1.3 review

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

1) Families with many cars tend to also own many television sets is an example of association with causation. 1) _____
   A) True B) False

2) State whether the following claim is one of association and causation, association only, or neither association nor causation. 2) _____
   Goldfish who live in large ponds are usually larger than goldfish who live in small ponds.
   A) Neither association nor causation
   B) Association with causation
   C) Association only

3) Goldfish who live in large ponds are usually larger than goldfish who live in small ponds. 3) _____
   Can we conclude Large ponds produce large Goldfish ?
   A) Yes B) No

4) State whether the following claim is one of association and causation, association only, or neither association nor causation. 4) _____
   Eating fish makes you smarter!
   A) Association only
   B) Association with causation
   C) Neither association nor causation

5) State whether the following claim is one of association and causation, association only, or neither association nor causation. 5) _____
   Studies show that taking a practice exam increases your score on a exam.
   A) Association with causation
   B) Association only
   C) Neither association nor causation

6) Studies show that taking a practice exam increases your score on a exam. What is the explanatory variable? 6) _____
   A) Score on a exam B) Weather or not taking a practice exam

7) Studies show that taking a practice exam increases your score on a exam. Is the explanatory variable categorical or quantitative? 7) _____
   A) Quantitative B) Categorical

8) Studies show that taking a practice exam increases your score on a exam. What is the response variables? 8) _____
   A) Weather or not taking a practice exam B) Score on a exam

9) Studies show that taking a practice exam increases your score on a exam. Are the response variable categorical or quantitative? 9) _____
   A) Quantitative B) Categorical

Determine whether the study depicts an observational study or an experiment.

10) The personnel director at a large company would like to determine whether the company cafeteria is widely used by employees. She calls each employee and asks them whether they usually bring their own lunch, eat at the company cafeteria, or go out for lunch. 10) _____

A) experiment B) observational study

11) A medical researcher obtains a sample of adults suffering from diabetes. She randomly assigns 73 people to a treatment group and 73 to a placebo group. The treatment group receives a medication over a period of three months and the placebo group receives a placebo over the same time frame. At the end of three months the patients' symptoms are evaluated. 11) _____

A) experiment B) observational study

12) A researcher obtained a random sample of 100 smokers and a random sample of 100 nonsmokers. After interviewing all 200 participants in the study, the researcher compared the rate of depression among the smokers with the rate of depression among nonsmokers. 12) _____

A) experiment B) observational study

Indicate whether the study described is an observational study or a controlled experiment.

13) A group of students is divided into two groups. One group is a given a new chewable vitamin and the other group is given a placebo. After six months they are asked to fill out a questionnaire and given a health exam to see whether the new vitamin has health benefits that are better than a placebo. 13) _____

A) Observational study B) experiment

Solve the problem.

14) Only randomized experiments can lead to claims of causation. 14) _____

A) False B) True

A group of 500 patients who suffer from skin cancer were asked to participate in a study to determine the effectiveness of a new medication. The patients were randomly divided into two groups, one that was given the actual medication, and one that received a placebo pill. A good outcome was defined as the cancer being in remission after 6 months of treatment. The results of the study are below.

	Medication	Placebo
Remission	160	130
Not in remission	80	130

15) Approximately what percent of patients who took the medication had cancer remission? 15) _____

A) 50% B) 67% C) 58% D) 48%

16) Was the new medication effective for cancer remission? 16) _____

A) No, this was not a controlled experiment.
B) Yes, both groups had more patients with cancer remissions.
C) No, the patients who took the placebo also had cancer remissions.
D) Yes, a higher percent of patients who took the medication had cancer remissions than the patients who took the placebo.

17) Can we conclude that the cancer remissions were caused by the new medication? 17) _____

A) No, even though this is a controlled experiment, there might be a confounding factor since the placebo group had cancer remissions too.

B) Yes, this is a controlled experiment. Since a higher percent of patients who took the medication had cancer remissions, we can conclude causation.

C) No, even though this is a controlled experiment, there was no difference between the treatment and control groups, so we cannot conclude causation.

Solve the problem.

18) When the effects of the explanatory variable upon the response variable cannot be determined, then 18) _____

A) Then the claim is invalid. B) There is sampling error.

C) A lurking variable is present. D) Confounding has occurred.

19) Association between explanatory and response variable can be due to confounding variables, not causation. 19) _____

A) False B) True

20) Confounding variables are often present in odservational study. 20) _____

A) False B) True

A 2014 headline reads "Sitting is the New Smoking: Ways a Sedentary Lifestyle is Killing You", and explains the mounting evidence for ways in which sitting is bad for you. A more recent large 2015 study contributed to this evidence by following 69,260 men and 77,462 women and finding that for women, those who spent more leisure time sitting were significantly more likely to get cancer.

21) What is the explanatory variable? 21) _____

A) Weather or not get cancer B) hours spent leisure time sitting

22) Is the explanatory variable categorical or quantitative? 22) _____

A) Categorical B) Quantitative

23) What is the response variable? 23) _____

A) hours spent leisure time sitting B) Weather or not get cancer

24) Is the response variable categorical or quantitative? 24) _____

A) Quantitative B) Categorical

25) Is the 2015 study an observational study or a randomized experiment? 25) _____

A) Observational Study B) Experiment

26) Can we conclude from the 2015 study that spending more leisure time sitting causes cancer in women? 26) _____

A) Yes, it does, because an association was found and the result comes from a randomized experiment

B) No, it does not, because this was an observational study.