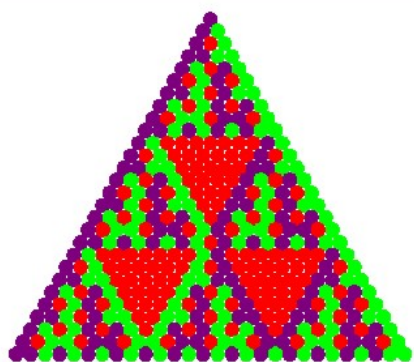
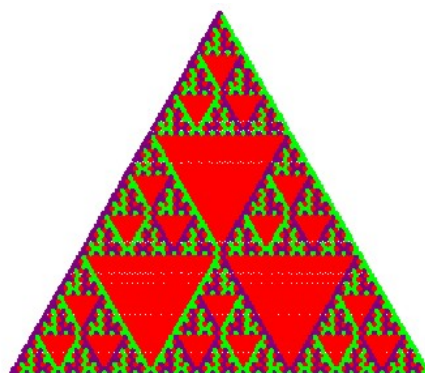


The PascGalois Triangle: A Tool for Visualizing Abstract Algebra - Color Figures

Kathleen M. Shannon & Michael J. Bardzell

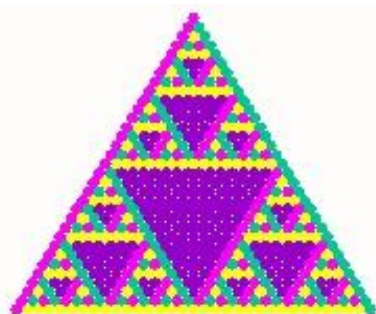


$P_{Z_3(1,2)}$ 28 rows

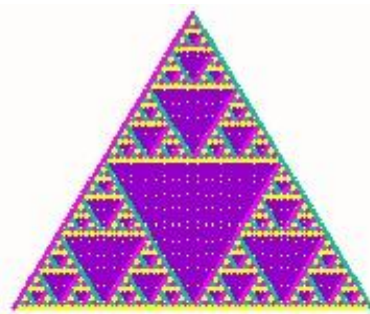


$P_{Z_3(1,2)}$ 82 rows

Figure 1

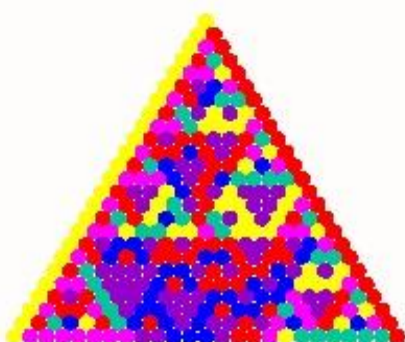


$P_{Z_2 \times Z_2}$ 33 rows

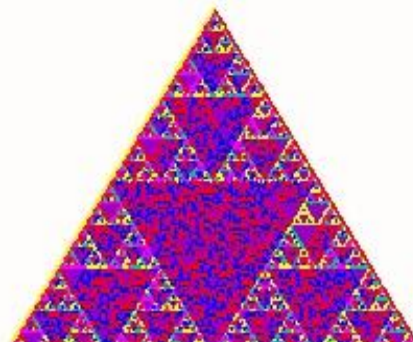


$P_{Z_2 \times Z_2}$ 65 rows

Figure 2



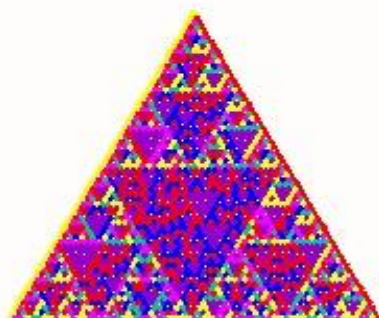
P_{S_3} 25 rows



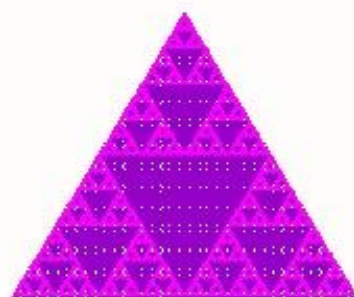
P_{S_3} 125 rows

Figure 3

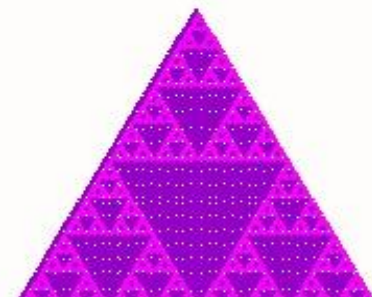
Figure 4



P_{S_3} 65 rows

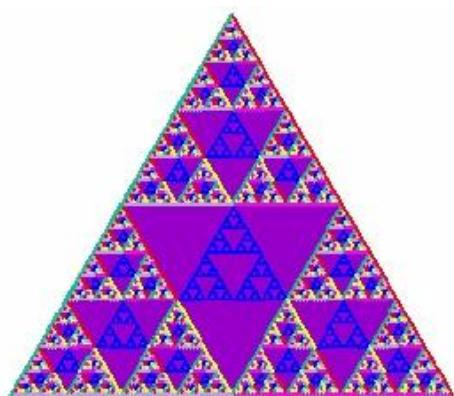


$P_{Z_2} (1,1)$ 65 rows

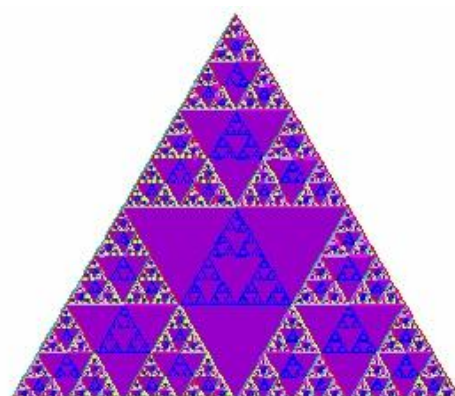


