

Jeremy — PS 10 — 2025-02-25

EIWL3 Sections 26, 27, and 28

This is perfect! 10 / 10.

In[179]:=

```
#^2 & /@ Range[20]
```

Out[179]=

```
{1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400}
```

In[180]:=

```
Blend[{#, Red}] & /@ {Yellow, Green, Blue}
```

Out[180]=

```
{, , 
```

In[181]:=

```
Column[{ToUpperCase[#], #}, Frame -> True] & /@ Alphabet[]
```

Out[181]=

```
{

|   |
|---|
| A |
| a |

, 

|   |
|---|
| B |
| b |

, 

|   |
|---|
| C |
| c |

, 

|   |
|---|
| D |
| d |

, 

|   |
|---|
| E |
| e |

, 

|   |
|---|
| F |
| f |

, 

|   |
|---|
| G |
| g |

, 

|   |
|---|
| H |
| h |

, 

|   |
|---|
| I |
| i |

, 

|   |
|---|
| J |
| j |

, 

|   |
|---|
| K |
| k |

, 

|   |
|---|
| L |
| l |

,  


|   |
|---|
| M |
| m |

, 

|   |
|---|
| N |
| n |

, 

|   |
|---|
| O |
| o |

, 

|   |
|---|
| P |
| p |

, 

|   |
|---|
| Q |
| q |

, 

|   |
|---|
| R |
| r |

, 

|   |
|---|
| S |
| s |

, 

|   |
|---|
| T |
| t |

, 

|   |
|---|
| U |
| u |

, 

|   |
|---|
| V |
| v |

, 

|   |
|---|
| W |
| w |

, 

|   |
|---|
| X |
| x |

, 

|   |
|---|
| Y |
| y |

, 

|   |
|---|
| Z |
| z |

}
```

In[182]:=

```
Framed[#, Background -> RandomColor[]] & /@ Alphabet[]
```

Out[182]=

```
{

|   |
|---|
| a |
|---|

, 

|   |
|---|
| b |
|---|

, 

|   |
|---|
| c |
|---|

, 

|   |
|---|
| d |
|---|

, 

|   |
|---|
| e |
|---|

, 

|   |
|---|
| f |
|---|

, 

|   |
|---|
| g |
|---|

, 

|   |
|---|
| h |
|---|

, 

|   |
|---|
| i |
|---|

, 

|   |
|---|
| j |
|---|

, 

|   |
|---|
| k |
|---|

, 

|   |
|---|
| l |
|---|

,  


|   |
|---|
| m |
|---|

, 

|   |
|---|
| n |
|---|

, 

|   |
|---|
| o |
|---|

, 

|   |
|---|
| p |
|---|

, 

|   |
|---|
| q |
|---|

, 

|   |
|---|
| r |
|---|

, 

|   |
|---|
| s |
|---|

, 

|   |
|---|
| t |
|---|

, 

|   |
|---|
| u |
|---|

, 

|   |
|---|
| v |
|---|

, 

|   |
|---|
| w |
|---|

, 

|   |
|---|
| x |
|---|

, 

|   |
|---|
| y |
|---|

, 


|   |
|---|
| z |
|---|

}
```

In[183]:=

```
Grid[{#, EntityValue[#, "Flag"]} & /@ EntityList[Group of 5 COUNTRIES], Frame → All]
```

