2006 Q1

(a) Both distributions of catapult distances are similarly unimodal and roughly symmetrical. Catapult B throws farther, on average, than catapult A (median for B = 138cm vs. 136cm for A), and catapult B is more consistent (less variability, with B's IQR = 141 − 137 = 4 cm vs. A's IQR = 138 − 133 = 5cm). Catapult A also has one high and one low outlier according to IQR rules, while Catapult B has no outliers.

A: LF = Q1 − 1.5IQR
= 133 − 1.5(5) = 125.5
UF = Q3 + 1.5IQR
= 138 + 1.5(5) = 145.5

B: LF = 137 − 1.5(4) = 131
UF = 141 + 1.5(4) = 147

(b) The parents should choose catapult B because it has the smaller IQR (higher precision, less variability)

(c) The catapult should be placed 138 cm from the target line because ±2.5 cm from this distance includes the largest number of test target throws for catapult B.