$P_{Z_2} (1,0)$ 65 rows

Figure 5

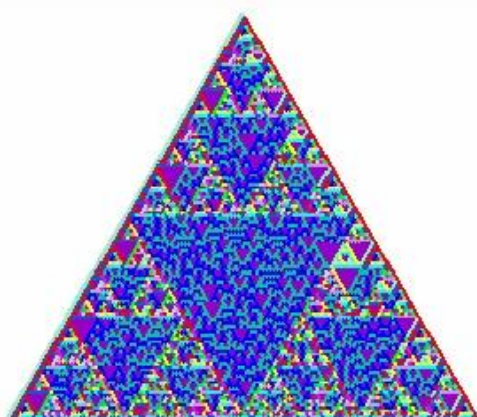


129 rows

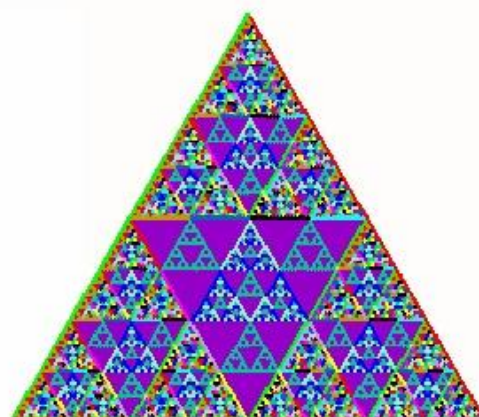


256 rows

Figure 6



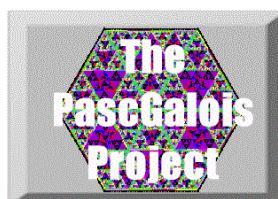
P_{D_6}



P_{D_8}

Figure 7

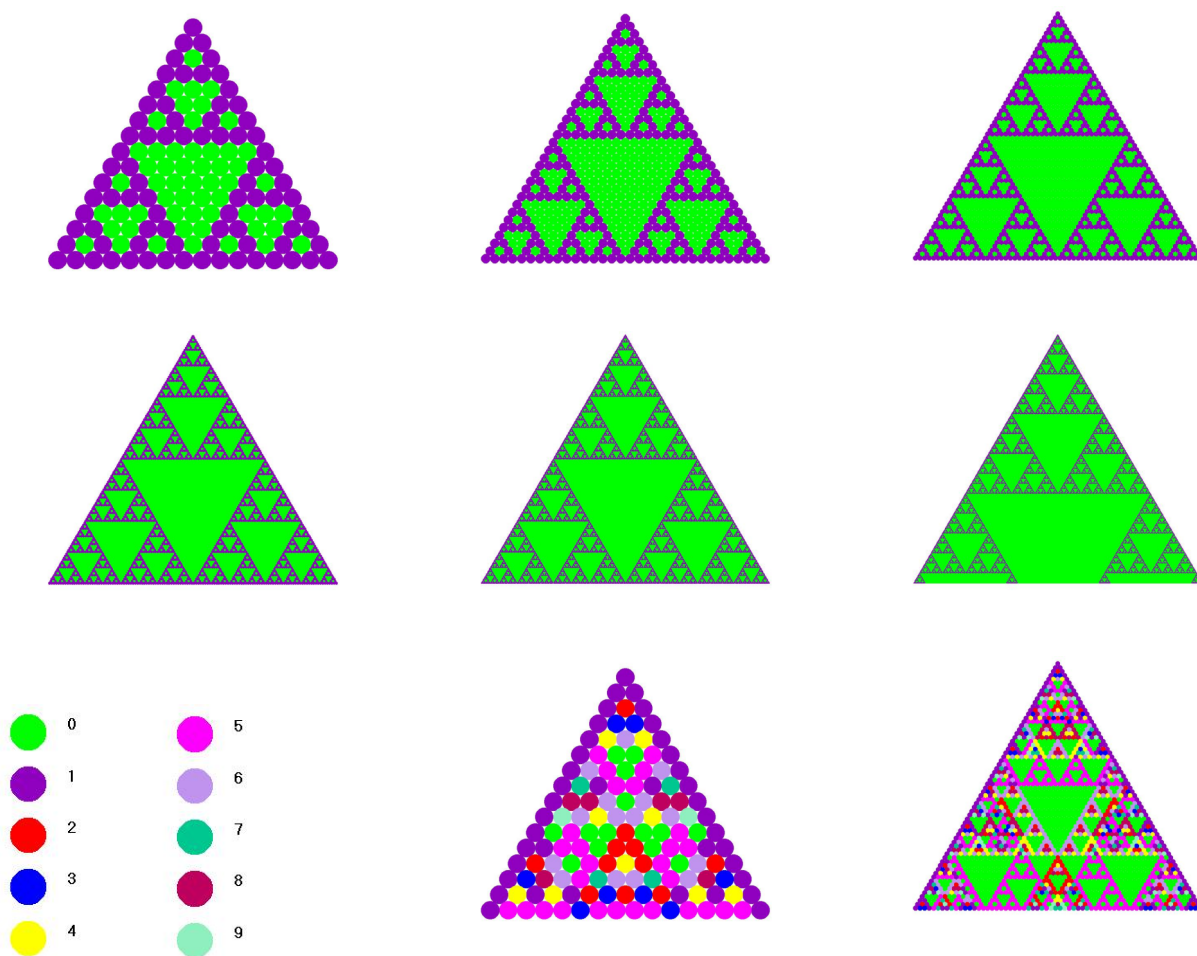
Go to

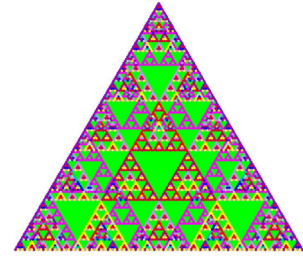
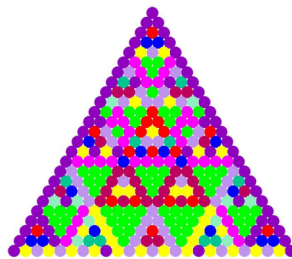
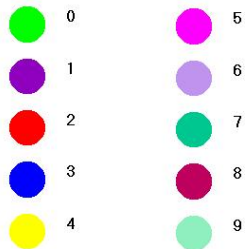
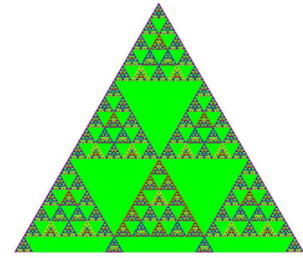
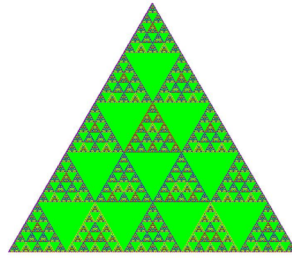
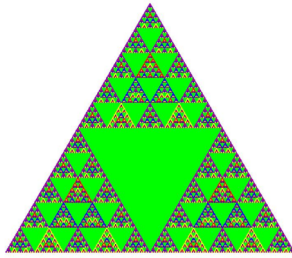
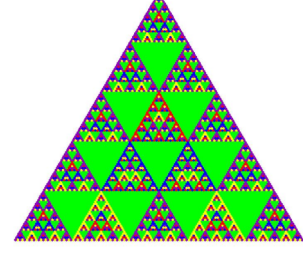
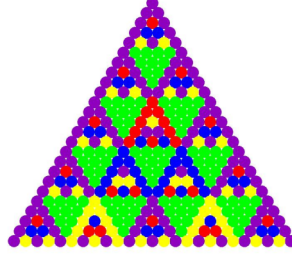
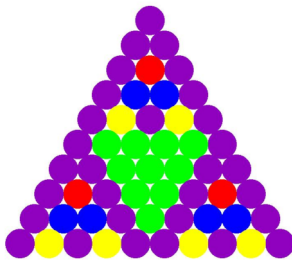
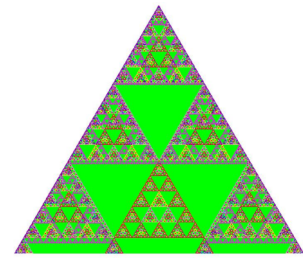
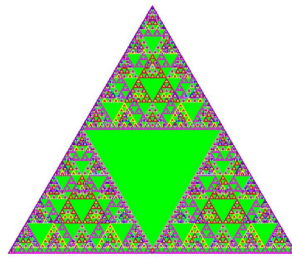
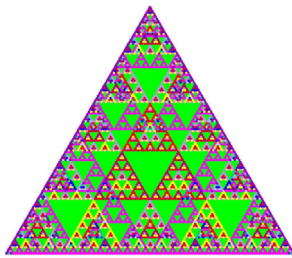


Below is a library of PascGalois triangles to suplliment the images
found in