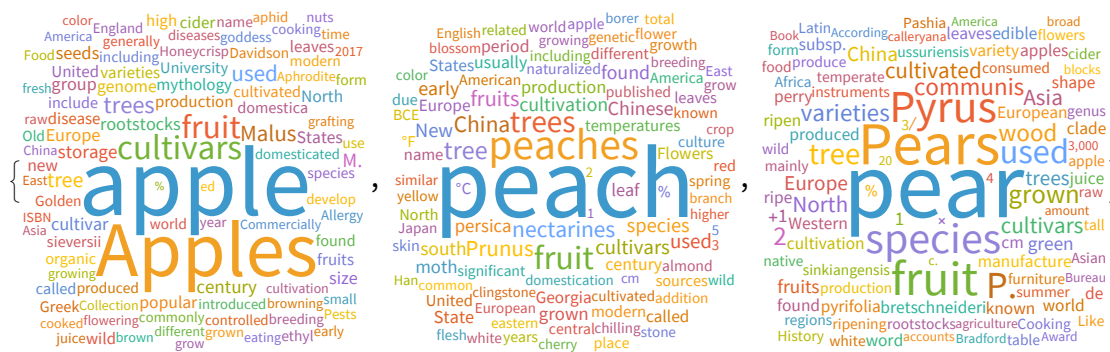
Out[183]=

France	
Germany	
Japan	
United Kingdom	
United States	

In[184]:=

```
WordCloud[WikipediaData[#]] & /@ {"Apple", "Peach", "Pear"}
```

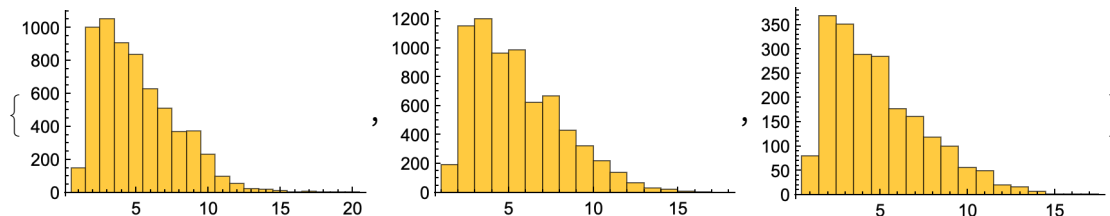
Out[184]=



In[185]:=

```
Histogram[StringLength[TextWords[WikipediaData[#]]] & /@ {"Apple", "Peach", "Pear"}
```

Out[185]=



In[186]:=

```
GeoListPlot[#, GeoRange → Central America COUNTRIES ... ✓] & /@  
EntityList[Central America COUNTRIES ... ✓]
```

Out[186]=



In[187]:=

```
NestList[Blur[#] &, Rasterize[Style["X", 30]], 10]
```

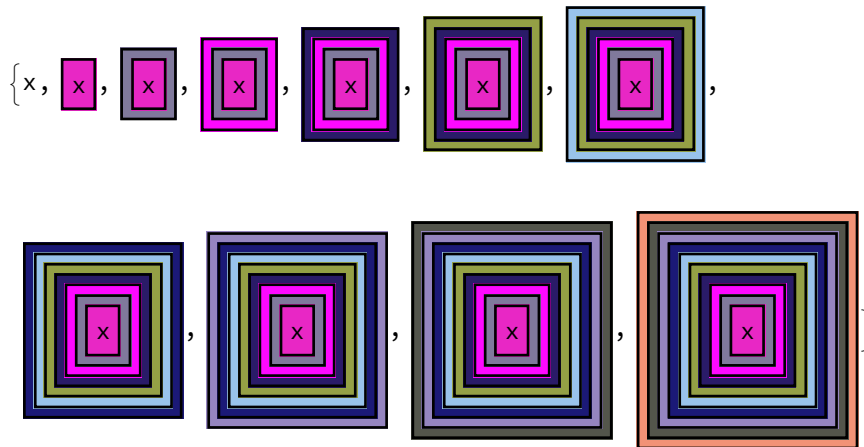
Out[187]=

```
{X, X, X, X, X, X, X, X, X, X, X}
```

