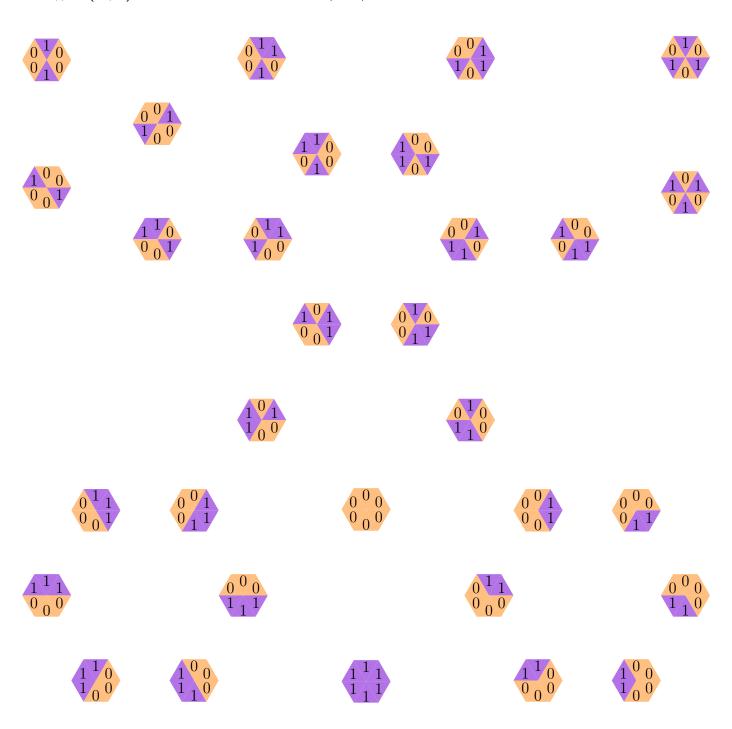
Supplemental material: Visual Algebra (Math 4120), HW 10

 $\#1(\mathbf{a},\mathbf{c})$: Action graph of $D_6 = \langle r, f \rangle$ acting on 31 "binary hexagons."



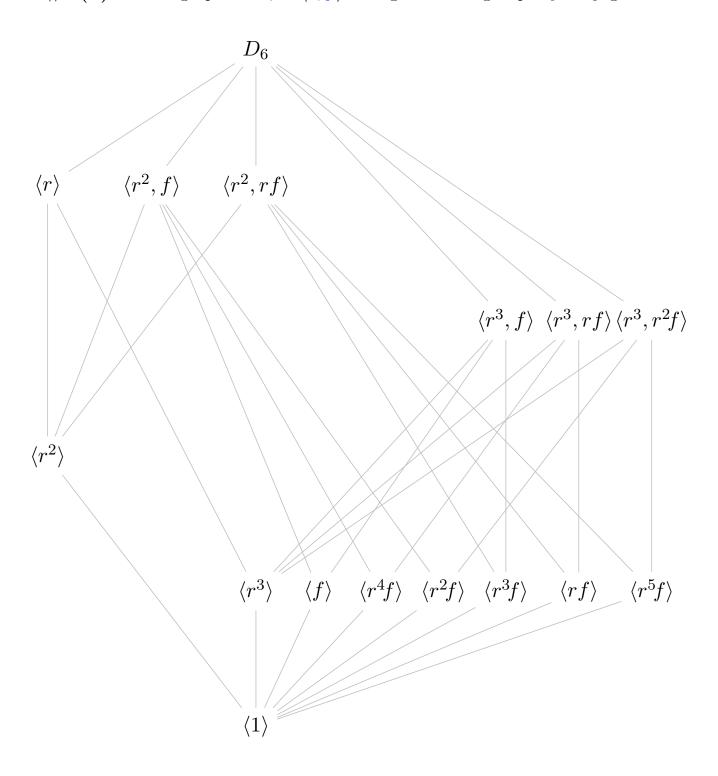
 $\#1(\mathbf{b})$: Fixed point table of D_6 acting on "binary hexagons."

	$\begin{matrix}1&1\\1&1\\1&1\end{matrix}$	$\begin{smallmatrix}0&1&0\\1&0&1\end{smallmatrix}$	$\begin{array}{c} 1 & 0 & 1 \\ 0 & 1 & 0 \end{array}$	$\begin{smallmatrix}0&0&0\\1&&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\0&1&1\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}0&1&1\\0&1\\0&0&1\end{smallmatrix}$	$\begin{matrix} 1 & 1 \\ 0 & 0 \end{matrix}$	$\begin{matrix}1&1&0\\1&0\\1&0\end{matrix}$	$\begin{array}{c} 1 & 0 \\ 1 & 0 \\ 1 & 1 \end{array}$	$\begin{smallmatrix}0&0&0\\1&0\\1&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&0\\0&1&1\\\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\0&0&1\end{smallmatrix}$	$\begin{smallmatrix}0&1\\0&1\\0&0\end{smallmatrix}$	$\begin{array}{c} 1 & 1 & 0 \\ 0 & 0 & 0 \end{array}$	1 0 0 1 0 0
1															
r															
r^2															
r^3															
r^4															
r^5															
f															
rf															
r^2f															
r^3f															
r^4f															
$r^5 f$															

 $\#1(\mathbf{b})$: Fixed point table of D_6 acting on "binary hexagons" (contin.)