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Click on an image to enlarge it. In recent versions of browsers, you should get
a caption for each picture when your mouse points to it. Beacuse of the
limitations regarding subscripts in these captions, the notation used is not
 $P_G(a,b)$ but rather $G(a,b)$ to refer to the PascGalois triangle using group
multiplication from the group G and generators a and b .

Z_2 , Z_5 and Z_{10} . Cyclic Groups of orders 2, 5 and 10:





Z_{10} with subgroups colored similarly or the same.

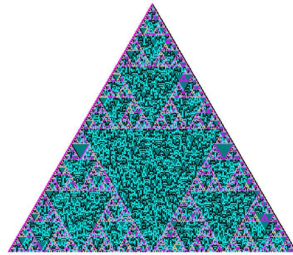
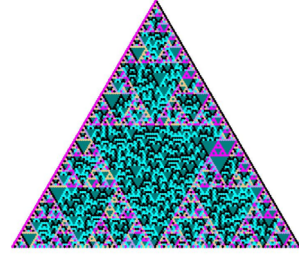
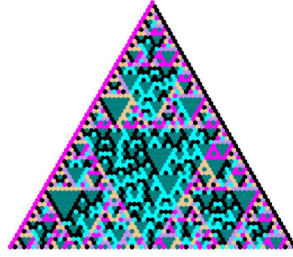
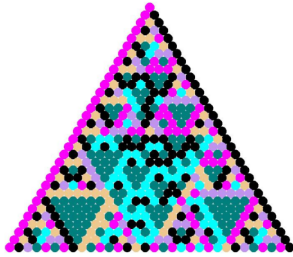
Z_{10} 400 rows colored as shown Z_{10} 400 rows colored as shown Z_{10} 400 rows colored as shown Z_{10} 400 rows colored as shown