In[188]:=

```
NestList[Framed[#, Background → RandomColor[]] &, x, 10]
```

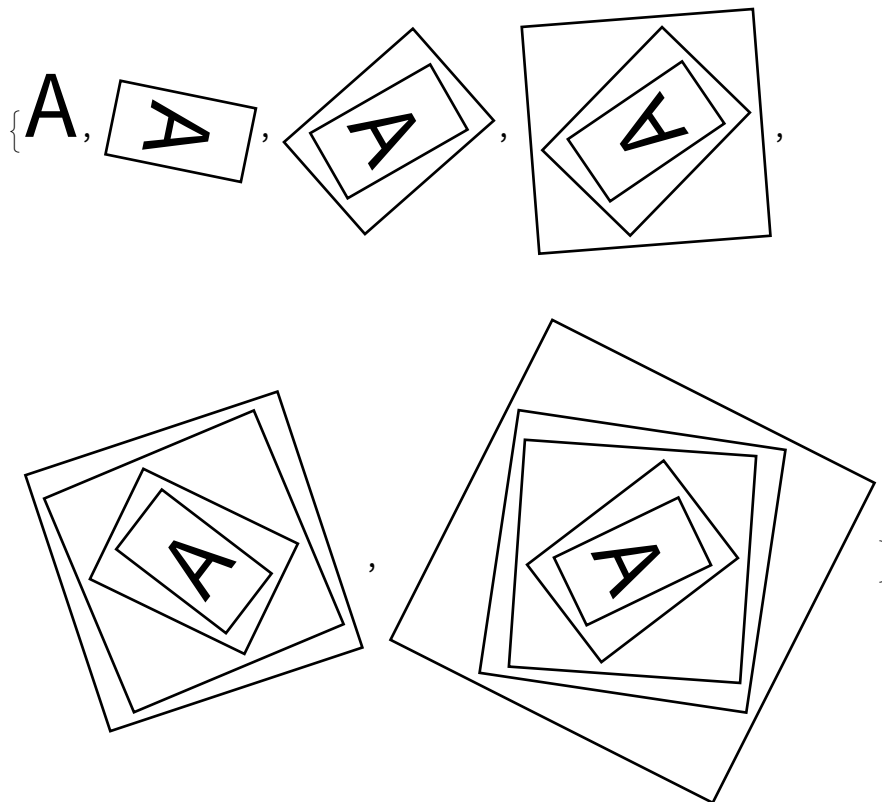
Out[188]=



In[189]:=

```
NestList[Rotate[Framed[#, RandomReal[{0, 360 °}]] &, Style["A", 50], 5]
```

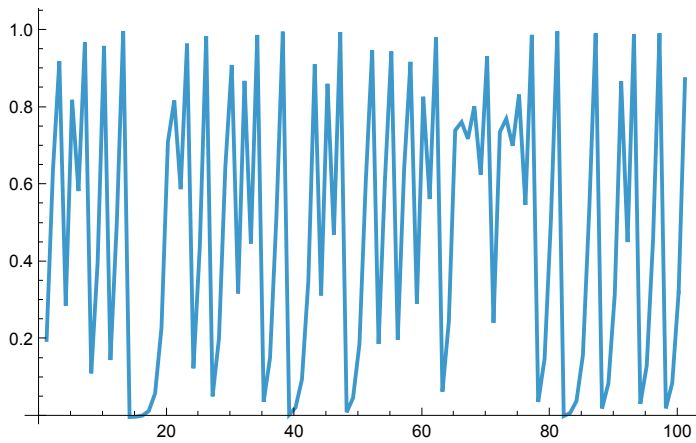
Out[189]=



In[190]:=

ListLinePlot[NestList[4 # (1 - #) &, 0.2, 100]]

Out[190]=



In[191]:=

N[Nest[1 + 1 / # &, 1, 30]]

Out[191]=

1.61803

In[192]:=

NestList[3 # &, 1, 10]

Out[192]=

{1, 3, 9, 27, 81, 243, 729, 2187, 6561, 19683, 59049}

In[193]:=

NestList[(# + 2 / #) / 2 &, 1.0, 5] - Sqrt[2]