	$\begin{bmatrix} 0 & 1 & 0 \\ 0 & 1 & 0 \\ 1 & 0 \end{bmatrix}$	$\begin{smallmatrix}1 & 0 & 0 \\ 0 & 0 & 1 \end{smallmatrix}$	$\begin{smallmatrix}0&0\\1\\1&0\end{smallmatrix}$	$\begin{smallmatrix}1&0&0\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\1&0&1\end{smallmatrix}$	$\begin{smallmatrix}0&1&1\\0&1&0\\&1&0\end{smallmatrix}$	$\begin{smallmatrix}1&1&0\\0&0&1\end{smallmatrix}$	$\begin{matrix}1 & 0 & 1 \\ 1 & 0 & 0 \end{matrix}$	$\begin{smallmatrix}0&1&0\\1&1&0\end{smallmatrix}$	$\begin{smallmatrix}0&1&0\\0&1&1\\0&1&1\end{smallmatrix}$	$\begin{smallmatrix}1&0&1\\0&0&1\end{smallmatrix}$	$\begin{smallmatrix}0&1&1\\1&0&0\end{smallmatrix}$	$\begin{smallmatrix}1&1&0\\0&1&0\end{smallmatrix}$	$\begin{smallmatrix}1&0&0\\1&0&1\\&0&1\end{smallmatrix}$	$\begin{smallmatrix}0&0&1\\1&1&0\end{smallmatrix}$
1															
r															
r^2															
r^3															
r^4															
r^5															
f															
rf															
r^2f															
r^3f															
r^4f															
$r^5 f$															

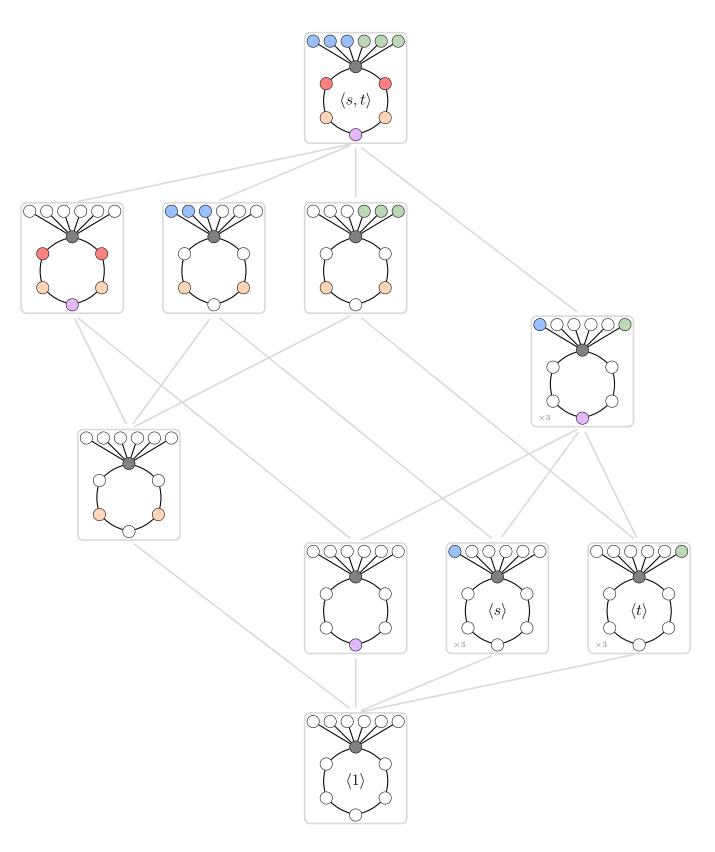
#4(a): Action graph of $D_6 = \langle r, f \rangle$ acting on its subgroups by conjugation.



 $\#4(\mathbf{b})$: Fixed point table of D_6 acting on its subgroups by conjugation.

	D_6	$\langle r \rangle$	$\langle r^2\!,f\rangle$	$\langle r^2, rf \rangle$	$\langle r^3, f \rangle$	$\langle r^3, rf \rangle$	$\langle r^3, r^2 f \rangle$	$\langle r^2 \rangle$	$\langle r^3 \rangle$	$\langle f \rangle$	$\langle r^2 f \rangle$	$\langle r^4 f \rangle$	$\langle rf \rangle$	$\langle r^3 f \rangle$	$\langle r^5 f \rangle$
1															
r															
r^2															
r^3															
r^4															
r^5															
f															
rf															
r^2f															
r^3f															
r^4f															
$r^5 f$															

#5: The subgroup diagram of $D_6 = \langle s, t \rangle$, where s = f and t = fr. Each conjugacy class is labeled with a subgroup that contains it.



#5: The G-set poset of $D_6 = \langle s, t \rangle$, where s = f and t = fr, constructed by collapsing its Cayley graph by right cosets of its subgroups.

