Brian — PS 2 — 2025-01-21 — Solution

EIWL3 Sections 5-8

Exercises from *EIWL3* Section 5

```
(* 5.1 *) Reverse[Range[10]^2]
(* I could square and reverse or reverse and square. *)
```

Out[ ]=

```
{100, 81, 64, 49, 36, 25, 16, 9, 4, 1}
```
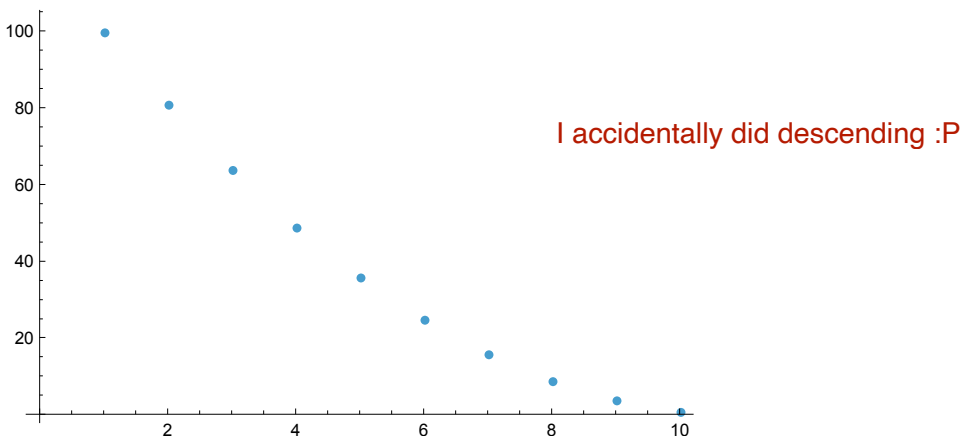
```
(* 5.2 *) Total[Reverse[Range[3]]^2]
```

Out[11]=

```
14
```

```
(* 5.3 *) ListPlot[Reverse[Range[10]]^2 ]
```

Out[ ]=

I accidentally did descending :P

```
(* 5.4 *) Sort[Join[Range[4], Range[4]]]
```

Out[ ]=

```
{1, 1, 2, 2, 3, 3, 4, 4}
```

```
(* 5.5 *) Range[10, 20, 1] (* Range[10, 20, 1] is simpler
 and clearer but it isn't what Wolfram requested us to do. *)
```

Out[ ]=

```
{10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20}
```

```
Range[11] + 9 (* This way uses Plus as Wolfram requested *)

(* 5.6 *) Sort[Join[Range[5]^2, Range[5]^3]]
```

Out[ ]=

```
{1, 1, 4, 8, 9, 16, 25, 27, 64, 125}
```

```
(* 5.7 *) Length[IntegerDigits[2^128]]
```
Out[●]=
```
39
```

```
(* 5.8 *) First[IntegerDigits[2^32]]
```
Out[●]=
```
4
```

```
(* 5.9 *) Take[IntegerDigits[2^100], 10]
```
Out[●]=
```
{1, 2, 6, 7, 6, 5, 0, 6, 0, 0}
```

```
(* 5.10 *) Max[IntegerDigits[2^20]]
```
Out[●]=
```
8
```

```
(* 5.11 *) Count[IntegerDigits[2^1000], 0]
```
Out[●]=
```
28
```

```
(* 5.12 *) Sort[IntegerDigits[2^20]][[0]]
(* I am using a special notation for Part *)
```
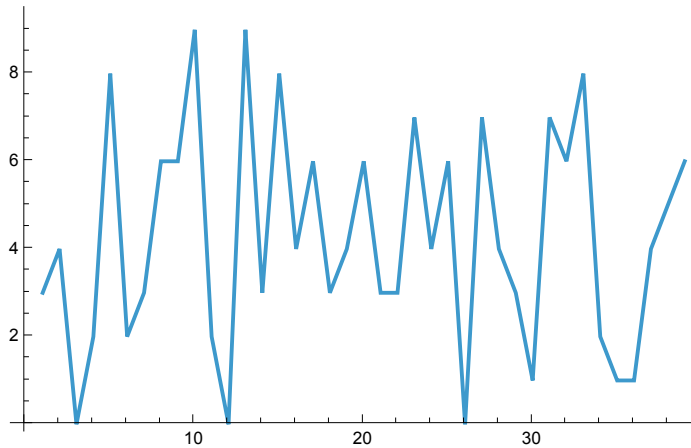Out[●]=
```
List
```

```
(* 5.13 *) ListLinePlot[IntegerDigits[2^128]]
```
Out[●]=


```
(* 5.14 *) Drop[Take[Range[100], 20], 10]
```
Out[●]=
```
{11, 12, 13, 14, 15, 16, 17, 18, 19, 20}
```