D_3 , D_4 , D_5 , D_6 and D_8 . Dihedral Groups of the symetries of regular 3,4,5,6, and 8 sided polygons

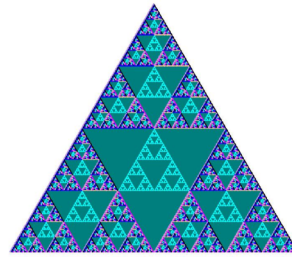
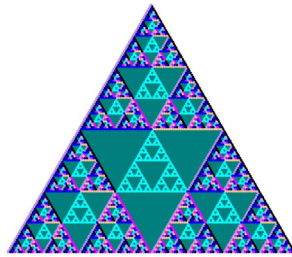
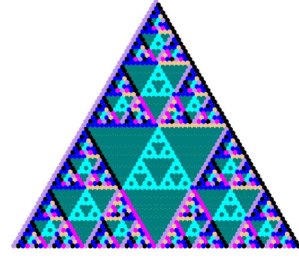
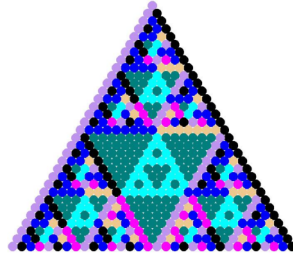
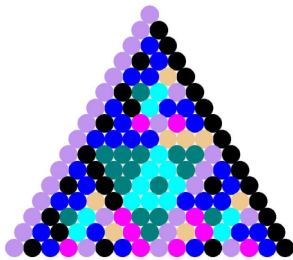
In D_5 , D_6 and D_8 the identity is purple, rotations are blue & green and relections are red/orange/yellow/pink . . .

D₃

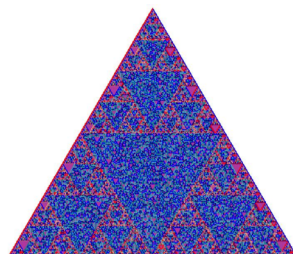
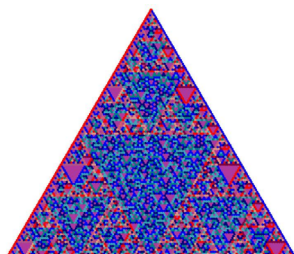
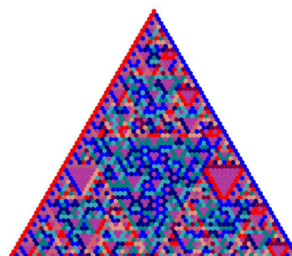
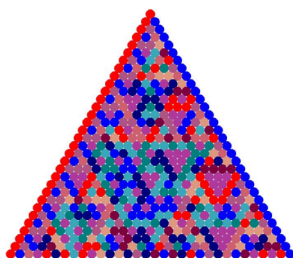
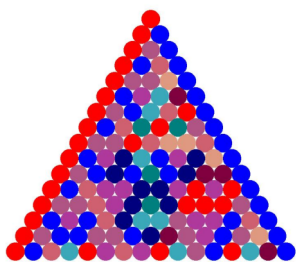
d3(rotation, reflection) with 16 rows



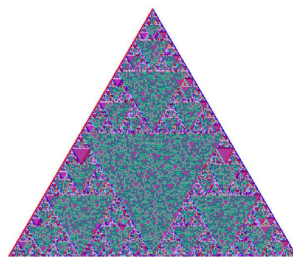
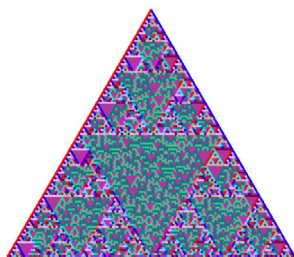
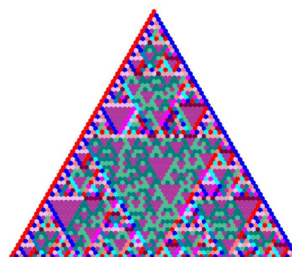
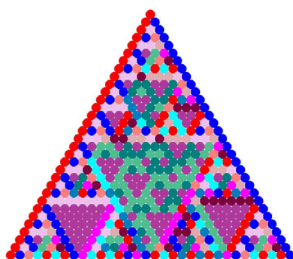
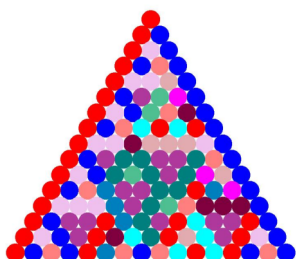
D₄



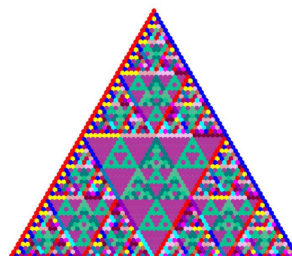
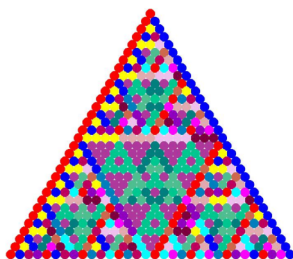
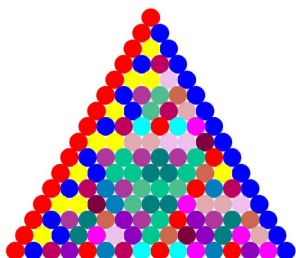
D₅

