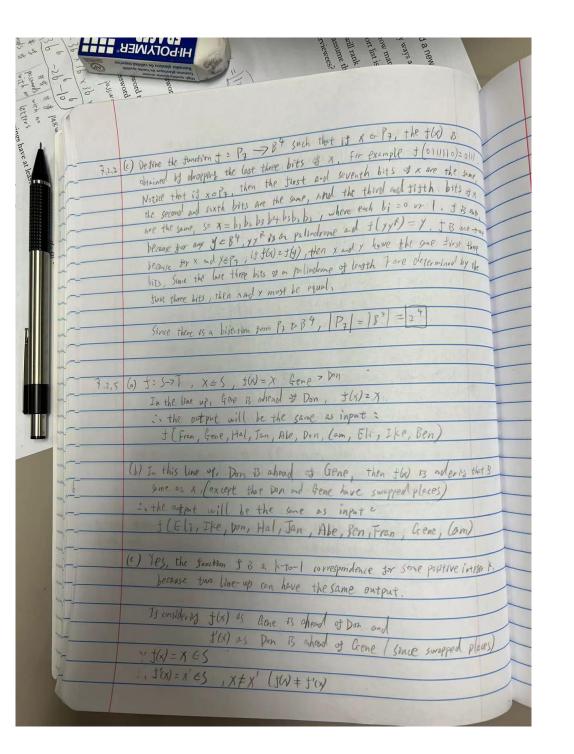
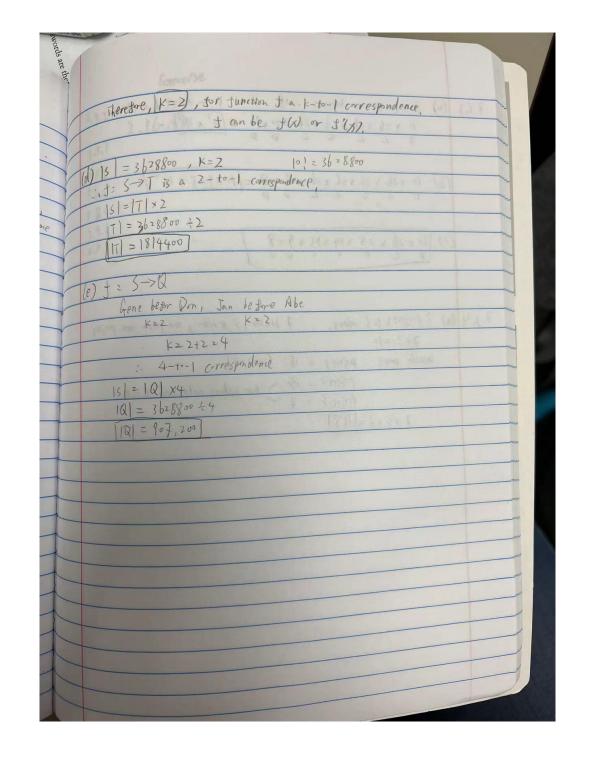
	HW 5
	(b) Prove that for any positive intesor n, 6 evenly divides 7"-1,
6.51	(b) Prove that for any positive intesor ", o cons
	Proof.
	By induction on n
	Base case: $n=1, 3^n-1=b, b \text{ evenly olivides } b.$
	The state of the s
	Assum that k is a positive integer and b evenly elivides 7"-1, and prove
	Assum that K is a positive integer and of the grant of prove
- 3	that b eventy divides 7"-1 since b evenly divides 7"-1, 7"-1=6m
	For some integer m, and therefore $7^{h} - 1 = 6m$.
	7" - = -
	$= (7^k \times 7') - 1$ $= (7^k \times 7) - 1 - b + b$
	= (1 x 1)-1-6+6
	$=((1^{k}\times 1)-7)+6$
	= 7(7*-1)-6
	= 7 x 6m-6 by the inductive hypothesis
	=6(7m-1)
	Therefore, 7 K+1-1 53 a multiple of 6, and 6 evenly divides 7 K+1-1.
	6.7
6.1	b) Prove that any amount of portage worth 24 cents or more can be made from 7-cent a
	The state of the s
	Proof.
	By induction on the amount of postage,
	have one:
	. 24 cents: use two 7-cent and two 5-cent stem?
	Com - with a life of the
	27 Cents = use your 5-cent and a 7 cent stamp,
	128 cents: Use your 7-cent stamp,
	July t-lent stamp,
	and a second

