

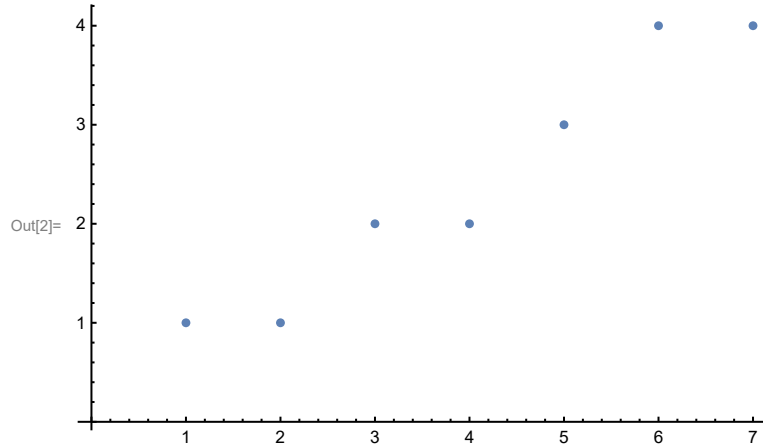
First Look at Lists

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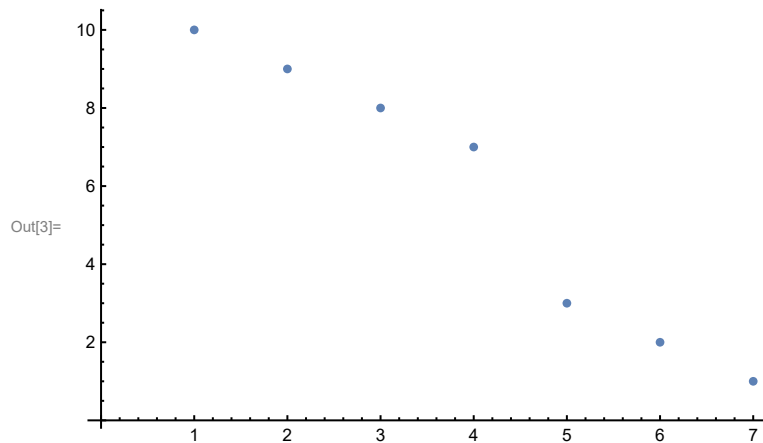
In[1]:= {1, 2, 3, 4, a, b, c}

Out[1]= {1, 2, 3, 4, a, b, c}

In[2]:= ListPlot[{1, 1, 2, 2, 3, 4, 4}]



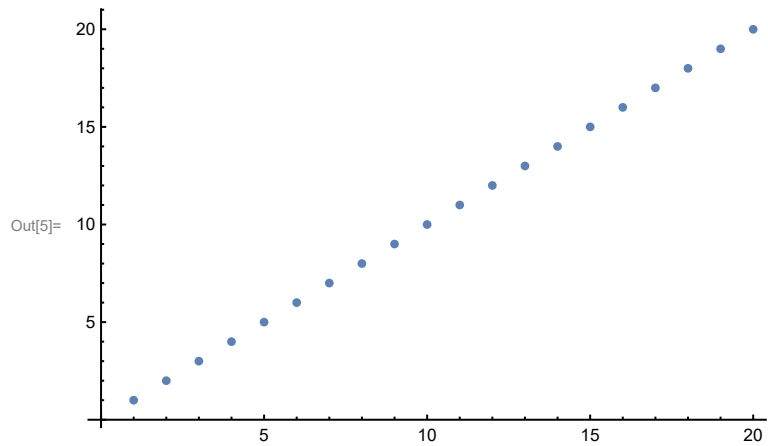
In[3]:= ListPlot[{10, 9, 8, 7, 3, 2, 1}]



```
In[4]:= Range[10]
```

```
Out[4]= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
```

```
In[5]:= ListPlot[Range[20]]
```



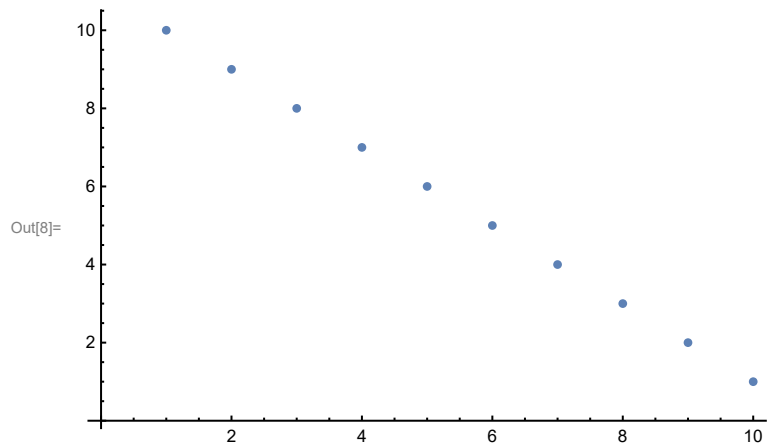
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In[6]:= Reverse[{1, 2, 3, 4}]
```