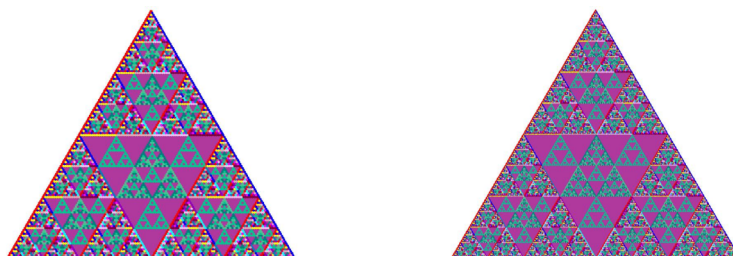


D₆



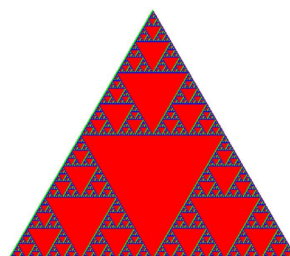
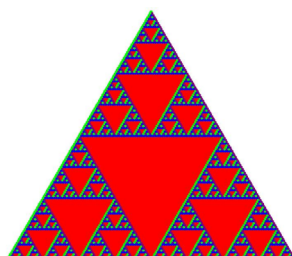
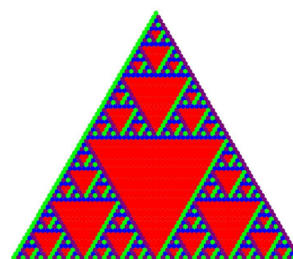
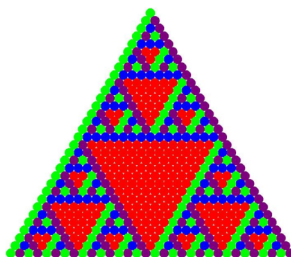
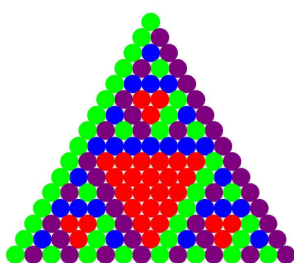
D₈



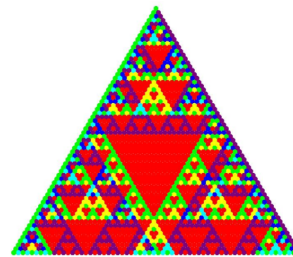
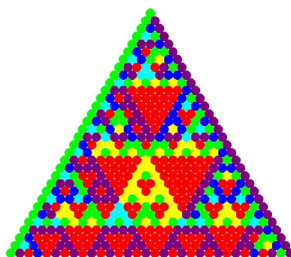
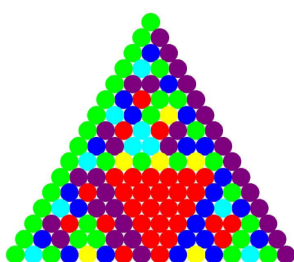


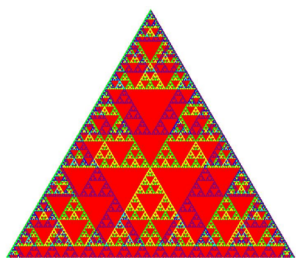
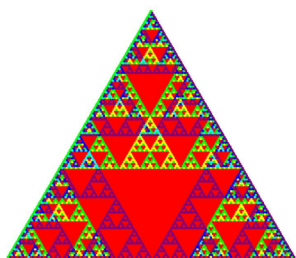
$Z_2 \times Z_2$ and $Z_2 \times Z_3$, Direct Products of the cyclic groups of orders 2 and 3.

$Z_2 \times Z_2$



$Z_2 \times Z_3$

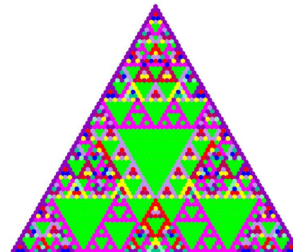
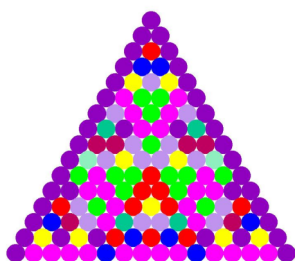
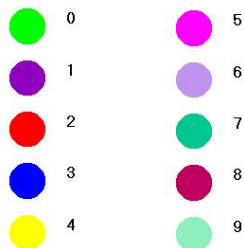
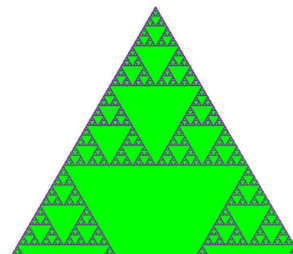
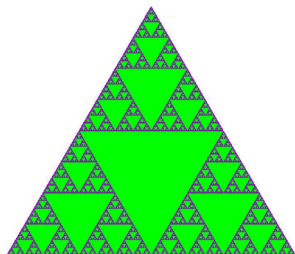
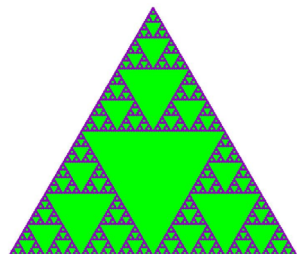
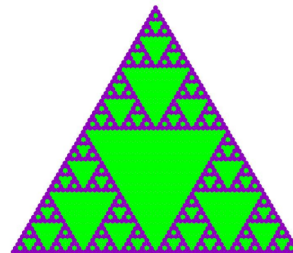
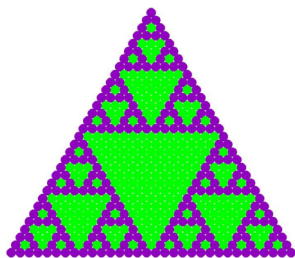
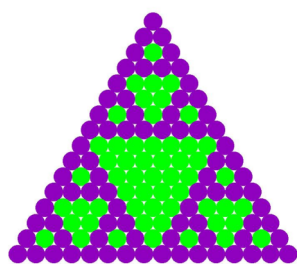


