

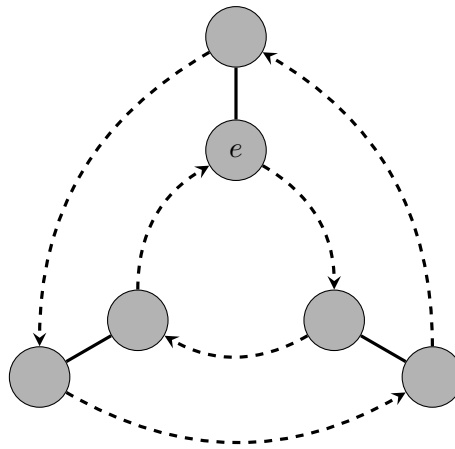
## MG 5860: Visual Group Theory (Summer 2009)

### Quiz 3 (20 points)

**NAME:**

**Instructions:** Answer each of the following questions completely. If something is unclear, or if you have any questions, then please ask. Good luck!

The abstract Cayley diagram for the group of symmetries of an equilateral triangle can be represented as follows, where one of the nodes has already been labeled by the “do nothing action”  $e$ .



1. (10 points) Finish labeling the nodes with the remaining 5 actions of the group. Let's use  $h$  to represent horizontal flip (assuming triangle oriented so that one tip is pointing up) and  $r$  to represent rotation by  $120^\circ$  clockwise.
2. (10 points) Using the Cayley diagram above, complete the following multiplication table for the group of symmetries of an equilateral triangle.

$*$	$e$	$r$	$h$			
$e$						
$r$						
$h$						