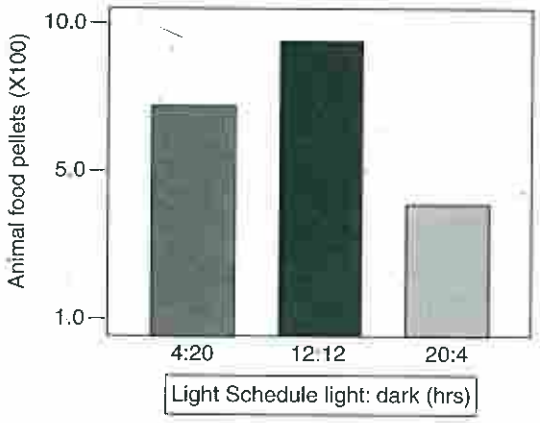
23. The graph is from an experiment where total light exposure was adjusted for three groups of rats. Each group had 12 rats and each group was exposed to different amounts of light versus dark in a 24-hour period for three months. Food consumption was measured in each group following a 24-hour period. Food pellets are reported as means per group for three months. (Note: All rats used in the experiment were the same age and breed. All were fed the same kind of food pellets.)



Which of the following do results of the experiment BEST support?

A Food consumption is genetically predetermined.

B Food consumption is determined solely by environmental factors.

C Food consumption is unaffected by environmental factors.

D Food consumption is influenced by environmental factors.

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24. Explain what relationship exists between the body temperature of birds and their ability to fly.

A There is no relationship between the body temperature of birds and their ability to fly.

B Birds have a higher average body temperature than mammals do because of a fast metabolism needed to produce energy for flight.

C Birds need a high body temperature to keep them warm as they fly into the cooler, upper air of the atmosphere.

D Birds need a cooler body temperature because when in flight, there is no way to escape from the heat of the sun.

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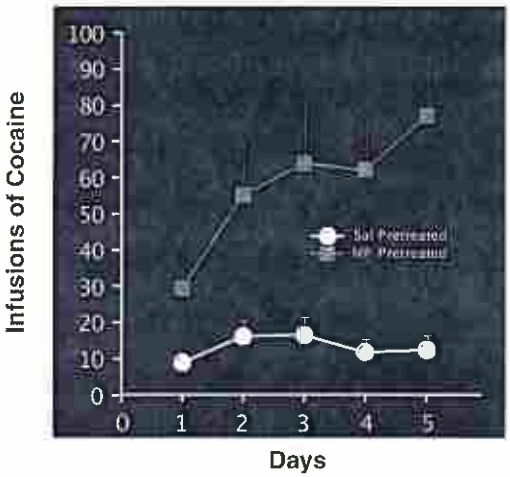
25. A hypothesis states that taking drugs known as "gateway drugs," which include nicotine and marijuana, could make an individual more likely to use stronger illegal drugs. To test this idea, a group of researchers divided young rats into two groups. For one week, they injected one group with saline (salt solution) and the other group with methylphenidate (MP). MP, which is used to treat attention disorders, is in the same class of drugs as cocaine and is considered a gateway drug. The researchers then inserted catheters in the rats so that as adults they could self-administer very low doses of cocaine with a pump by poking their heads into one of two holes. To be sure the animals were not randomly selecting cocaine, the researchers designed the experiment so that only one hole would produce a dose of cocaine. The researchers created the graph in Figure 1 to illustrate the results of the experiment over a five-day period. On the graph, Sal represents saline.



Based on the graph, what would be an accurate statement regarding the effect of pretreatment with MP?

A Animals pretreated with MP were less likely to self-administer cocaine.

B Animals pretreated with MP were more likely to self-administer cocaine.

C Animals pretreated with MP self-administered the same amount of cocaine as control animals.

D Animals pretreated with MP did not self-administer cocaine.

26. Three bodies were found at what appeared to be the same crime scene. Police used yellow tape to block off the area. Crime scene investigators arrived to take pictures and collect evidence of fingerprints and bloodstains and to look for other evidence, such as tire tracks, footprints, and bullet holes.

Postmortem Events and Onset Times

Event	1 hour	3 hours	5 hours	10 hours	12 hours	24 hours
Rigor mortis	None	Beginning	Obvious rigor	Obvious, but not maximum	Maximum	
Livor mortis	Beginning	Obvious, but not set	Obvious, but not maximum	Maximum lividity		
Algor mortis	97°F	94°F	91°F	84°F	80°F	Above 80°F
Decomposition						Green skin on abdomen

It was 11:00 p.m. when pathologists from the coroner's lab began their examinations to estimate time of death. Body #1 and body #2 showed the beginning signs of rigor mortis and some red blotches on the skin, and the temperature of the bodies was 92°F. Use the chart to predict the time at which the coroner's office estimated the deaths happened.

A between 6:00 P.M. and 8:00 P.M.

B between 5:00 P.M. and 6:00 P.M.

C between 8:00 P.M. and 10:00 P.M.

D at exactly 7:00 P.M.

Use the information below to answer questions 27 through 29.

When testing a hypothesis, a scientist's expectations can affect what he or she actually observes. For this reason, it is important for scientist pported by scientific data, not by opinions. Data that are made up or changed to fit expectations have no value.

When possible, scientists will repeat experiments to verify their findings. A hypothesis cannot be examined usefully i n a scientific way without enough data. Just one example is never enough to prove something true. However, one example could prove that something is not true. It is just as important to keep accurate records of data that do not support the hypothesis as records that do support the hypothesis. If the hypothesis is not supported, it will need to be modified. Accurate records guide the scientist and lead to better hypotheses.

Clear and accurate records are also needed so that other researchers can repeat an experiment. A single result is never enough support for a hypothesis. For it to be accepted, researchers in another lab must be able to repeat the experiment and obtain the same results. If the record is incomplete, unclear, or inaccurate, repeating the experiment is difficult or impossible. Always write neatly and record data in an organized way. By keeping information organized, tables can help make sure that data are accurate.

Sample Data: Volume of an Irregular Solid

	Total volume (mL)	Volume of water only (mL)	Volume of object (mL)
Trial 1	17.5	10.5	7.0
Trial 2	14.5	9.0	5.5
Trial 3	21.5	10.0	11.5
Average	17.8	9.8	8.0

27. The total volume shown for Trial 3 on the data table on the previous page appears to be too high. What should the person doing the experiment do about that measurement?

A Ignore it because it is obviously wrong.

B Change the value so all the measurements match one another.

C Keep making measurements until the right one is observed and then record that one.

D Record the data that appear to be incorrect and then try to find an explanation.

28. It is important that research results are always recorded

A quietly.

B accurately and clearly.

C in blue ink.

D unless they are wrong.