Out[193]=

{-0.414214, 0.0857864, 0.0024531, 2.1239×10^{-6} , 1.59472×10^{-12} , -2.22045×10^{-16} }

In[194]:=

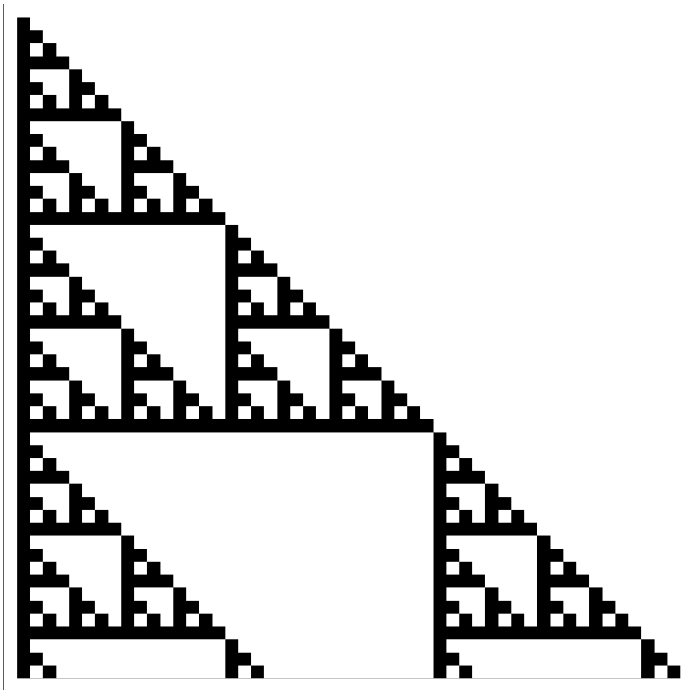
```
Graphics[Line[NestList[# + RandomReal[{-1, 1}, 2] &, {0, 0}, 1000]]]
```

Out[194]=



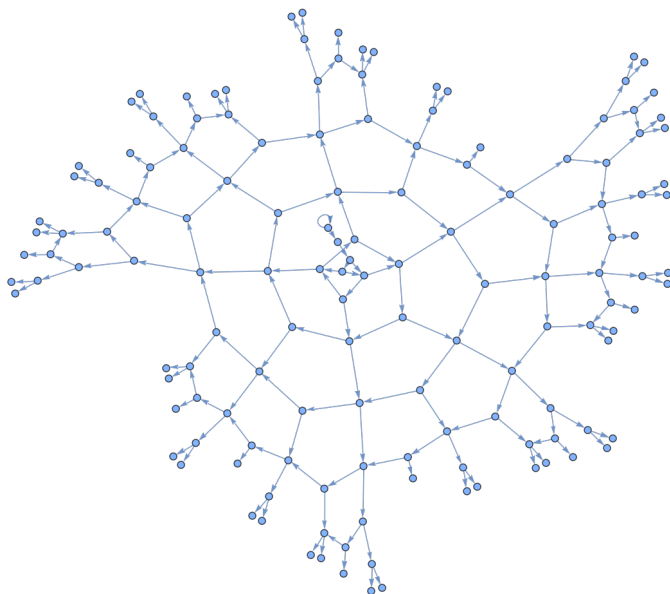
```
In[195]:=
ArrayPlot[NestList[Mod[Join[{0}, #] + Join[#, {0}], 2] &, {1}, 50]]
```

Out[195]=



```
In[196]:=
NestGraph[{# + 1, 2 #} &, 0, 10]
```

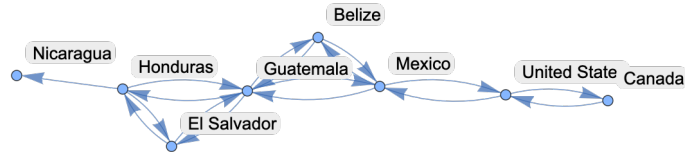
Out[196]=



In[197]:=

```
NestGraph[{"BorderingCountries"} &,
  Entity["Country", "UnitedStates"] ☒, 4, VertexLabels -> All]
```

