CSE 380 **Discrete Mathematics II**

About Sets and Their Representations

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Finite Sets

The Bitstring Representation

A	B	C	Subset
0	0	0	{} or ∅
0	0	1	{C}
0	1	0	{B}
0	1	1	{B, C}
1	0	0	{A}
1	0	1	{A, C}
1	1	0	{A, B}
1	1	1	{A, B, C}

Others?

Mapping Numbers to Numbers

What is the definition of f(n)?

n	f(n)
1	2
2	3
3	5
4	7
12	6
31	10
14	14
23	15
42	21
34	35
123	30
142	42
143	70
234	105
2143	210

What we really want

nset	f(nset)
{}	1
{1}	2
{2}	3
{3}	5
{1, 2}	6
{4}	7
{1, 3}	10
{1, 4}	14
{2, 3}	15
{2, 4}	21
{1, 2, 3}	30
{3, 4}	35
{1, 2, 4}	42
{1, 3, 4}	70
{2, 3, 4}	105
{1, 2, 3, 4}	210

What About Infinite Sets?

For example, the set of all primes.