Exercises from *EIWL3* Section 6

(* 6.1 *) Table[1000, 5]
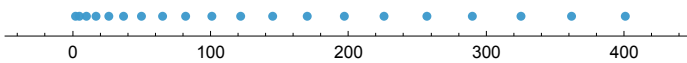
Out[ ]=

{1000, 1000, 1000, 1000, 1000}

(* 6.2 *) Table[n^3, {n, 10, 20}]

Out[ ]=

{1000, 1331, 1728, 2197, 2744, 3375, 4096, 4913, 5832, 6859, 8000}

In[15]:= **(* 6.3 *) NumberLinePlot[Table[n^2, {n, 20}]]**

Out[15]=

(* 6.4 *) Table[i, {i, 2, 20, 2}] (* I assume he wants to use Table with steps, but there are lots of other ways of doing this. E.g., *)

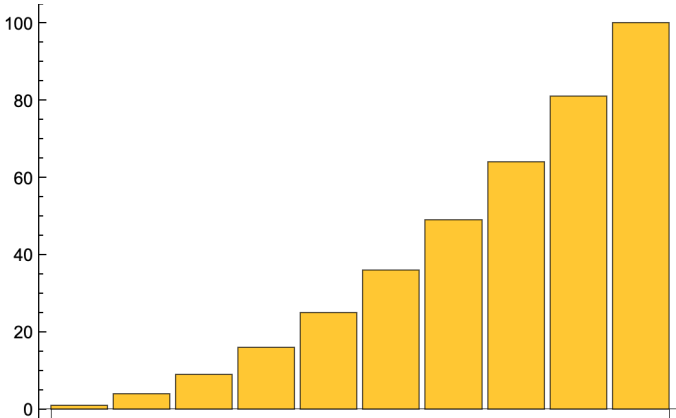In[14]:= **Table[i, {i, 10}] 2**

Out[14]=

{2, 4, 6, 8, 10, 12, 14, 16, 18, 20}

In[13]:= **(* 6.5 *) Table[i, {i, 10}]**

Out[13]=

{1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

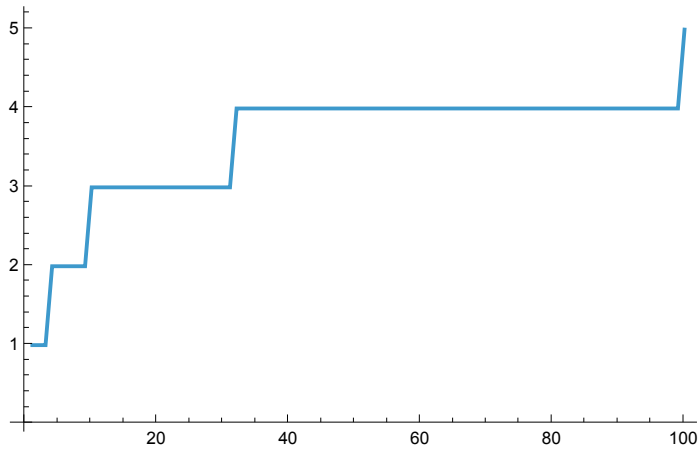In[12]:= **(* 6.6 *) BarChart[Table[i^2, {i, 10}]]**

Out[12]=

(* 6.7 *) Table[IntegerDigits[i^2], {i, 10}]

