

AP Statistics Worksheet
Randomized Block Experimental Design

Name: _____

1. Researchers believe that a new drug called Bone Builder will help bones heal after children have broken or fractured a bone. The researchers believe that Bone Builder will work differently on bone breaks than on bone fractures. Bone builder will be used in conjunction with traditional casts. To test the impact of Bone Builder on bones healing, the researchers recruit 18 children with bone breaks and 30 children with bone fractures. Design an appropriate experiment to determine if Bone Builder will help bones heal.
2. The progress of a certain disease differs in men and women. A clinical experiment was conducted to see how two different therapies might help slow down the progress of that disease. The researches want to test to see if the therapies are more effective than the older, traditional, therapy and they also want to see if there is a difference between the two new therapies. A total of 500 subjects volunteered: 200 females and 300 males. Design an appropriate experiment.
3. An English professor is trying to determine if the order in which someone reads a book and watches a film adaptation of that novel matters in terms of understanding the major themes presented in the novel. In other words, does watching the film before reading the novel increase understanding or does reading the novel first and then watching the film increase understanding? A total of 60 students have signed up for the study. The teacher has chosen two novels (and the film adaptations) for the experiment—*Pride and Prejudice* and *The Great Gatsby*. Design a matched pairs experiment.
4. A portion of the abstract to a recent study about a new vaccine for the H1N1 virus that was published in a medical journal reads:
Design: *Double-blind, randomized block design, blocked by age (3-10, 11-18, 19-45, 45-80). Three different factors are present: 20 mg of vaccine, 40 mg of vaccine and a placebo. Prior to administration of vaccine, subjects were exposed to high levels of the H1N1 virus. Twenty days after treatment was administered, a blood analysis was performed to determine effectiveness of treatment*
Subjects: *2,300 healthy subjects volunteered 300 aged 3 – 10, 500 aged 11-18, 800 aged 19-45 and 700 aged 45-80.*

Provide a diagram of this experiment,

5. A new vegetable fertilizer is to be tested at two different levels (regular concentration and double concentration). Design an appropriate experiment, including a control, for 30 test plots, half of which are in the shade. Also, explain how you would use randomization.