

## Infinity Lesson – Day 1

As we saw in class, the key idea that we will need to use in working with infinite sets is that of **one-to-one correspondence**. If sets have a one-to-one correspondence they have the same cardinality, meaning they have the same number of elements. In order to establish a one-to-one correspondence between two sets you need to find rules that match them up in each direction. By doing this you are showing that each set has an element that matches exactly one element in the other set. For each of the following pairs of sets, determine whether or not a one-to-one correspondence exists.

Set pair #1:

$$\{ 11, 12, 13, 14, 15, 16 \}$$
$$\{ 22, 24, 26, 28, 30, 32 \}$$

Set pair #2:

$$\{ 11, 12, 13, 14, 15, 16, 17 \dots 101, 102, 103 \}$$
$$\{ 22, 24, 26, 28, 30, 32, 34 \dots 202, 204, 206 \}$$

Set pair #3:

$$\{ 11, 12, 13, 14, 15, 16, 17 \dots 101, 102, 103 \}$$
$$\{ 22, 24, 26, 28, 30, 32, 34 \dots 204, 206, 208 \}$$

Set pair #4:

{ 1, 2, 3, 4, 5, 6, 7, 8 }

{ 1, 3, 5, 7, 9, 11, 13, 15 }

Set pair #5:

{ 1, 2, 3, 4, 5, 6, 7, 8, 9 }

{ 1, 3, 5, 7, 9, 11, 13, 15 }

Set pair #6: (HINT: This was on sample test 3)

{ 1, 2, 3, 4, 5, 6, 7, 8 }

{ 2, 5, 10, 17, 26, 37, 50, 65 }

Set pair #7:

{ 2, 4, 6, 8, 10, 12, 14, . . . 198, 200 }

{ 5, 10, 15, 20, 25, 30, 35, . . . 495, 500 }

Set pair #8:

{ 3, 6, 9, 12, 15, . . . 300, 303 }

{ -2, 4, -6, 8, -10, . . . 200, -202 }