Out[16]=

{{1}, {4}, {9}, {1, 6}, {2, 5}, {3, 6}, {4, 9}, {6, 4}, {8, 1}, {1, 0, 0}}
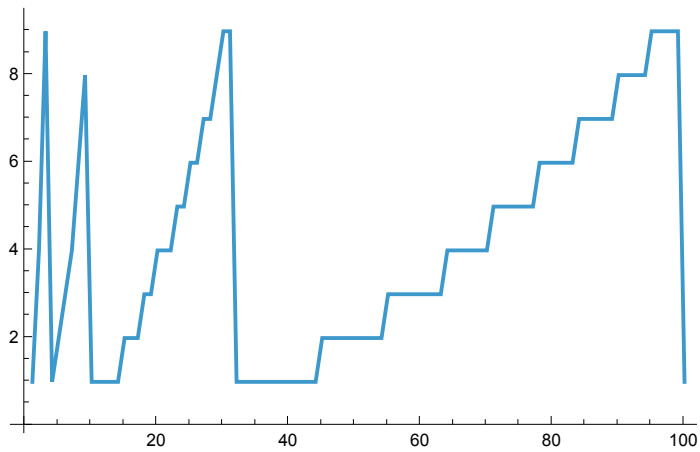
In[18]:= `(* 6.8 *) ListLinePlot[Table[Length[IntegerDigits[i^2]], {i, 100}]]`

Out[18]=

In[17]:= `(* 6.8 *) ListLinePlot[Table[First[IntegerDigits[i^2]], {i, 100}]]`

Out[17]=
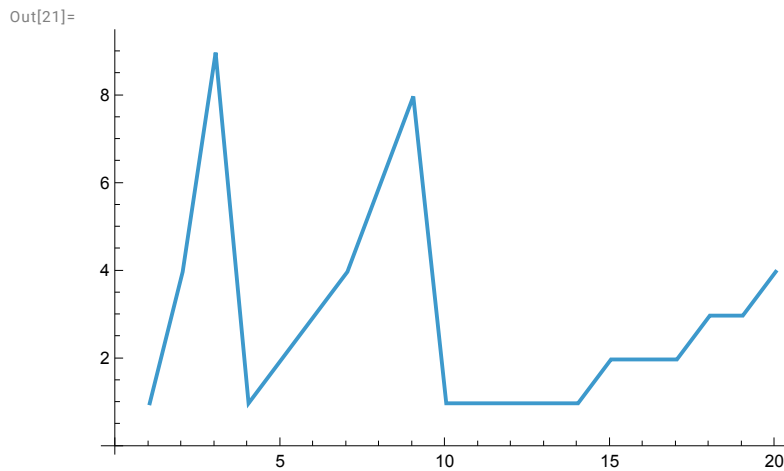

In[19]:= `(* 6.9 *)Table[First[IntegerDigits[i^2]], {i, 20}]`

Out[19]=

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

(* 6.10 *) ListLinePlot[Table[First[IntegerDigits[i^2]], {i, 20}]]

Out[21]=

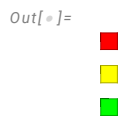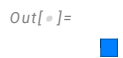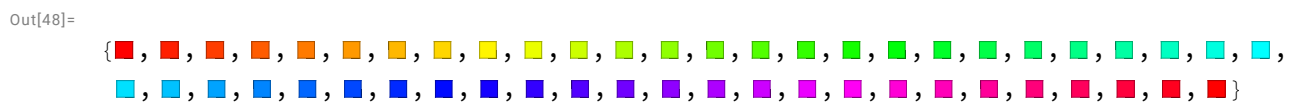## Exercises from *EIWL3* Section 7

(* 7.1 *) {Red, Yellow, Green}

Out[ ]=

{ ■ , ■ , ■ }

(* 7.2 *) Column[{Red, Yellow, Green}]

Out[ ]=

■
■
■

(* 7.3 *) ColorNegate[Orange]

Out[ ]=

■

(* 7.4 *) Table[Hue[i], {i, 0, 1, 0.02}]

Out[48]=

{ ■ ,
■ , ■ }

In[51]:= (* 7.5 *) Table[RGBColor[1.0, green, 1.0], {green, 0, 1, 0.05}]

Out[51]=

{ ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , ■ , □ , □ , □ }

(* 7.6 *) Blend[{Pink, Yellow}]

Out[55]=

■

(* 7.7 *) Table[Blend[{Hue[i], Yellow}] , {i, 0, 1, 0.05}]