Out[197]=



In[198]:=

$$123^{321} > 456^{123}$$

Out[198]=

True

In[199]:=

```
Select[Range[100], Total[IntegerDigits[#]] < 5 &]
```

Out[199]=

```
{1, 2, 3, 4, 10, 11, 12, 13, 20, 21, 22, 30, 31, 40, 100}
```

In[200]:=

```
If[PrimeQ[#], Style[#, Red], #] & /@ Range[20]
```

Out[200]=

```
{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20}
```

In[201]:=

```
Select[WordList[], First[Characters[#]] == "p" && Last[Characters[#]] == "p" &]
```

Out[201]=

```
{pap, paperclip, parsnip, partisanship, partnership, pawnshop, peep, penmanship,
  pep, pickup, pileup, pip, plop, plump, polyp, pomp, pop, premiership,
  prep, primp, professorship, prop, proprietorship, pulp, pump, pup}
```

In[202]:=

```
Select[Table[Prime[n], {n, 100}], Last[IntegerDigits[#]] < 3 &]
```

Out[202]=

```
{2, 11, 31, 41, 61, 71, 101, 131, 151, 181, 191, 211,
  241, 251, 271, 281, 311, 331, 401, 421, 431, 461, 491, 521, 541}
```

In[203]:=

```
Select[Table[RomanNumeral[n], {n, 100}], ! MemberQ[Characters[#], "I"] &]
```

Out[203]=

```
{V, X, XV, XX, XXV, XXX, XXXV, XL, XLV,
  L, LV, LX, LXV, LXX, LXXV, LXXX, LXXXV, XC, XCV, C}
```

In[204]:=

```
Select[RomanNumeral[Range[1000]], StringReverse[#] == # &]
```

Out[204]=

```
{I, II, III, V, X, XIX, XX, XXX, L, C, CXC, CC, CCC, D, M}
```


In[205]:=

```
Select[IntegerName[Range[100]], First[Characters[#]] == Last[Characters[#]] &]
```

Out[205]=

```
{nineteen, twenty-eight, thirty-eight, eighty-one,
 eighty-three, eighty-five, eighty-nine, ninety-seven}
```

In[206]:=

```
Select[TextWords[WikipediaData["words"]], StringLength[#] > 15 &]
```

Out[206]=

```
{yibi-jarran-gabun, yibi-gabun-jarran, orthographically,
 multiple-morpheme, Proto-Indo-European, 978-0-08-044854-1}
```

In[207]:=

```
NestList[If[EvenQ[#],  $\frac{\#}{2}$ , 3 # + 1] &, 1000, 200]
```

Out[207]=

```
{1000, 500, 250, 125, 376, 188, 94, 47, 142, 71, 214, 107, 322, 161, 484, 242, 121, 364,
 182, 91, 274, 137, 412, 206, 103, 310, 155, 466, 233, 700, 350, 175, 526, 263,
 790, 395, 1186, 593, 1780, 890, 445, 1336, 668, 334, 167, 502, 251, 754, 377,
 1132, 566, 283, 850, 425, 1276, 638, 319, 958, 479, 1438, 719, 2158, 1079, 3238,
 1619, 4858, 2429, 7288, 3644, 1822, 911, 2734, 1367, 4102, 2051, 6154, 3077,
 9232, 4616, 2308, 1154, 577, 1732, 866, 433, 1300, 650, 325, 976, 488, 244, 122,
 61, 184, 92, 46, 23, 70, 35, 106, 53, 160, 80, 40, 20, 10, 5, 16, 8, 4, 2, 1, 4, 2,
 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4,
 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1,
 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2, 1, 4, 2}
```

