Brian — 2025-01-17 — PS 1— Solution

Exercises from *EIWL3* Section 1

```
In[1]:=  1 + 2 + 3
Out[1]=  6

In[2]:=  1 + 2 + 3 + 4 + 5
Out[2]=  15

In[3]:=  1 × 2 × 3 × 4 × 5
Out[3]=  120

In[4]:=  5 ^ 2
Out[4]=  25

In[5]:=  3 ^ 4
Out[5]=  81

In[6]:=  10 ^ 12
Out[6]=  1 000 000 000 000

In[7]:=  3 ^ (7 × 8)
Out[7]=  523 347 633 027 360 537 213 511 521
```

Comment: The previous exercise was Ex. 1.7, and to solve it, I had to use parentheses, which had not been discussed. From this, we are put on warning that Wolfram will sometimes expect us to use things that he hasn’t explicitly introduced. The next exercise is Ex. 1.8, and in that one, he explicitly introduces parentheses. The point is that you sometimes have to look a little ahead to do the exercises.

```
In[8]:=  (4 - 2) (3 + 4)
Out[8]=  14

In[9]:=  29 000 × 73
Out[9]=  2 117 000
```

Exercises from EIWL3 Section 2

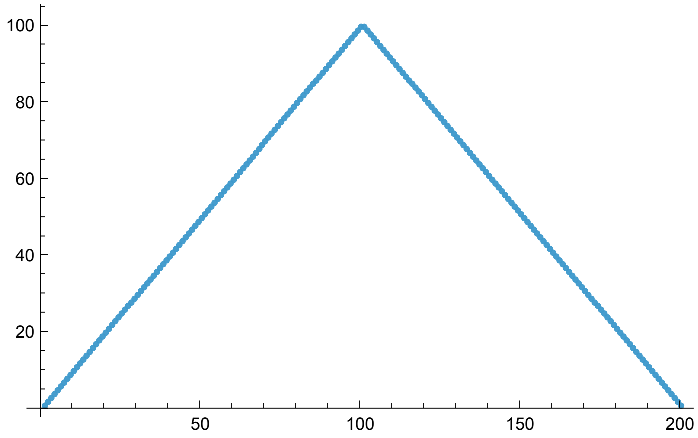
```
In[10]:=  Plus[7, 6, 5]
Out[10]=
          18
```

```
In[11]:= Times[2, Plus[3, 4]]
Out[11]=
         14

In[12]:= Max[Times[6, 8], Times[5, 9]]
Out[12]=
         48

In[13]:= RandomInteger[1000]
Out[13]=
         477

In[14]:= Plus[10, RandomInteger[10]]
Out[14]=
         17
```

Exercises from *EIWL3* Section 3

```
In[15]:= Range[4]
Out[15]=
         {1, 2, 3, 4}

In[16]:= Range[100]
Out[16]=
         {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}

In[17]:= Reverse[Range[4]]
Out[17]=
         {4, 3, 2, 1}

In[18]:= Reverse[Range[50]]
Out[18]=
         {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}

In[19]:= Join[Range[4], Reverse[Range[4]]]
Out[19]=
         {1, 2, 3, 4, 4, 3, 2, 1}
```

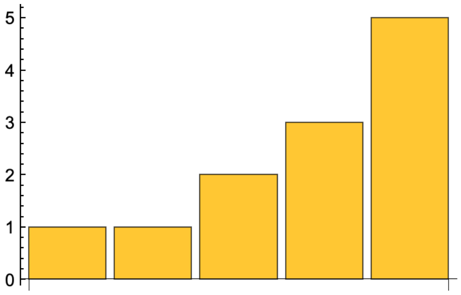
```
In[20]:= ListPlot[Join[Range[100], Reverse[Range[100]]]]
Out[20]=
```



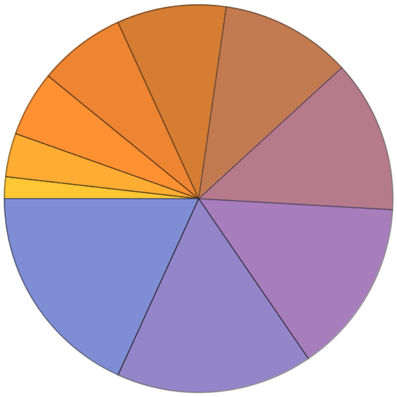
```
In[21]:= Range[RandomInteger[10]]
Out[21]=
         {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

In[22]:= Range[10] (* Is a simpler expression for Reverse[Reverse[Range[10]]] *)
Out[22]=
         {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
```

