

With a reference database, the population or location from which the samples are obtained must somewhat match that relevant to the samples in the crime. For example, a bullet lead reference database using samples from one bullet manufacturer would not be appropriate if the bullets relevant to the crime might likely have come from that manufacturer.

The following are question preambles that will likely be used on the test. You should familiarize yourself with them to save time during the test. You may ask questions for clarification in advance of the test.

**9-12 (1 pt each)** You will send pairs of tubes to a lab for analysis. For each pair of tubes, you are to decide whether replication for the characteristic indicated is present, absent or unknown to you and also whether it would be known to the lab receiving the samples. (Replication means it is the same across both samples.) You know everything given in the table. The lab only knows what is written on the tube: if a tube has a person's name on it, the lab can assume that the tube contents belong to the name of the person on the label and can infer gender but nothing else. If a tube is labeled with a number, the contents are completely unknown to the lab but known to you to the extent given in the table. However, if two tubes are labeled the same, the lab can assume the contents are the same. A question mark (?) indicates that the state of that particular sample is unknown to you. You may be able to use other information in the table to decide its property. (Gender, marker type and blood type do not change from sample to sample of the same individual, even if the assays are sometimes ambiguous.) Your options for tube contents and tube labels are:

<u>tube</u>	<u>tube label</u> -- what you and the lab each see	<u>Contents are from</u> -- what only you see	<u>Gender</u>	<u>Blood type</u>	<u>Marker type</u>
(1)	Chrissie Hynde	Chrissie Hynde	Female	B	negative
(2)	Justin Hayward	Justin Hayward	Male	?	negative
(3)	Margo Timmins	Margo Timmins	Female	A	+
(4)	#2013	Robert Plant	Male	O	?
(5)	#1869	Patsy Cline	Female	A	+
(6)	#1000	James Page	Male	O	+
(7)	Guy Clark	Guy Clark	Male	B	negative
(8)	Nanci Griffith	Nanci Griffith	Female	A	negative
(9)	#2013	Robert Plant	Male	O	?
(10)	#7193	Justin Hayward	Male	A	negative

In the following questions, indicate which pairs of tubes (if any) satisfy the specified criteria.

- (A) Absence of replication is known to you, and the lab cannot infer the absence
- (B) Absence of replication is known to you and the lab can infer the absence
- (C) Presence of replication is known to you, and the lab cannot infer the replication
- (D) Presence of replication is known to you, and the lab can infer the replication
- (E) Replication is unknown to you and unknown to the lab

**17-26. Blind designs.** In a taste test of dog food versus liver paté, the goal of the study is to assess the subject's possible preference for the taste or smell of canned dog food over liver paté (as specified); note that taste includes smell, but smell does not include taste. You may wish to recall class discussion for some of these. Do not infer more than is given.

You are to decide, given the design for each question, what factors might influence the subject's discrimination in ways other than taste or smell (as specified). That is, what factors still need to be addressed to avoid possible bias and other influences? Anything that allows the subject to identify the dog food or that leads them to sense a difference in the presentation of the foods should be considered to possibly affect their preference or discrimination.

**17-21 (2 pts)** Design for a test of subjects' preferences based on smell alone. The researcher carries out all preparations prior to the subjects' arrival. Both foods are made from meat. The two meats differ in texture: the dog food has meaty chunks, and the paté is homogenized. The two meats also differ in color. Each food is taken from the original container and put directly in the serving containers without modification; serving containers are labeled with a letter (A, B, C, ...), chosen randomly. All subjects are familiar with the appearance of unmodified canned dog food and with that of paté. The researcher knows which serving containers have the dog food. The researcher engages in casual conversation with the subjects during the tests but avoids intentionally conveying information to subjects. Smelling involves no physical contact between the subject and the food, just having the subject smell 4" above a serving dish held by the researcher. All smelling tests are conducted before any of the taste tests. Foods are presented in random order to subjects. The subjects are blindfolded during the smell test.

Given the design, what factors should be considered as possibly influencing the subjects' preferences in ways other than smell?

**(A) the design does not adequately avoid the effects of this factor**

**(B) the design adequately avoids the effects of this factor**

This will be followed by several questions listing different factors. Then there will be a second paragraph and set of questions on

Design for a test of subjects' preferences based on taste (which includes smell)