

Section 9 Solution

1) Let x be the amount he invested at 6% account, then $x + 10000$ is the amount for the 8% account.

Investment	Principal p	Rate r	Time t	Interest I
6% Account	x	6%	1	$0.06x$
8% Account	$x + 10000$	8%	1	$0.08(x + 10000)$

Since the total interest from both investments is \$3390, then
 $0.06x + 0.08(x + 10000) = 3390$
 $0.06x + 0.08x + 800 = 3390$
 $0.14x = 2590$
 $x = 18500$

So he has invested \$18,500 at the 6% account.

2) Let x be the amount he invested at 5% account, then $x + 5000$ is the amount for the 9% account.

Investment	Principal p	Rate r	Time t	Interest I
5% Account	x	5%	1	$0.05x$
9% Account	$x + 5000$	9%	1	$0.09(x + 5000)$

Since the total interest from both investments is \$1430, then
 $0.05x + 0.09(x + 5000) = 1430$
 $0.05x + 0.09x + 450 = 1430$
 $0.14x = 980$
 $x = 7000$

So he has invested \$7000 at the 5% account.

3) Let x be the amount he invested at 9% account, then $x + 3500$ is the amount for the 10% account.

Investment	Principal p	Rate r	Time t	Interest I
9% Account	x	9%	1	$0.09x$
10% Account	$x + 3500$	10%	1	$0.10(x + 3500)$

Since the total interest from both investments is \$1490, then
 $0.09x + 0.10(x + 3500) = 1490$
 $0.09x + 0.10x + 350 = 1490$
 $0.19x = 1140$
 $x = 6000$

So he has invested \$6000 at the 9% account.

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4) Let x be the amount she invested at 9% account, then $17000 - x$ is the amount for the 11% account.

Investment	Principal p	Rate r	Time t	Interest I
9% Account	x	9%	1	$0.09x$
11% Account	$17000 - x$	11%	1	$0.11(17000 - x)$

Since the total interest from both investments is \$1670, then
 $0.09x + 0.11(17000 - x) = 1670$
 $0.09x + 1870 - 0.11x = 1670$
 $-.02x = -200$
 $x = 10000$

So she has invested \$10,000 at the 9% account and $\$17000 - \$10000 = \$7000$ at 11% account.

5) Let x be the amount he invested at 9% account, then $x + 1000$ is the amount for the 11% account.

Investment	Principal p	Rate r	Time t	Interest I
9% Account	x	9%	1	$0.09x$
11% Account	$x + 1000$	11%	1	$0.11(x + 1000)$

Since the total interest from both investments is \$1290, then
 $0.09x + 0.11(x + 1000) = 1290$
 $0.09x + 0.11x + 110 = 1290$
 $0.20x = 1180$
 $x = 5900$

So he has invested \$5900 at the 9% account and \$6900 at 11% account.

6) Let x be the amount he invested at 8% account, then $100000 - x$ is the amount for the 5% account.

Investment	Principal p	Rate r	Time t	Interest I
8% Account	x	8%	1	$0.08x$
5% Account	$100000 - x$	5%	1	$0.05(100000 - x)$

Since the total interest from both investments is \$6800, then
 $0.08x + 0.05(100000 - x) = 6800$
 $0.08x + 5000 - 0.05x = 6800$
 $0.03x = 1800$
 $x = 60000$

So he has invested \$60,000 at the 8% account.

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7) Let x be the amount he invested at 3% account, then $5000 - x$ is the amount for the 7% account.

Investment	Principal p	Rate r	Time t	Interest I
3% Account	x	3%	1	$0.03x$
7% Account	$5000 - x$	7%	1	$0.07(5000 - x)$

Since the total interest from both investments is \$1290, then
 $0.03x + 0.07(5000 - x) = 290$
 $0.03x + 350 - 0.07x = 290$
 $-0.04x = -60$
 $x = 1500$

So she has invested \$1500 at the 3% account.

8) Let x be the amount he invested at 11% account, then $75000 - x$ is the amount for the 6% account.

Investment	Principal p	Rate r	Time t	Interest I
11% Account	x	11%	1	$0.11x$
6% Account	$75000 - x$	6%	1	$0.06(75000 - x)$

Since the total interest from both investments is \$6750, then
 $0.11x + 0.06(75000 - x) = 6750$
 $0.11x + 4500 - 0.06x = 6750$
 $0.05x = 2250$
 $x = 45000$

So she has invested \$45,000 at the 11% account.

9) Let x be the amount he invested at 9% account, then $x + 250$ is the amount for the 10% account.

Investment	Principal p	Rate r	Time t	Interest I
9% Account	x	9%	1	$0.09x$
10% Account	$x + 250$	10%	1	$0.10(x + 250)$

Since the total interest from both investments is \$101, then
 $0.09x + 0.10(x + 250) = 101$
 $0.09x + 0.10x + 25 = 101$
 $0.19x = 76$
 $x = 400$

So she has invested \$400 at the 9% account, and $\$400 + \$250 = \$650$ at 10% account.

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10) Let x be the amount he invested at 9% account, then $15000 - x$ is the amount for the 12% account.

Investment	Principal p	Rate r	Time t	Interest I
9% Account	x	9%	1	$0.09x$
12% Account	$15000 - x$	12%	1	$0.12(15000 - x)$

Since the total interest from both investments is \$1620, then
 $0.09x + 0.12(15000 - x) = 1620$
 $0.09x + 1800 - 0.12x = 1620$
 $-0.03x = -180$
 $x = 6000$

So she has invested \$6000 at the 9% money market account.

11) Let x be the amount he invested at 3% account, then $2x + 1000$ is the amount for the 5% account.

