

University of Washington Math Hour Olympiad, 2017

Grades 6-7

6. Some boys and girls, all of different ages, had a snowball fight. Each girl threw one snowball at every kid who was older than her. Each boy threw one snowball at every kid who was younger than him. Three friends were hit by the same number of snowballs, and everyone else took fewer hits than they did. Prove that at least one of the three is a girl.



7. Last year, jugglers from around the world travelled to Jakarta to participate in the Jubilant Juggling Jamboree. The festival lasted 32 days, with six solo performances scheduled each day. The organizers noticed that for any two days, there was exactly one juggler scheduled to perform on both days. No juggler performed more than once on a single day. Prove there was a juggler who performed every day.