Exercises from *EIWL3* Section 4

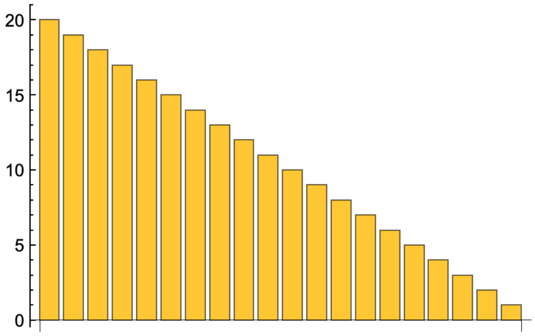
```
In[23]:= BarChart[{1, 1, 2, 3, 5}]
Out[23]=
```



```
In[24]:= PieChart[Range[10]]
Out[24]=
```

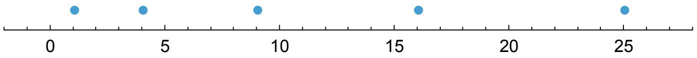


```
In[25]:= BarChart[Reverse[Range[20]]]
Out[25]=
```



```
In[26]:= Column[Range[5]]
Out[26]=
         1
         2
         3
         4
         5
```

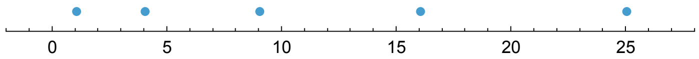
```
In[27]:= NumberLinePlot[Range[5]^2] (* You might be surprised that in my
          solution I "squared" a list.The key is that exponentiation is Listable,
         meaning that it will exponentiate each element of a list when given a list. *)
Out[27]=
```



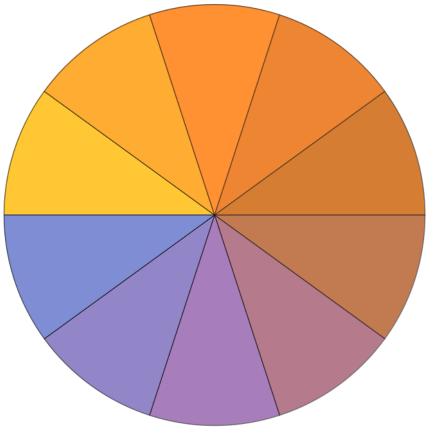
```
In[28]:= Range[10]^2
Out[28]=
         {1, 4, 9, 16, 25, 36, 49, 64, 81, 100}
```

Another way to make the same number line plot is:

```
In[29]:= NumberLinePlot[Power[Range[5], 2]]
Out[29]=
```



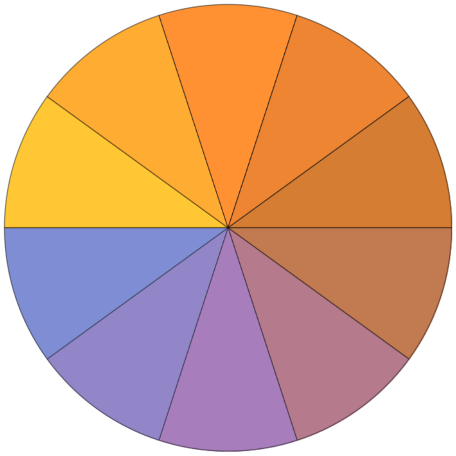
```
In[30]:= PieChart[{1, 1, 1, 1, 1, 1, 1, 1, 1, 1}]
Out[30]=
```



Comment: This is another one of those problems where Wolfram is thinking you might look ahead a little to come up with the solution. Specifically, in Section 6, he is going to introduce the **`Table`** function, and the easiest application of **`Table`** is to make repeated numbers:

```
In[31]:= Table[1, 10]
Out[31]=
         {1, 1, 1, 1, 1, 1, 1, 1, 1, 1}
```

```
In[32]:= PieChart[Table[1, 10]]
Out[32]=
```



```
In[33]:= Column[{
           PieChart[Table[1, 1]],
           PieChart[Table[1, 2]],
           PieChart[Table[1, 3]]
          }]
Out[33]=
```