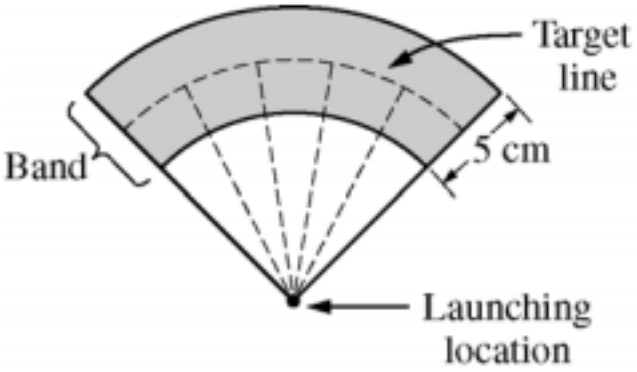
CARNIVAL CATAPULT CONTEST

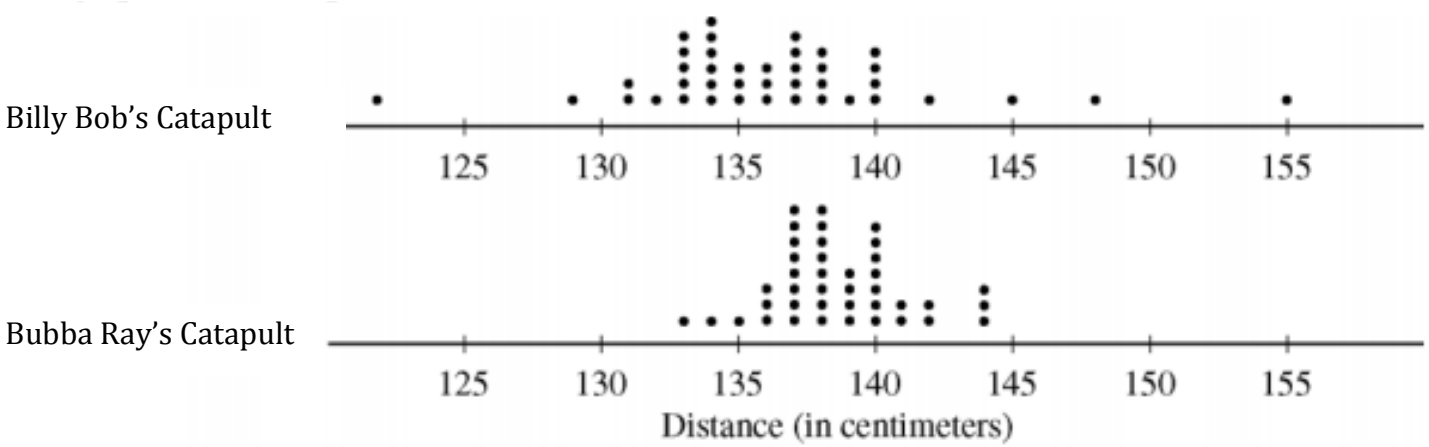
Billy Bob and Bubby Ray have each built catapults in Mrs. Hedge's class for the middle school carnival. They were given the following design for the game:



Students will launch ping pong balls from the launching location. A target line will be drawn in the middle of the band, as shown above. All points on the target line are the same distance from the launching location. If the ball lands within the shaded area, the student wins a prize.

Billy Bob and Bubba Ray cannot agree on whose catapult to use for the carnival because both feel their design is the best. Mrs. Hedge suggested a "trial run" of the catapults by school faculty to determine which design to use.

Under identical conditions, 40 ping pong balls were launched from each catapult. The distances were recorded (to the nearest cm) and the results were plotted below:



a) Describe any similarities and any differences in the two distributions of the distances traveled by ping pong balls launched from Billy Bob's catapult and Bubba Ray's catapult. Be precise with your units and explanations. Avoid pronouns.

b) Mrs. Hedge wants to increase the chance of having ping pong balls land within the shaded band at the carnival. Whose catapult would be better to use at the carnival? Justify your choice.

c) Using the catapult you chose in part (b), how many centimeters from the target line should the catapult be placed? Explain why you chose this distance.

Based on AP Statistics 2006 Free Response Problem #1