Solutions

Each answer shows the steps, then the **result**.

2.1

- control, randomization, replication

2.2

- to provide a baseline for comparison with the treated group(s)

2.3

- a fake treatment given for comparison

3.1 B

- randomization.

3.2 B

- placebo.

3.3

(a)

- the control group

(b)

- a placebo

(c)

- replication

3.4

(a)

- units: the 40 plants; response: the yield (mass of tomatoes) of each plant
- treatments: the new fertilizer and the usual fertilizer

(b)

- sunlight affects yield, so blocking compares treatments among similar plants and removes the variation due to sunlight
- in each greenhouse, number the plants 1 to 20 and use a random number generator to pick 10 different numbers
- those 10 plants get the new fertilizer and the other 10 get the usual one

(c)

- sunlight is linked to the treatment and also affects yield, so a higher yield could not be credited to the fertilizer

3.5 A

- B describes a single-blind experiment

3.6

- matched pairs design
- each runner acts as their own control, so differences between runners do not hide the effect of the shoes