50, 64, 72, 76, 80, 86, and 86			
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	–	43	47	85	92
2	1	44	–	86	93
3	5	45	{111}	87	95
4	3	46	51	88	94
5	4	47	52	89	97
6	6	48	112	90	–
7	7	49	55	91	99
8	8	50	{54}	92	98
9	9	51	117	93	100
10	11	52	58	94	101
11	12	53	119	95	103
12	110	54	60	96	123
13	113	55	61	97	105
14	15	56	122	98	106
15	17	57	63	99	31
16	–	58	–	100	108
17	19	59	65	101	–
18	20	60	67	102	14
19	21	61	66	103	49
20	23	62	70	104	53
21	24	63	69	105	13
22	25	64	73	106	114
23	27	65	71	107	115
24	28	66	–	108	46
25	29	67	75	109	57
26	–	68	74	110	118
27	107	69	109	111	59
28	33	70	77	112	88
29	34	71	79	113	121
30	35	72	78	114	62
31	37	73	–	115	104
32	36	74	125	116	124
33	–	75	82	117	81
34	40	76	84	118	{10}
35	39	77	83	119	{16}
36	42	78	85	120	{30}
37	41	79	87	121	{32}
38	43	80	–	122	{56}
39	44	81	120	123	{68}
40	116	82	89	124	{22}
41	45	83	91	125	{102}
42	–	84	90		

Chapter 27: Interference and the Wave Nature of Light

New Problems in 8e:				2, 14, 30, 37, and 52	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	—	23	28	45	65
2	55	24	63	46	5
3	3	25	—	47	1
4	56	26	31	48	12
5	57	27	32	49	24
6	60	28	59	50	7
7	9	29	33	51	35
8	10	30	34	52	8
9	11	31	—	53	62
10	—	32	38	54	29
11	13	33	39	55	51
12	54	34	41	56	—
13	15	35	40	57	53
14	17	36	42	58	21
15	19	37	45	59	{4}
16	64	38	44	60	{6}
17	20	39	47	61	{16}
18	66	40	48	62	{26}
19	25	41	43	63	{36}
20	23	42	49	64	{46}
21	58	43	61	65	{18}
22	27	44	—	66	{50}

Chapter 28: Special Relativity

New Problems in 8e:				6, 16, 18, 26, and 44	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	3	18	19	35	41
2	2	19	21	36	24
3	1	20	22	37	9
4	45	21	47	38	4
5	5	22	42	39	—
6	—	23	25	40	46
7	7	24	27	41	23
8	8	25	—	42	33
9	43	26	30	43	49
10	10	27	29	44	{12}
11	11	28	31	45	{20}
12	14	29	48	46	{28}
13	13	30	37	47	{36}
14	15	31	35	48	{32}
15	17	32	34	49	{40}
16	—	33	39		
17	—	34	38		

Chapter 29: Particles and Waves

New Problems in 8e:				10, 20, 24, 30, and 42	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	3	18	23	35	{38}
2	44	19	21	36	41
3	1	20	51	37	28
4	6	21	27	38	2
5	5	22	45	39	25
6	8	23	43	40	46
7	47	24	48	41	29
8	–	25	–	42	7
9	9	26	31	43	35
10	50	27	32	44	11
11	13	28	49	45	–
12	14	29	33	46	{4}
13	17	30	36	47	{12}
14	16	31	{40}	48	{18}
15	15	32	{39}	49	{26}
16	–	33	{37}	50	{34}
17	19	34	–	51	{22}

Chapter 30: The Nature of the Atom

New Problems in 8e:				2, 12, 22, 28, 36, 38, and 56	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	1	22	25	43	50
2	3	23	27	44	32
3	–	24	26	45	7
4	4	25	57	46	–
5	6	26	29	47	53
6	5	27	30	48	41
7	52	28	31	49	55
8	9	29	51	50	20
9	8	30	33	51	–
10	10	31	35	52	60
11	11	32	–	53	19
12	13	33	37	54	61
13	14	34	54	55	{12}
14	15	35	39	56	{24}
15	17	36	–	57	{34}
16	18	37	43	58	–
17	59	38	42	59	–
18	58	39	45	60	{16}
19	–	40	47	61	–
20	21	41	46		
21	23	42	49		

Chapter 31: Nuclear Physics and Radioactivity

New Problems in 8e:				10, 14, 24, 40, 50, and 62	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	54	22	26	43	—
2	1	23	57	44	49
3	3	24	61	45	51
4	5	25	27	46	52
5	6	26	28	47	13
6	8	27	31	48	2
7	7	28	30	49	39
8	—	29	34	50	20
9	9	30	32	51	25
10	12	31	33	52	46
11	—	32	35	53	59
12	11	33	55	54	43
13	53	34	38	55	29
14	15	35	37	56	—
15	17	36	—	57	{4}
16	18	37	41	58	{22}
17	21	38	60	59	{36}
18	56	39	45	60	{42}
19	19	40	58	61	{44}
20	23	41	47	62	{16}
21	—	42	48		

Chapter 32: Ionizing Radiation, Nuclear Energy, and Elementary Particles

New Problems in 8e:				2, 4, 16, 30, and 42	
<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>	<i>7e</i>	<i>8e</i>
1	—	19	21	37	47
2	1	20	23	38	{44}
3	46	21	49	39	43
4	3	22	25	40	45
5	5	23	52	41	40
6	7	24	26	42	—
7	9	25	28	43	12
8	50	26	—	44	24
9	11	27	29	45	35
10	48	28	33	46	10
11	13	29	31	47	27
12	15	30	34	48	53
13	—	31	51	49	54
14	17	32	37	50	{6}
15	19	33	38	51	{8}
16	18	34	39	52	{14}
17	20	35	41	53	{32}
18	22	36	—	54	{36}