```
Out[6]= {4, 3, 2, 1}
```

```
In[7]:= Reverse[Range[10]]
```

```
Out[7]= {10, 9, 8, 7, 6, 5, 4, 3, 2, 1}
```

In[8]:= **ListPlot**[Reverse[Range[10]]]



In[9]:= **Join**[{1, 2, 3}, {4, 5}, {6, 7}]

Out[9]= {1, 2, 3, 4, 5, 6, 7}

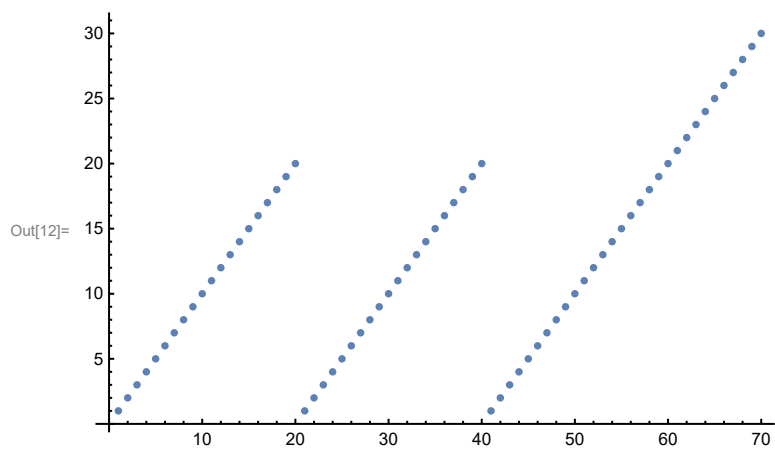
In[10]:= **Join**[{1, 2, 3}, {1, 2, 3, 4, 5}]

Out[10]= {1, 2, 3, 1, 2, 3, 4, 5}

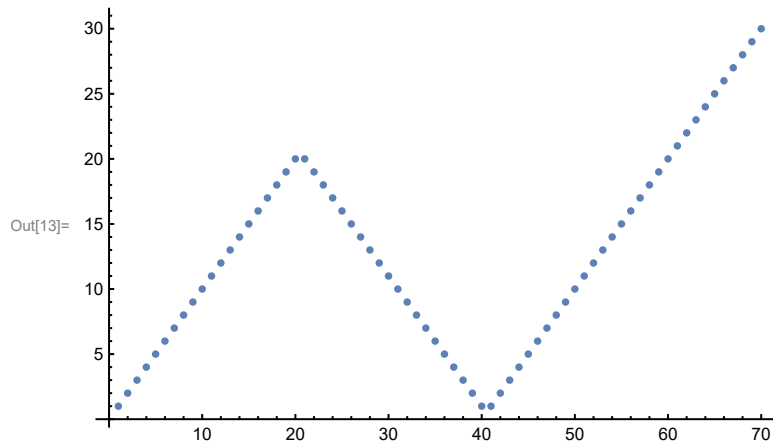
In[11]:= **Join**[Range[3], Range[5]]

Out[11]= {1, 2, 3, 1, 2, 3, 4, 5}

In[12]:= **ListPlot**[Join[Range[20], Range[20], Range[30]]]



```
In[13]:= ListPlot[Join[Range[20], Reverse[Range[20]], Range[30]]]
```



Exercises:

1. Use Range to create the list {1, 2, 3, 4}

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In[14]:= Range[4]
```

```
Out[14]= {1, 2, 3, 4}
```

2. Make a list of numbers up to 100

```
In[15]:= Range[100]
```

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

3. Use Range and Reverse to create {4, 3, 2, 1}

```
In[16]:= Reverse[Range[4]]
```

```
Out[16]= {4, 3, 2, 1}
```

4. Make a list of numbers from 1 to 50 in reverse order

In[17]:= **Reverse**[**Range**[50]]

