

Name That Design

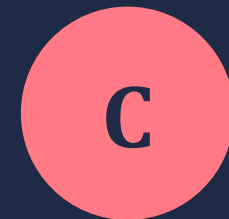
12 experiments. For each one, decide:
completely randomized, randomized block,
or matched pairs?



**Completely
Randomized**



**Randomized
Block**



**Matched
Pairs**

1

EXPERIMENT 1 OF 12

Caffeine & Reaction Time

A researcher recruits 40 college students to test whether caffeine improves reaction time. She puts all 40 names in a hat and draws 20; those students drink a caffeinated soda, while the other 20 drink an identical-tasting caffeine-free soda. Thirty minutes later, every student takes the same computer reaction-time test.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

2

Twins & Reading

A school district wants to compare a new phonics-based reading program to its standard program. It enrolls 25 sets of identical twins in 2nd grade. For each set of twins, a coin flip decides which twin gets the new program; the other twin gets the standard program. Reading scores are compared at the end of the year.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

3

EXPERIMENT 3 OF 12

Blood Pressure Medication

A drug company tests a new blood-pressure medication on 300 adults. Because age is known to affect blood pressure, patients are first separated into three groups: ages 30–44, 45–59, and 60+. Within each age group, half of the patients are randomly assigned to the new drug and half to a placebo.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

4

Dog Food Formulas

A pet food company wants to compare three new dog food formulas. A vet clinic provides 36 healthy adult dogs. Each dog is given a number from 1 to 36, and a random number generator assigns 12 dogs to each formula. After 8 weeks, each dog's change in coat-quality score is recorded.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

5

EXPERIMENT 5 OF 12

Sunscreen Showdown

A company is testing whether its new Sunscreen A prevents sunburn better than the leading Brand B. Each of 30 volunteers applies Sunscreen A to one forearm and Brand B to the other, with a coin flip deciding which arm gets A. After two hours in the sun, redness is measured on both arms.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

6

EXPERIMENT 6 OF 12

Tomato Fertilizers

An agronomist wants to compare four fertilizers on tomato yield. She has 3 fields with very different soil: sandy, clay, and loam. Each field is divided into 4 equal plots, and the 4 fertilizers are randomly assigned to the plots within each field — one fertilizer per plot.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

7

EXPERIMENT 7 OF 12

Online vs. Paper Homework

A math department wants to know if online homework works better than paper homework. The 120 Algebra 2 students are first sorted by course level: honors, standard, and support. Within each level, students are randomly assigned to do either online or paper homework for the semester. Final exam scores are compared.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

8

EXPERIMENT 8 OF 12

Gum & Test Scores

Does chewing gum during a test improve scores? A teacher has 100 student volunteers. She uses a random number generator to select 50 students to chew gum during the unit test; the other 50 take the test without gum. The mean test scores of the two groups are compared.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

9

New Racing Shoe

A shoe company tests a new racing shoe. It recruits 40 runners and ranks them by their best 5K time. The two fastest runners form a pair, the next two form a pair, and so on, making 20 pairs. Within each pair, a coin flip decides which runner races in the new shoe and which races in the old shoe.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

10

Music & Memory

A psychology class asks whether background music affects memory. They recruit 80 students and first separate them by grade: 9th, 10th, 11th, and 12th (20 students each). Within each grade, 10 students are randomly chosen to study a word list with music and 10 study in silence. Everyone takes the same recall test.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

11

Flu Vaccine Trial

To test a new flu vaccine, 2,000 adult volunteers are enrolled. Computer software randomly assigns 1,000 volunteers to receive the vaccine and 1,000 to receive a saline shot. Neither the volunteers nor the nurses know who received which shot. The number of flu cases in each group is recorded over the winter.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

12

Premium vs. Regular Gas

A car magazine wants to know whether premium gasoline gives better mileage than regular. It uses 15 cars of different makes and models. Each car drives the same 200-mile route once with regular and once with premium gas, and a coin flip decides the order for each car. Miles per gallon are recorded for each run.

Which design is this?

A

Completely Randomized

B

Randomized Block

C

Matched Pairs

Answer Key

1	Caffeine & Reaction Time	A Completely Randomized	7	Online vs. Paper Homework	B Randomized Block
2	Twins & Reading	C Matched Pairs	8	Gum & Test Scores	A Completely Randomized
3	Blood Pressure Medication	B Randomized Block	9	New Racing Shoe	C Matched Pairs
4	Dog Food Formulas	A Completely Randomized	10	Music & Memory	B Randomized Block
5	Sunscreen Showdown	C Matched Pairs	11	Flu Vaccine Trial	A Completely Randomized
6	Tomato Fertilizers	B Randomized Block	12	Premium vs. Regular Gas	C Matched Pairs