Inductive step 2 Assume that for k 3 28, it is possible to make i cents worth of postage using only I -cent and s-kent stomps for any in the range form 24 through K, Show that it is possible to make Kt I cents worth of postse using only 7-cent and 5-cent stamps. Since K228, then K-4224 therefore K-4 tells withe range from 24 through K, and by the inductive hypothesis, it is possible to make k-4 cents worth of stamps using only 7-cent and 5-cent stamps, by achling one 5-cent stamp, the amount of postage becomes (k-w)+5= k+1. There tre, it is possible to make k+1 cents worth of postage using only 7-cent and 5-cent stargs. Also, in a function of I to show K= 5a + 7b K+1 = 5a+7b+1 - 5a+7b+21-20 Therefore, 5(a-4)+7(b+3) is anothe type of 5a+7b, so k is approved by the expansion of 1411 can be made 5-cent and 7 cent stamps. (b) The loop below computes the sum of a lot of numbers, . Pro-condition = j=1, sum a, h is a positive integer, and a list of n numbers, Sum == Sum +a;+1 · Post-conditions sum Ex ak · Loop variant 2) 13 an integer, is n, and sum = Epon ak Step | Assume that j=1, sum zen, n 13 a positive integer, We will prove that is an integer, i = n, and sum= Ex=1 ak Since n B a positive integer, 0 < 1. Since j=1/jis a integer, Since i=1, then i < n, Finally since i = | and sum = a, sum = 5 is ax for any k.

bit sty Let i, and sum, be the values of i and sum before an iteration of the loop, let], and sum, be the values of and sum after the iterations of the loop, Assume that i < n, i, is an integer and sum, = \(\int_{k=1}^{\int} a_k\), We will prove that iz is an integer 12 5 n, and sum_ = E 12 1 a K. Since its incremented by I pi the loop, iz= i, th; +1, and since sum 13 Acremented by K in the loop, sum = sum, + Crk+1 Since in B an integer and 12211th, then 12 is also an integer, Also, since il B an integer and ji < n , then i, < n -1. Holding I to both stokes of the inequality gives jutien, which is equivalent to jush, Finally, Sim, = sum, + ax+1 = Ein ax + ax+1, Let ax+1 be the last value in the summation. So the summation is true. As the while loop showed before, sum == sum + aj+1, plus into termula, sum = Eil ak, ? ak+1 = aj+1, and is j+1, Ein ak+ak+1 = Ein ak+ai+1 = Ein ak jitt ak jitt jz, is Sumz = Ein ak After a timite number of iterations jen, The loop eventually terminates because after n iterations, the value of j v3 n, which means that the andition is n will be felse Step 4. Assume that the condition i < n B talse (which means that izh), is n, and sum = Exil ax, We will prove that sum = Exil ax. Since $j \le n$ and $j \ge n$, then j = N. Therefore $sum = \sum_{k=1}^{n} a_k = \sum_{k=1}^{n} a_k$,

Total 40 characters in these list, 2h losery 1 1	
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tter see the see that the see	1
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(c) [Pasth 7 : $(40-26) \times 40^{3-7} = 14 \times 40^{6}$	The same of the sa
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WSM / 2 (720) X = 14 x 40°)	The same of the sa
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	and the last
(3) 2 printes, 2 pases (sinst and last page) in color	THE A
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100 pases - 2 colored pages = 98 pages,	No.
260 printer can also print black-and-white	twa
498 × 4	No.
of the state of th	***
(c) 100 = 25 = 4 stocks of paper, each printer can print either one of jour stocks.	
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	(b) 10 x2b x2b x2b x2b x 3 x8 = 10 x 9 x8 x 26 4)	
	(b) 10 x26 x26 x26 x 1 x 0 - 11	
	7.49.49	
	(c) 0 x 2b x 25 x 24 x 23 x 9 x 8	
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1.3.4	(a) 3 projects to 3 coders. 7 juntor, 3 sentor, one person, one project	_
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