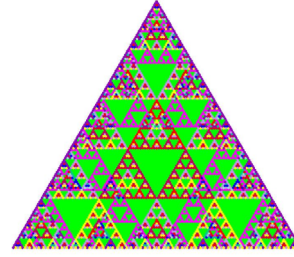
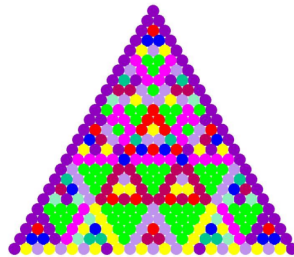
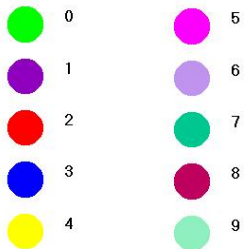
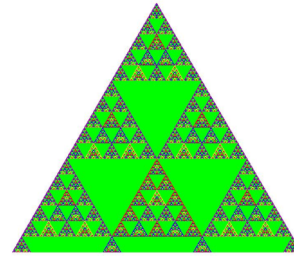
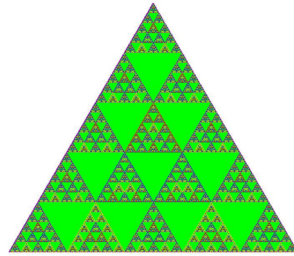
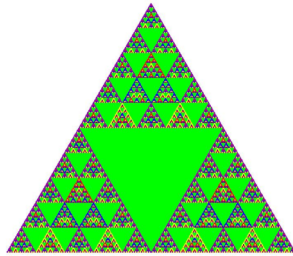
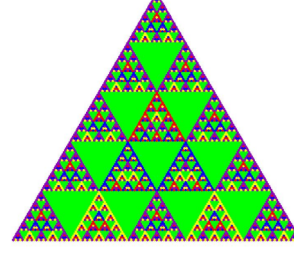
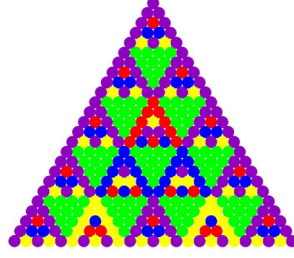
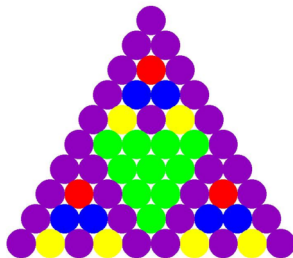
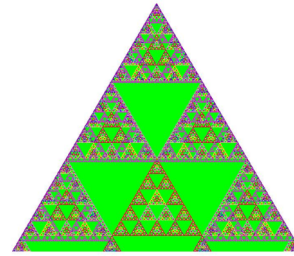
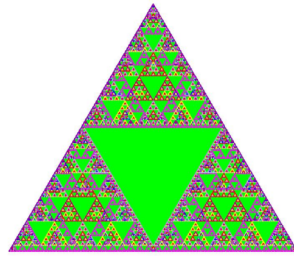
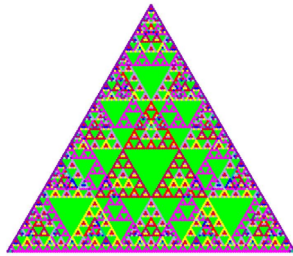


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 Bardzell & Shannon

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Z_2 , Z_5 and Z_{10} . Cyclic Groups of orders 2, 5 and 10:





Z_{10} with subgroups colored similarly or the same.

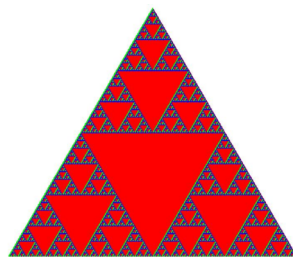
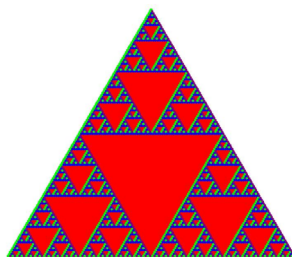
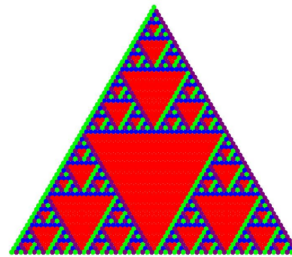
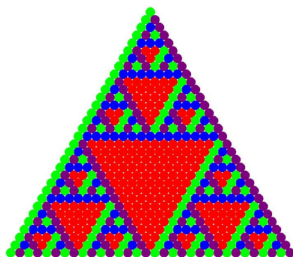
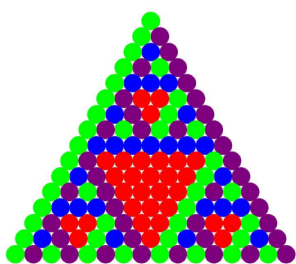
Z_{10} 400 rows colored as shown Z_{10} 400 rows colored as shown Z_{10} 400 rows colored as shown Z_{10} 400 rows colored as shown