Out[54]=

{ ■ , ■ }

```
(* 7.8 *) Table[Style[i, Hue[i]], {i, 0.0, 1.0, 0.1}]
```

Out[ ]=

{0., 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.}
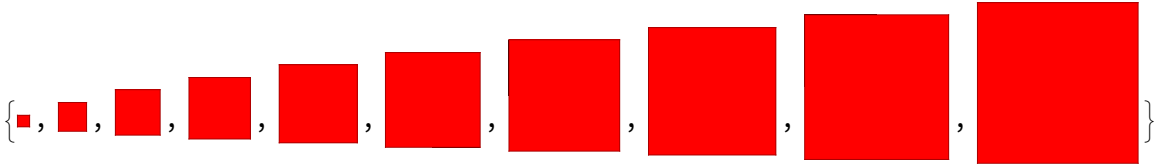
```
(* 7.9 *) Style[Purple, 100]
```

Out[ ]=


```
(* 7.10 *) Table[Style[Red, i], {i, 10, 100, 10}]
```

Out[ ]=


```
In[56]:= (* 7.11 *) Style[999, Red, 100]
```
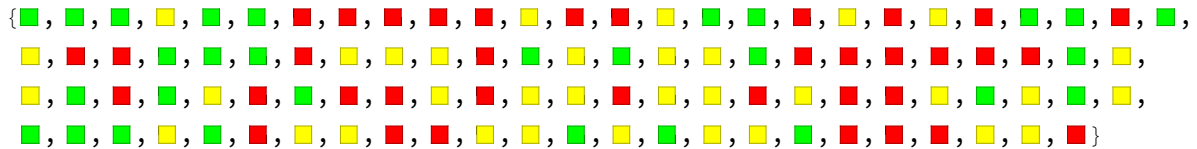
Out[56]=


```
(* 7.12 *) Table[Style[i, i], {i, Range[10]^2}]
```

Out[ ]=


```
(* 7.13 *) {Red, Yellow, Green}[[RandomInteger[2, 100] + 1]]
```

Out[ ]=


```
(* 7.14 *) Table[Style[i, 3 i], {i, Take[IntegerDigits[2^1000], 50]}]
```