Investment	Principal p	Rate r	Time t	Interest I
3% Account	x	3%	1	$0.03x$
5% Account	$2x + 1000$	5%	1	$0.05(2x + 1000)$

Since the total interest from both investments is \$245, then
 $0.03x + 0.05(2x + 1000) = 245$
 $0.03x + 0.10x + 50 = 245$
 $0.13x = 195$
 $x = 1500$

So he has invested \$1500 at the 3% account.

12) Let x be the amount he invested at 6% account, then $x + 600$ is the amount for the 11% account.

Investment	Principal p	Rate r	Time t	Interest I
6% Account	x	6%	1	$0.06x$
11% Account	$x + 600$	11%	1	$0.11(x + 600)$

Since the total interest from both investments is \$185, then
 $0.06x + 0.11(x + 600) = 185$
 $0.06x + 0.11x + 66 = 185$
 $0.17x = 119$
 $x = 700$

So he has invested \$700 at the 6% account, and $\$700 + \$600 = \$1300$ at 11% account.

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13) Let x be the amount he invested at 8.5% account, then $2x + 2000$ is the amount for the 10% account.

Investment	Principal p	Rate r	Time t	Interest I
8.5% Account	x	8.5%	1	$0.085x$
10% Account	$2x + 2000$	10%	1	$0.10(2x + 2000)$

Since the total interest from both investments is \$1625, then
 $0.085x + 0.10(2x + 2000) = 1625$
 $0.085x + 0.20x + 200 = 1625$
 $0.285x = 1425$
 $x = 5000$

So she has invested \$5000 at the 8.5% account.

14) Let x be the amount he invested at 7.5% account, then $2x - 1000$ is the amount for the 9.5% account.

Investment	Principal p	Rate r	Time t	Interest I
7.5% Account	x	7.5%	1	$0.075x$
9.5% Account	$2x - 1000$	9.5%	1	$0.095(2x - 1000)$

Since the total interest from both investments is \$2025, then
 $0.075x + 0.095(2x - 1000) = 2025$
 $0.075x + 0.19x - 95 = 2025$
 $0.265x = 2120$
 $x = 8000$

So she has invested $2(\$8000) - \$1000 = \$15,000$ at the 9.5% account.

15) Let x be the amount he invested at 6.5% account, then $12000 - x$ is the amount for the 4.5% account.

Investment	Principal p	Rate r	Time t	Interest I
6.5% Account	x	6.5%	1	$0.065x$
4.5% Account	$12000 - x$	4.5%	1	$0.045(12000 - x)$

Since the total interest from both investments is \$680, then
 $0.065x + 0.045(12000 - x) = 680$
 $0.065x + 540 - 0.045x = 680$
 $0.02x = 140$
 $x = 7000$

So they have invested \$7000 at the 6.5% account, and $\$12,000 - \$7000 = \$5000$ at 4.5% account.

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16) Let x be the amount he invested at 11.5% account, then $70000 - x$ is the amount for the 15.5% account.

Investment	Principal p	Rate r	Time t	Interest I
11.5% Account	x	11.5%	1	$0.115x$
15.5% Account	$70000 - x$	15.5%	1	$0.155(70000 - x)$

Since the total interest from both investments is \$10,050, then
 $0.115x + 0.155(70000 - x) = 10050$
 $0.115x + 10850 - 0.155x = 10050$
 $-0.04x = -800$
 $x = 20000$

So he has invested \$20,000 at the 11.5% account.

17) Let x be the amount he invested at 6% account, then $x + 500$ is the amount for the 8% account.

Investment	Principal p	Rate r	Time t	Interest I
6% Account	x	6%	1	$0.06x$
8% Account	$x + 500$	8%	1	$0.08(x + 500)$

Since the total interest from both investments is \$320, then
 $0.06x + 0.08(x + 500) = 320$
 $0.06x + 0.08x + 40 = 320$
 $0.14x = 280$
 $x = 2000$

So she has invested \$2000 at the 6% account and $\$2000 + \$500 = \$2500$ at the 8% account.

18) Let x be the amount he invested at 7% account, then $x + 6000$ is the amount for the 11% account.

Investment	Principal p	Rate r	Time t	Interest I
7% Account	x	7%	1	$0.07x$
11% Account	$x + 6000$	11%	1	$0.11(x + 6000)$

Since the total interest from both investments is \$1380, then
 $0.07x + 0.11(x + 6000) = 1380$
 $0.09x + 0.11x + 660 = 1380$
 $0.20x = 720$
 $x = 3600$

So she has invested \$3600 at the 7% account, and $\$3600 + \$6000 = \$9600$ at 11% account.

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19) Let x be the amount he invested at 8% account, then $80000 - x$ is the amount for the 10% account.

Investment	Principal p	Rate r	Time t	Interest I
8% Account	x	8%	1	$0.08x$
10% Account	$80000 - x$	10%	1	$0.10(80000 - x)$

Since the total interest from both investments is \$7300, then
 $0.08x + 0.10(80000 - x) = 7300$
 $0.08x + 8000 - 0.10x = 7300$
 $-0.02x = -700$
 $x = 35000$

So they have invested $\$80,000 - \$35,000 = \$45,000$ at the 10% account.

20) Let x be the amount he invested at 5% account, then $8000 - x$ is the amount for the 7% account.

Investment	Principal p	Rate r	Time t	Interest I
5% Account	x	5%	1	$0.05x$
7% Account	$8000 - x$	7%	1	$0.07(8000 - x)$

Since the total interest from both investments is \$510, then
 $0.05x + 0.07(8000 - x) = 510$
 $0.05x + 560 - 0.07x = 510$
 $-0.02x = -50$
 $x = 2500$

So he has invested $\$2500$ at the 5% account.