Out[17]:= {50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1}

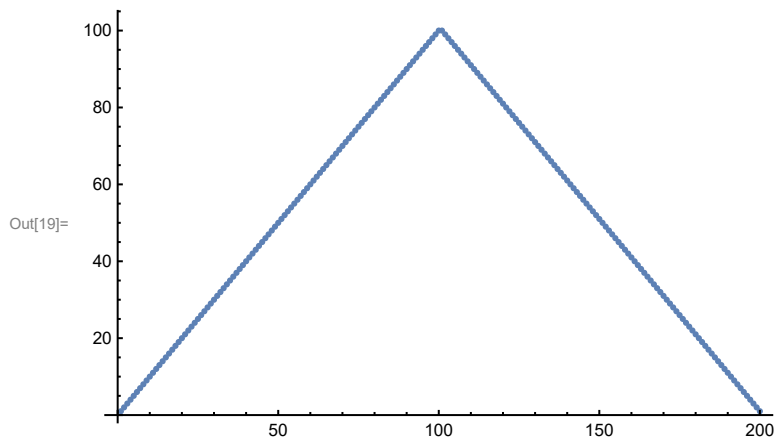
5. Use Range, Reverse and Join to create {1, 2, 3, 4, 4, 3, 2, 1}

In[18]:= **Join**[**Range**[4], **Reverse**[**Range**[4]]]

Out[18]:= {1, 2, 3, 4, 4, 3, 2, 1}

6. Plot a list that counts up from 1 to 100, then down to 1

In[19]:= **ListPlot**[**Join**[**Range**[100], **Reverse**[**Range**[100]]]]



7. Use Range and RandomInteger to make a list with a random length up to 10

In[20]:= **Range**[**RandomInteger**[10]]

Out[20]:= {1, 2, 3}

8. Find a simpler form for Reverse[Reverse[Range[10]]]

In[21]:= **Range**[10]

Out[21]:= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

9. Find a simpler form for Join[{1, 2}, Join[{3, 4}, {5}]]

In[22]:= **Range**[5]

Out[22]:= {1, 2, 3, 4, 5}

10. Find a simpler form for Join[Range[10], Join[Range[10], Range[5]]]

In[23]:= **Join**[**Range**[10], **Range**[10], **Range**[5]]

Out[23]= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 1, 2, 3, 4, 5}

11. Find a simpler form for **Reverse**[**Join**[**Range**[20], **Reverse**[**Range**[20]]]

In[24]:= **Join**[**Range**[20], **Reverse**[**Range**[20]]]

Out[24]= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1}

12. Compute the reverse of the reverse of {1, 2, 3, 4}.

In[25]:= **Reverse**[**Reverse**[{1, 2, 3, 4}]]

Out[25]= {1, 2, 3, 4}

13. Use **Range**, **Reverse** and **Join** to create the list {1, 2, 3, 4, 5, 4, 3, 2, 1}

In[26]:= **Join**[**Range**[5], **Reverse**[**Range**[4]]]

Out[26]= {1, 2, 3, 4, 5, 4, 3, 2, 1}

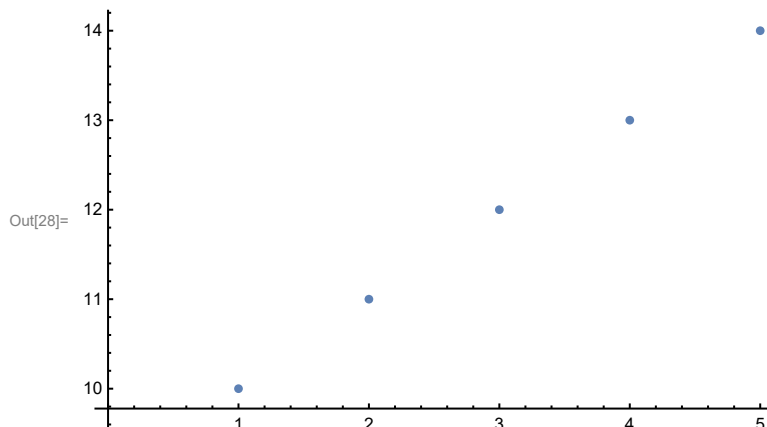
14. Use **Range**, **Reverse** and **Join** to create {3, 2, 1, 4, 3, 2, 1, 5, 4, 3, 2, 1}

In[27]:= **Join**[**Reverse**[**Range**[3]], **Reverse**[**Range**[4]], **Reverse**[**Range**[5]]]

Out[27]= {3, 2, 1, 4, 3, 2, 1, 5, 4, 3, 2, 1}

15. Plot the list of numbers {10, 11, 12, 13, 14}

In[28]:= **ListPlot**[{10, 11, 12, 13, 14}]



16. Find a simpler form for **Join**[**Join**[**Range**[10], **Reverse**[**Range**[10]]], **Range**[10]]

```
In[29]:= Join[Range[10], Reverse[Range[10]], Range[10]]
```

```
Out[29]= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
```