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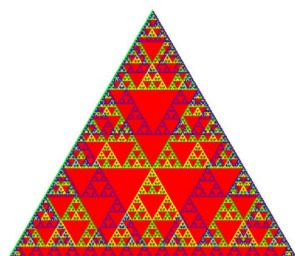
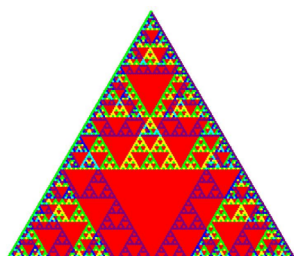
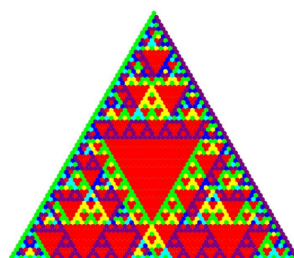
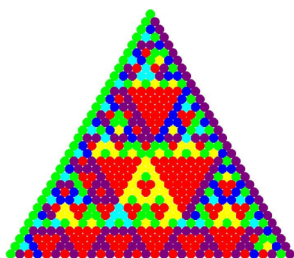
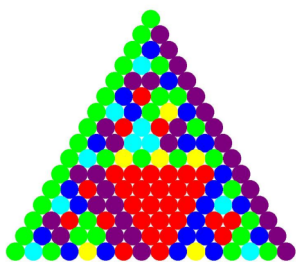
Click on an image to enlarge it. In recent versions of browsers, you should get
 a caption for each picture when your mouse points to it. Beacuse of the
 limitations regarding subscripts in these captions, the notation used is not
 $P_G(a,b)$ but rather $G(a,b)$ to refer to the PascGalois triangle using group
 multiplication from the group G and generators a and b .

$Z_2 \times Z_2$ and $Z_2 \times Z_3$, Direct Products of the cyclic
 groups of orders 2 and 3.

$Z_2 \times Z_2$



$Z_2 \times Z_3$



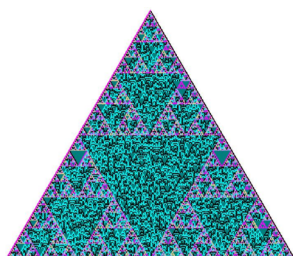
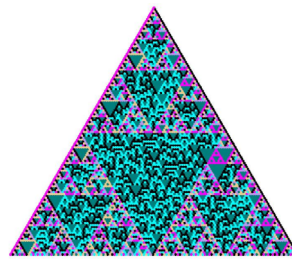
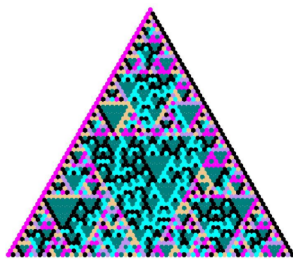
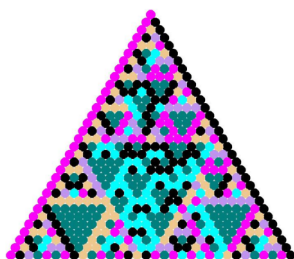
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 Bardzell & Shannon

Click on an image to enlarge it. In recent versions of browsers, you should get a caption for each picture when your mouse points to it. Beacuse of the limitations regarding subscripts in these captions, the notation used is not $P_G(a,b)$ but rather $G(a,b)$ to refer to the PascGalois triangle using group multiplication from the group G and generators a and b . In D_5 , D_6 and D_8 the identity is purple, rotations are blue & green and relections are red/orange/yellow/pink . . .

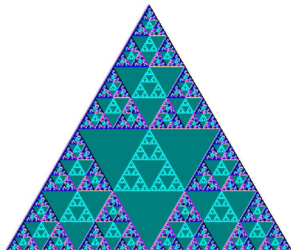
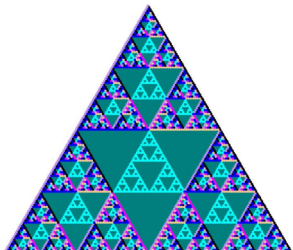
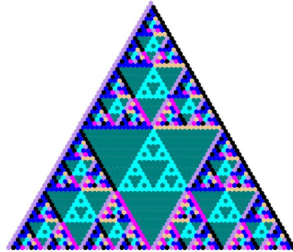
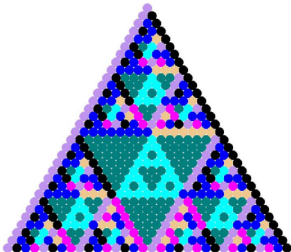
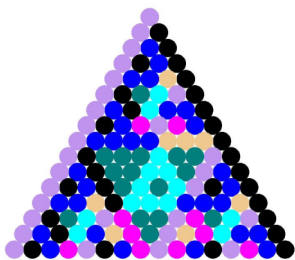
D_3 , D_4 , D_5 , D_6 and D_8 . Dihedral Groups of the symetries of regular 3,4,5,6, and 8 sided polygons