Out[ ]=

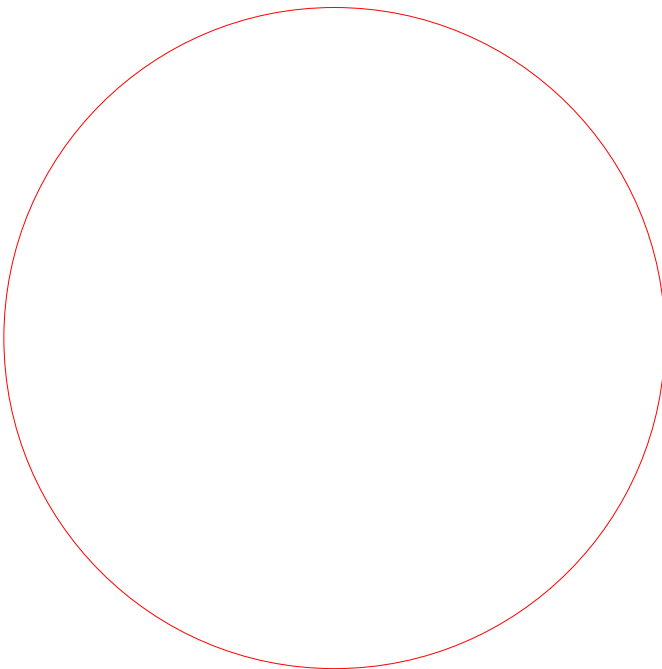# Exercises from *EIWL3* Section 8

```
(* 8.1 *) Graphics[RegularPolygon[3]]
```
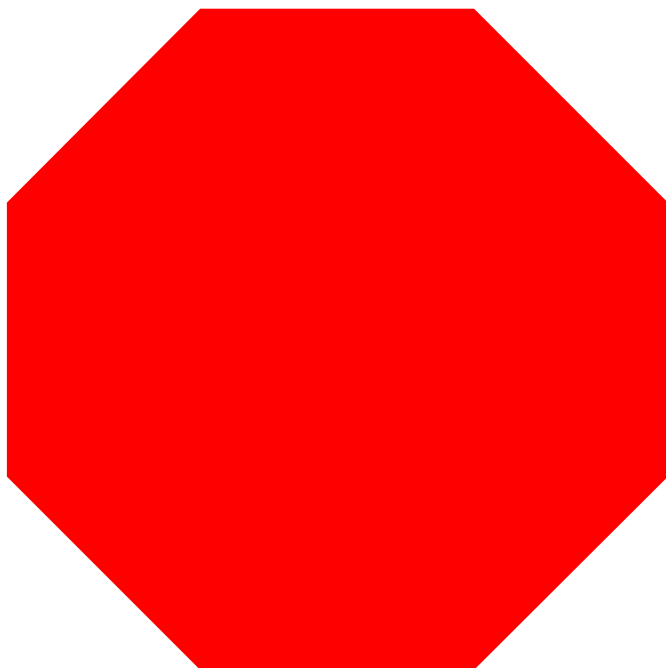
Out[ ]=
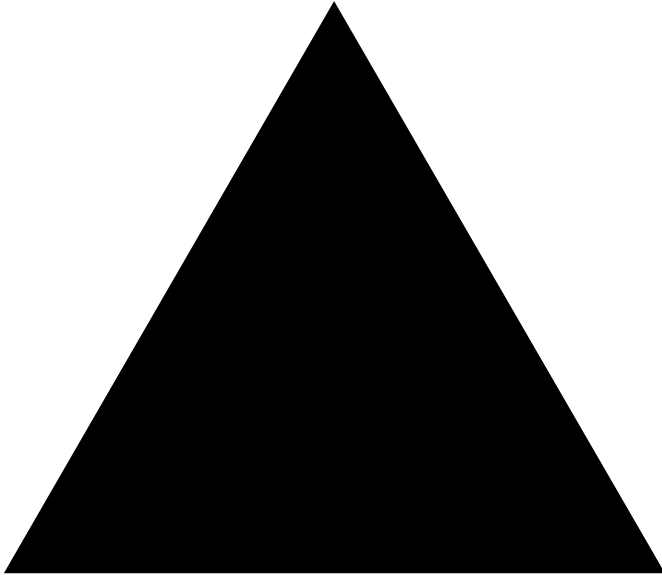

```
(* 8.2 *) Graphics[Style[Circle[], Red]]
```
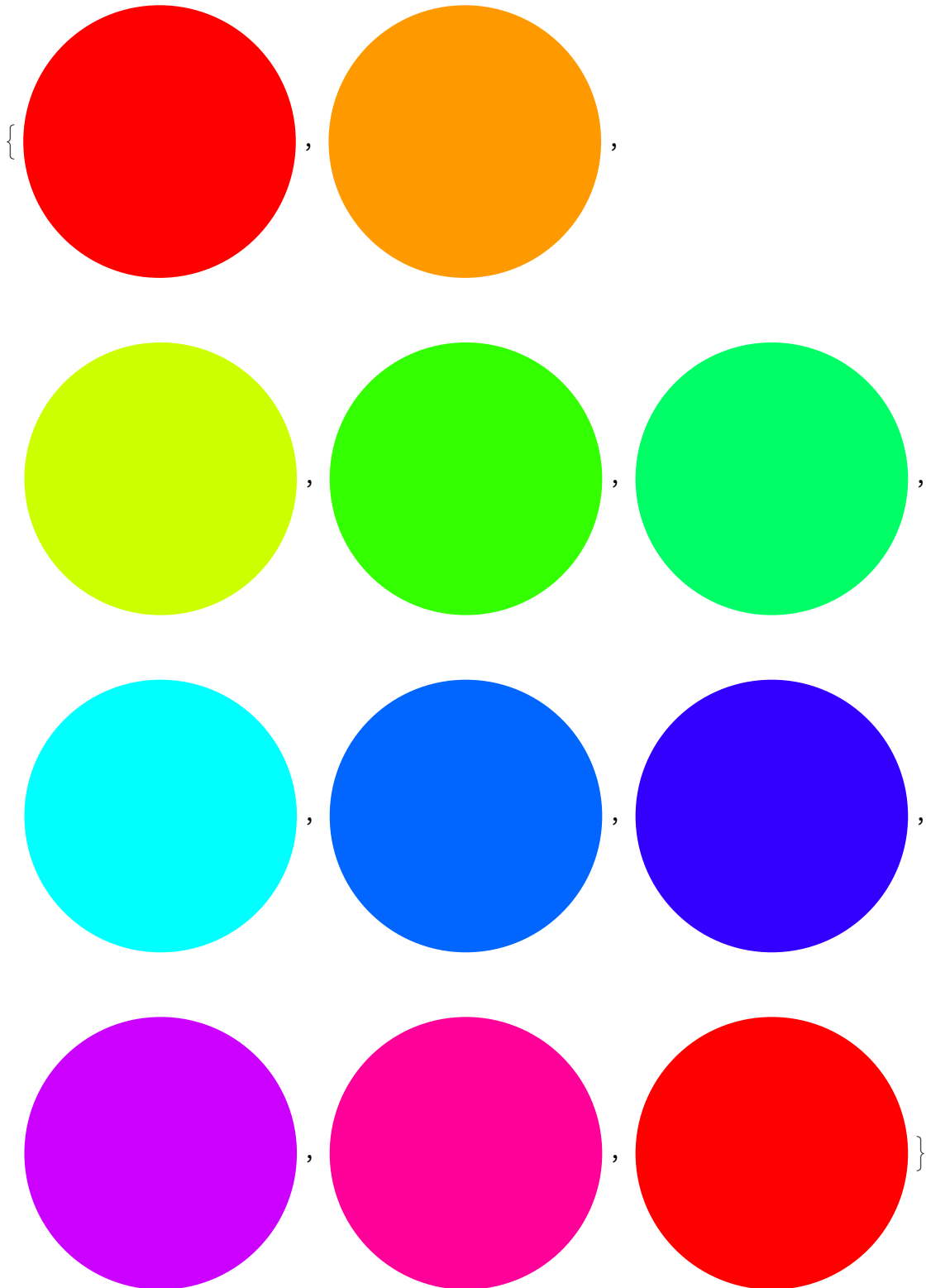
Out[ ]=

```
(* 8.3 *) Graphics[Style[RegularPolygon[8], Red]]
```
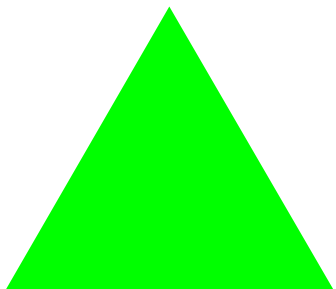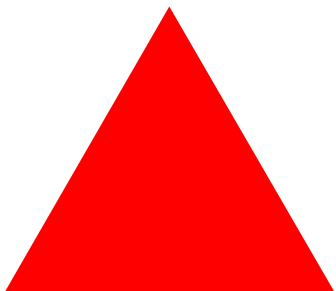
Out[●]=

```
(* 8.4 *) Table[Graphics[Style[Disk[], Hue[i]]], {i, 0.0, 1.0, 0.1}]
```
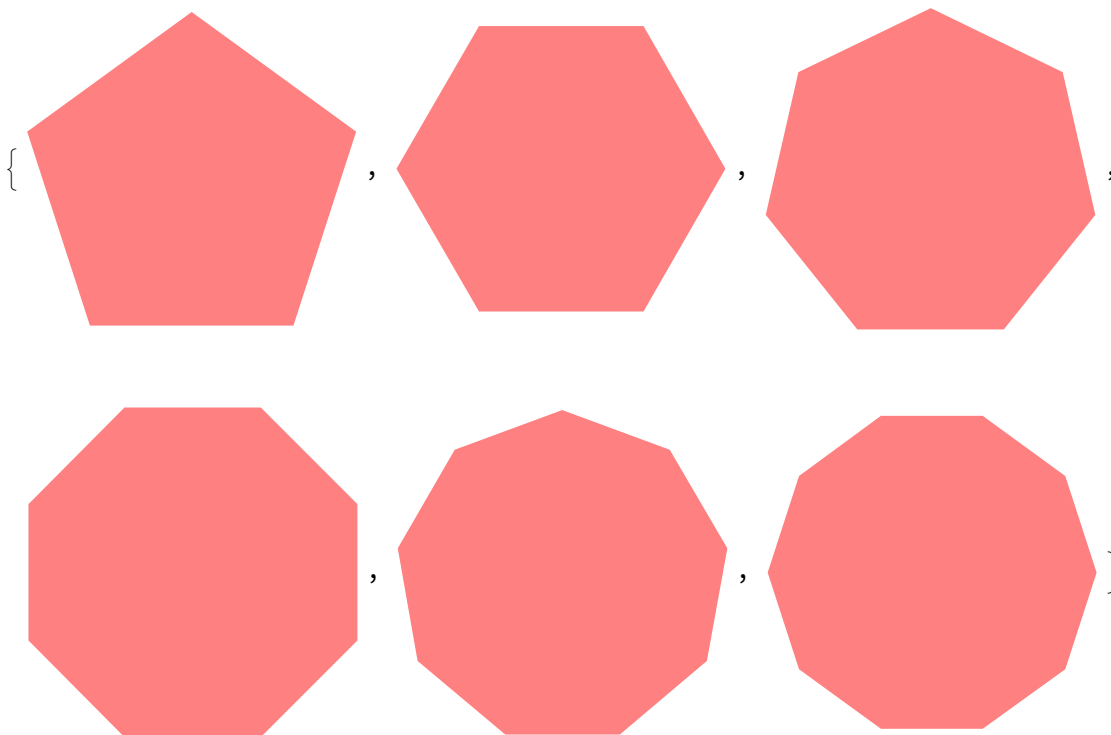
Out[ ]=

```
(* 8.5 *) Column[{
  Graphics[Style[RegularPolygon[3], Red]],
  Graphics[Style[RegularPolygon[3], Green]]
 }] (* The nested brackets and braces got deep
 enough that I used indenting to help me get it right. *)
```
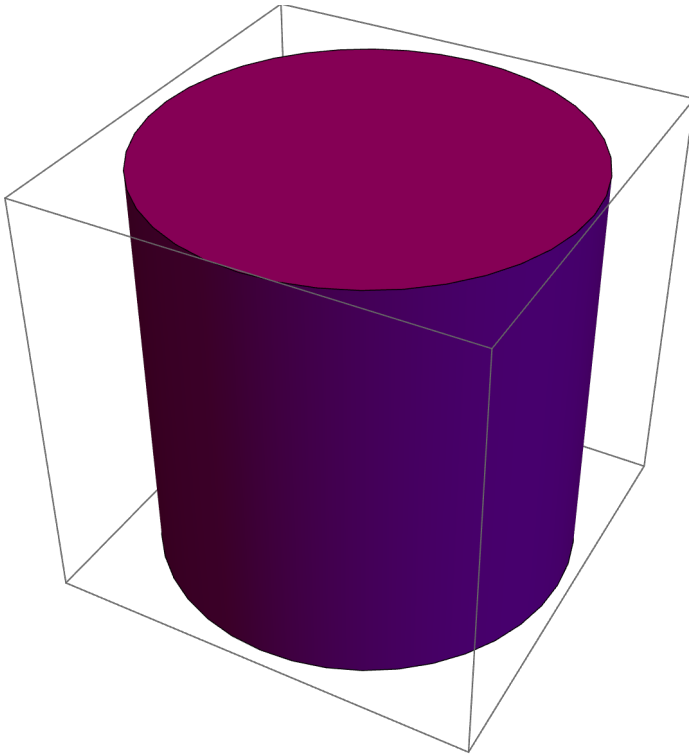
Out[ ]=


```
(* 8.6 *) Table[Graphics[Style[RegularPolygon[i], Pink]], {i, 5, 10}]
```

Out[ ]=

`(* 8.7 *) Graphics3D[Style[Cylinder[], Purple]]`

Out[ ]=

```
(* 8.8 *) Graphics[Table[
  Style[RegularPolygon[i], RandomColor[]],
   {i, 8, 3, -1}
  ]]
```

Out[ ]=