



AP[®] Statistics 2002 Sample Student Responses

The materials included in these files are intended for use by AP teachers for course and exam preparation in the classroom; permission for any other use must be sought from the Advanced Placement Program[®]. Teachers may reproduce them, in whole or in part, in limited quantities, for face-to-face teaching purposes but may not mass distribute the materials, electronically or otherwise. These materials and any copies made of them may not be resold, and the copyright notices must be retained as they appear here. This permission does not apply to any third-party copyrights contained herein.

These materials were produced by Educational Testing Service[®] (ETS[®]), which develops and administers the examinations of the Advanced Placement Program for the College Board. The College Board and Educational Testing Service (ETS) are dedicated to the principle of equal opportunity, and their programs, services, and employment policies are guided by that principle.

The College Board is a national nonprofit membership association dedicated to preparing, inspiring, and connecting students to college and opportunity. Founded in 1900, the association is composed of more than 4,200 schools, colleges, universities, and other educational organizations. Each year, the College Board serves over three million students and their parents, 22,000 high schools, and 3,500 colleges, through major programs and services in college admission, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT[®], the PSAT/NMSQT[®], and the Advanced Placement Program[®] (AP[®]). The College Board is committed to the principles of equity and excellence, and that commitment is embodied in all of its programs, services, activities, and concerns.

Copyright © 2002 by College Entrance Examination Board. All rights reserved. College Board, Advanced Placement Program, AP, SAT, and the acorn logo are registered trademarks of the College Entrance Examination Board. APIEL is a trademark owned by the College Entrance Examination Board. PSAT/NMSQT is a registered trademark jointly owned by the College Entrance Examination Board and the National Merit Scholarship Corporation. Educational Testing Service and ETS are registered trademarks of Educational Testing Service.

2. A manufacturer of boots plans to conduct an experiment to compare a new method of waterproofing to the current method. The appearance of the boots is not changed by either method. The company recruits 100 volunteers in Seattle, where it rains frequently, to wear the boots as they normally would for 6 months. At the end of the 6 months, the boots will be returned to the company to be evaluated for water damage.
- (a) Describe a design for this experiment that uses the 100 volunteers. Include a few sentences on how it would be implemented.

Since the appearance of boots is not changed by the method of waterproofing, we could assign each volunteer one new boot and one current method boot. (This blocking may reduce the effects of confounding variables in that some people may tread more through water than others) I would number the volunteers 00 to 99 and then with a random number table take pairs of digits (throwing out repeats) until I had 50 numbers. These volunteers would have right foot new method boot and left foot current method boot. The remaining 50 people would get right foot current method boot and left foot new method boot.

- (b) Could your design be double blind? Explain.

Yes, the team in charge of the study could be in charge of assigning the boot types to the feet, but the volunteer and company boot evaluators would not know and would be "blind." This double blinding prevents the volunteer from treating one foot different than the other based on knowledge of boot type, and this allows the boot evaluator to make unbiased evaluations of water damage on the boots.

2. A manufacturer of boots plans to conduct an experiment to compare a new method of waterproofing to the current method. The appearance of the boots is not changed by either method. The company recruits 100 volunteers in Seattle, where it rains frequently, to wear the boots as they normally would for 6 months. At the end of the 6 months, the boots will be returned to the company to be evaluated for water damage.
- (a) Describe a design for this experiment that uses the 100 volunteers. Include a few sentences on how it would be implemented.

The population is the residents in Seattle. The objective is to compare the new method of waterproofing with the current method. The volunteers recruited should be given a pair of boots. Each boot should be different from one another, however. One of the boots uses the new waterproofing method while the other remains to use the current one. The question of which foot wears which boot should be randomly decided. The boots should not be switched. After 6 months, the boots will be returned to the company to be evaluated for water damage. Water damage can be compared between the boots of the new method and the current method.

- (b) Could your design be double blind? Explain.

Yes, the design could be double blind. Double blind means that both the subject and the experimenters, the people who contact the subjects, do not know which boot uses which method of waterproofing. The manufacturers are the only ones who know. Neither the subjects nor the experimenters receive any information on the difference in the boots. The design is double blind.