D_3

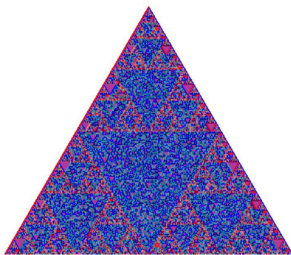
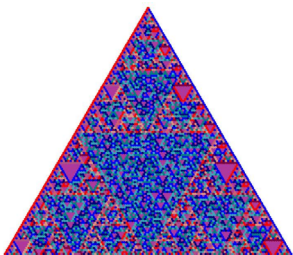
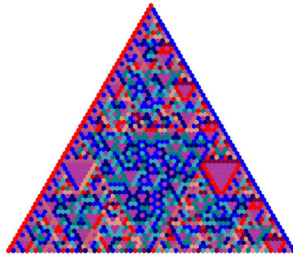
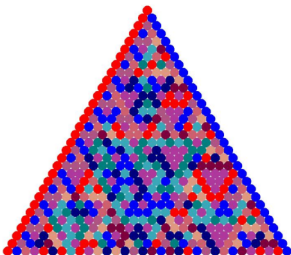
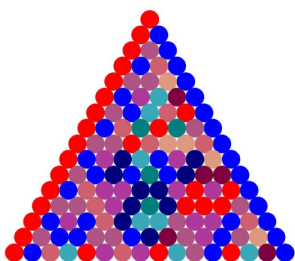
$d3(\text{rotation, reflection})$ with 16 rows



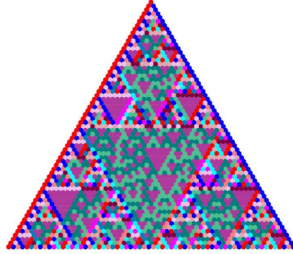
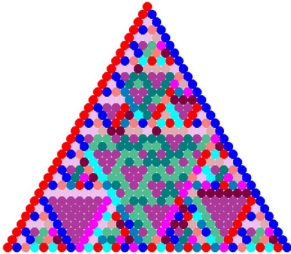
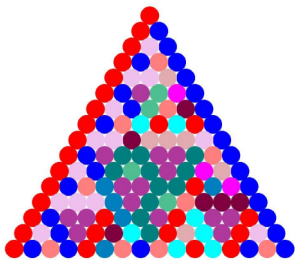
D_4

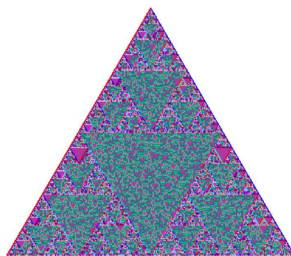
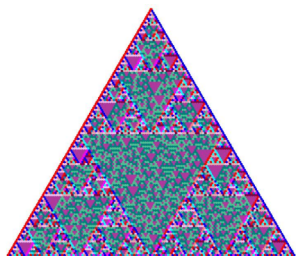


D₅

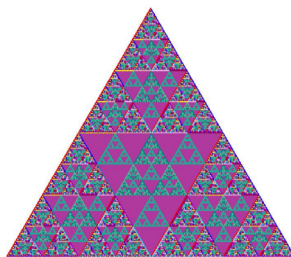
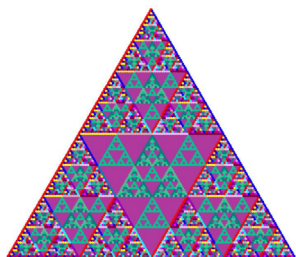
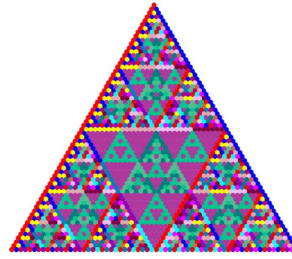
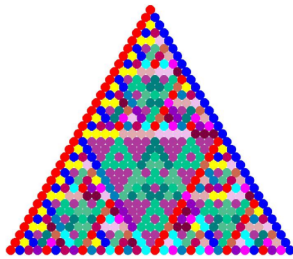
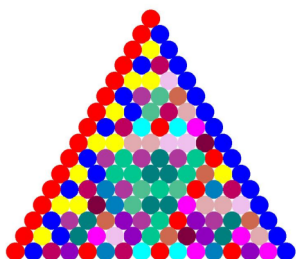


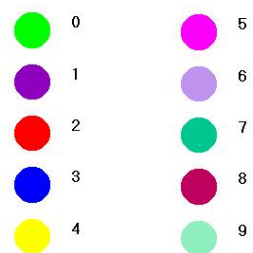
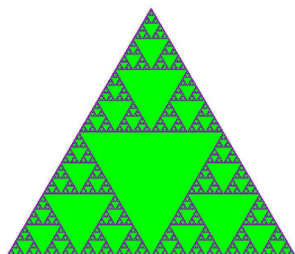
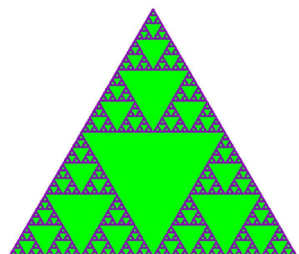
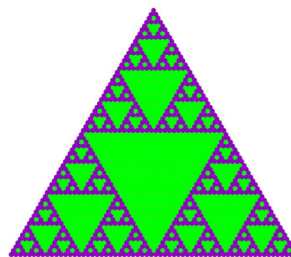
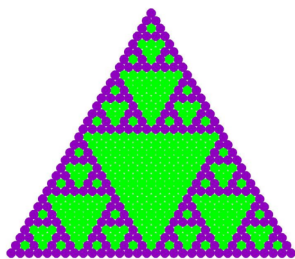
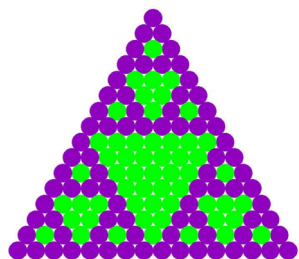
D₆





D₈





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Z_2 , Z_5 and Z_{10} . Cyclic Groups of orders 2, 5 and 10:

