

Walker — PS 10 — 2025-02-25

EIWL3 Sections 26, 27, and 28

Chapter 26

```
In[1]:= Power[#, 2] & /@ Range[20]
```

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

```
In[2]:= Blend[{#, Red}] & /@ {Yellow, Green, Blue}
```

```
Out[2]= {, , 
```

```
In[3]:= Framed[Column[#]] & /@ Transpose[{Alphabet[], ToUpperCase[Alphabet[]]}]
```

```
Out[3]= {

|   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e | f | g | h | i | j | k | l |
| 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 |
| M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |

}
```

```
In[4]:= Framed[Style[#, RandomColor[]], Background → RandomColor[]] & /@  
Characters[Alphabet[]]
```

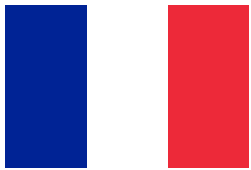

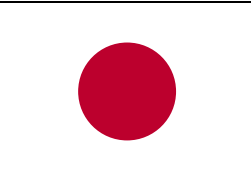

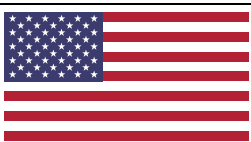
```
Out[4]= {

|     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| {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} |

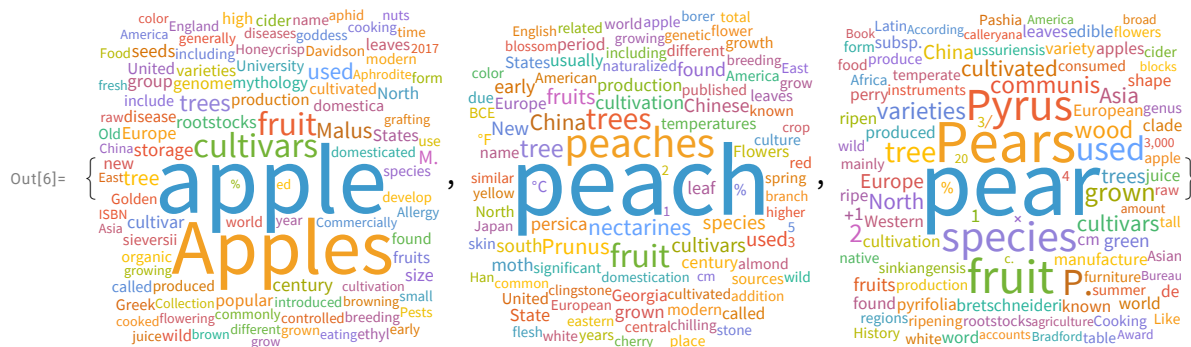
}
```

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

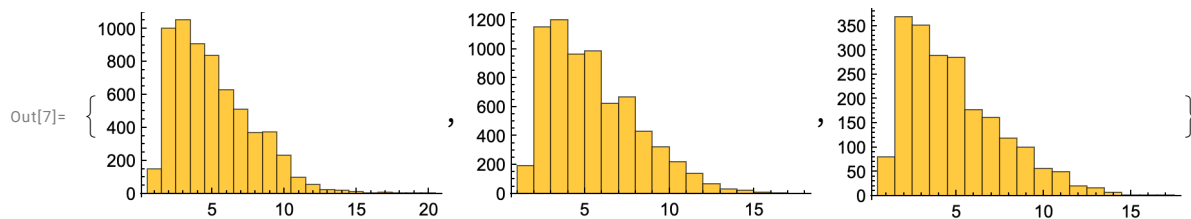
Out[5]= {

France	
Germany	
Japan	
United Kingdom	
United States	

```
In[6]:= WordCloud[WikipediaData[#]] & /@ {"apple", "peach", "pear"}
```



```
In[7]:= Histogram[StringLength[TextWords[WikipediaData[#]]]] & /@ {"apple", "peach", "pear"}
```



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

Out[8]=



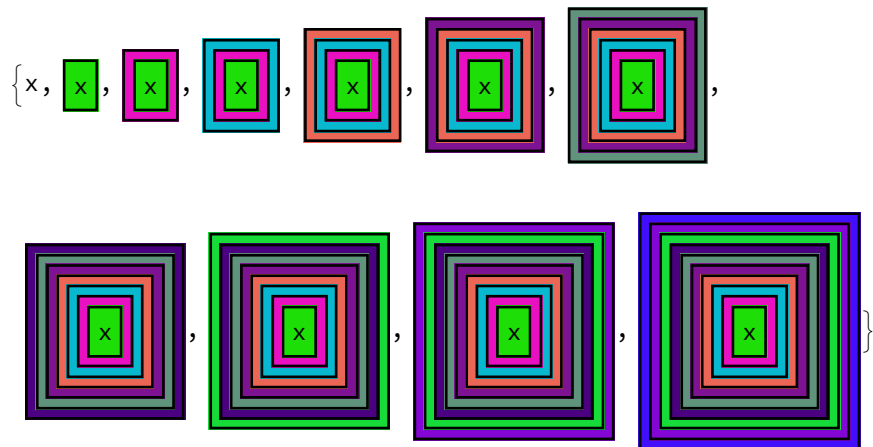
Chapter 27

```
In[9]:= NestList[Blur, Rasterize[Style[X, 30]], 10]
```

```
Out[9]= {X, X, X, X, X, X, X, X, X, X, X}
```

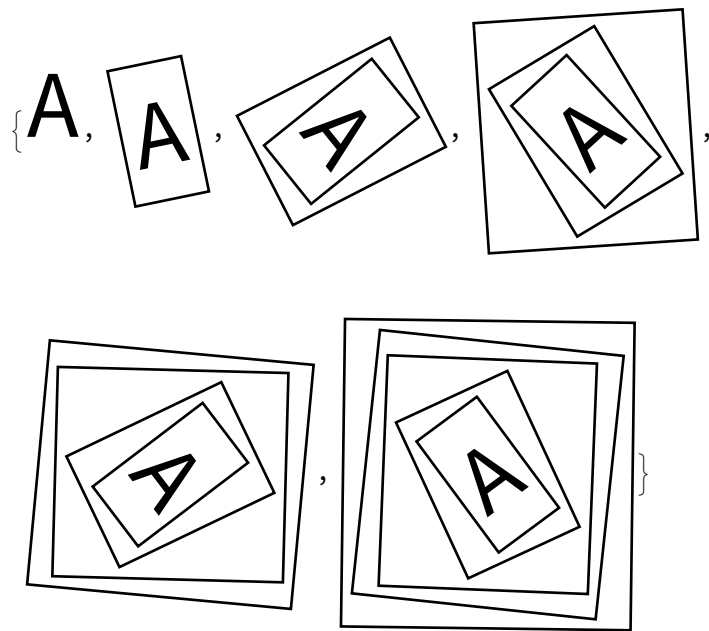
```
In[10]:= NestList[Framed[#, Background → RandomColor[]] &, x, 10]
```

```
Out[10]=
```



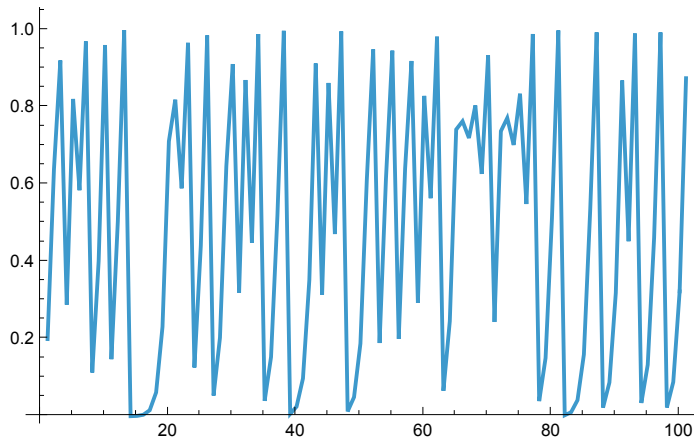
```
In[11]:= NestList[Rotate[Framed[#, RandomInteger[360]] &, Style[A, 50], 5]
```

```
Out[11]=
```



```
In[12]:= ListLinePlot[NestList[4 # (1 - #) &, 0.2, 100]]
```

```
Out[12]=
```



```
In[13]:= N[Nest[1 + 1 / # &, 1, 30]]
```

```
Out[13]=
```

```
1.61803
```

```
In[14]:= NestList[3 # &, 1, 10]
```

```
Out[14]=
```

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

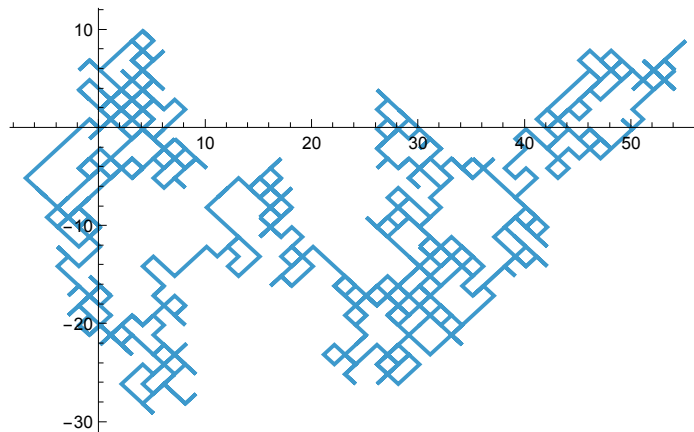
```
In[15]:= N /@ Subtract[#, Sqrt[2]] & /@ NestList[(# + 2 / #) / 2 &, 1, 5]
```

```
Out[15]=
```

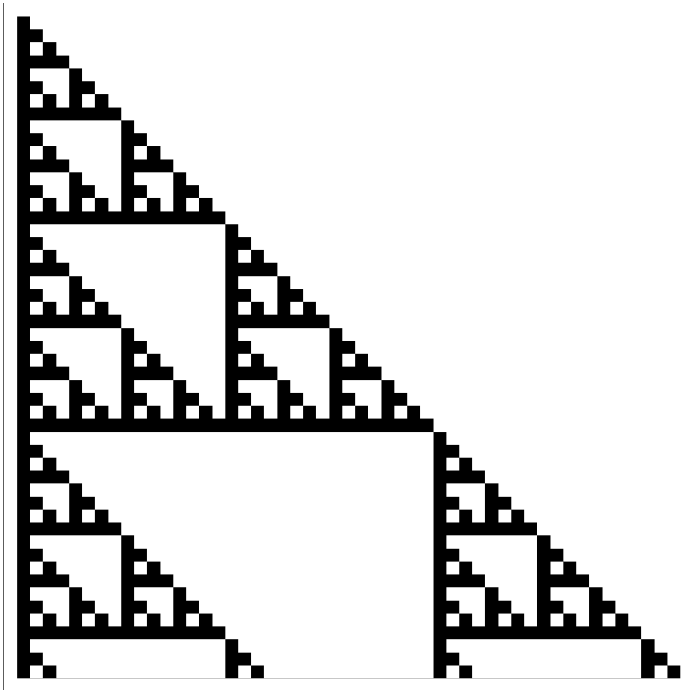
```
{-0.414214, 0.0857864, 0.0024531, 2.1239 × 10-6, 1.59472 × 10-12, 0.}
```

```
In[16]:= ListLinePlot[NestList[
  {#[[1]] + RandomChoice[{-1, 1}], #[[2]] + RandomChoice[{-1, 1}]] &, {0, 0}, 1000]]
```

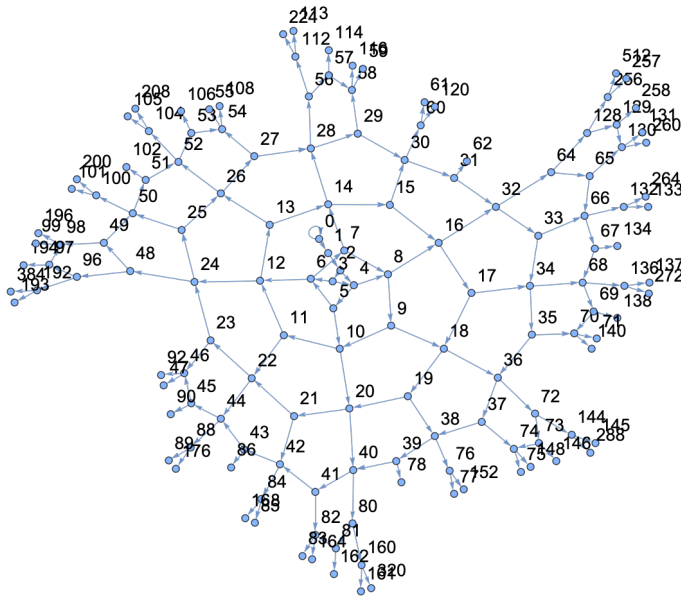
```
Out[16]=
```



```
In[17]:= ArrayPlot[Mod[#, 2] & /@ NestList[Join[{0}, #] + Join[#, {0}] &, {1}, 50]]
Out[17]=
```

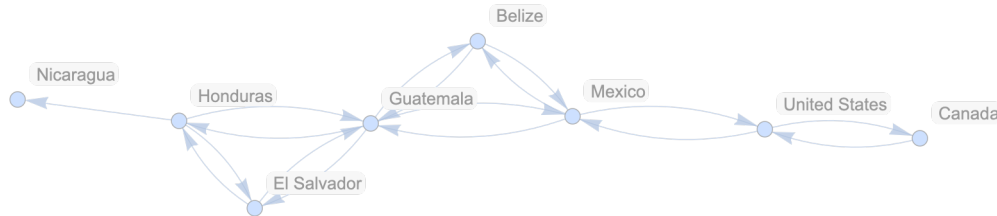


```
In[18]:= NestGraph[{# + 1, 2 #} &, 0, 10, VertexLabels -> All]
Out[18]=
```



```
NestGraph[{"BorderingCountries"} &, United States COUNTRY ☒, 4, VertexLabels -> All]
```

Out[19]=



Chapter 28

```
In[20]:= 123 ^ 321 > 456 ^ 123
```

Out[20]=

True

```
In[21]:= Select[Range[100], Total[IntegerDigits[#]] < 5 &]
```

Out[21]=

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

```
In[22]:= If[PrimeQ[#], Style[#, Red], #] & /@ Range[20]
```

Out[22]=

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

```
In[23]:= Select[WordList[], Last[Characters[#]] == "p" && First[Characters[#]] == "p" &]
```

Out[23]=

{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[24]:= Select[Prime[Range[100]], Last[IntegerDigits[#]] < 3 &]
```

Out[24]=

{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[25]:= Select[RomanNumeral[Range[100]], ! MemberQ[Characters[#], "I"] &]
```

Out[25]=

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

```
In[26]:= Select[RomanNumeral[Range[1000]], Characters[#] == Reverse[Characters[#]] &]
```

Out[26]=

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

```
In[27]:= Select[IntegerName[Range[100]], First[Characters[#]] == Last[Characters[#]] &]
```

Out[27]=

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

```
In[28]:= Select[TextWords[WikipediaData["words"]], StringLength@# > 15 &]
```

```
Out[28]= {yibi-jarran-gabun, yibi-gabun-jarran, orthographically,  
multiple-morpheme, Proto-Indo-European, 978-0-08-044854-1}
```

```
In[29]:= NestList[If[EvenQ[#], # / 2, 3 # + 1] &, 1000, 200]
```

```
Out[29]= {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,  
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}
```

```
In[30]:= WordCloud[Select[TextWords[WikipediaData["computers"]], StringLength@# == 5 &]]
```

```
Out[30]=
```

```
In[31]:= Select[WordList[], StringLength[#] > 3 && # != StringReverse[#] &&  
Take[Characters[#], 3] == Take[Reverse[Characters[#]], 3] &]
```

```
Out[31]= {despised, detected, detested, drainboard,  
foolproof, lackadaisical, marjoram, revolver}
```



```
In[32]:= Select[WordList[], StringLength[#] == 10 && Total[LetterNumber[Characters[#]]] == 100 &]
Out[32]= {accumulate, alienation, answerable, apoplectic, aquamarine, bewitching, censurable,
ceramicist, chastening, chimpanzee, clinically, collecting, condensate,
congenital, conjugated, connivance, declension, deliquesce, demobilize,
demodulate, denominate, diagonally, discipline, discommode, egoistical,
emasculate, embodiment, emendation, empathetic, fatalistic, fatherhood,
geographer, hemoglobin, inadequacy, interbreed, leveraging, liberalism,
likelihood, martingale, mercantile, meridional, neoclassic, paramecium,
plebiscite, potbellied, quadrangle, reciprocal, regimented, reschedule,
researcher, scoreboard, septicemia, shibboleth, sleepyhead, stagecraft,
stalemated, temperance, thickening, threatened, uncombined, unmodified}
```