Building Stamina®

DIRECTIONS Read each question. Then circle the letter for the correct answer.

1 **Which of the following is the *best* description of a hypothesis?**

A a solution to an ongoing problem

B a conclusion drawn from observations and data

C a possible explanation of a phenomenon

D a question asked after viewing a phenomenon

2 **A car travels 382 kilometers from Los Angeles to San Francisco in 7 hours. What is the speed of the car? Round to the nearest whole number. (speed = distance/time)**

A 50 km/h

B 55 km/h

C 60 km/h

D 82 km/h

3 **A relationship between data points can be considered nonlinear if**

A the data points form a line.

B the data points are constant.

C the data points do not form a line.

D the data points are related with a constant slope.

4 **In the graph of the equation $y = x$, the slope is equal to 1. From left to right, the line**

A is spiked.

B is flat and horizontal.

C goes up steadily.

D goes down steadily.

5 **The base area of a storage unit is 600 m^2 and the height is 12 meters. What is the volume of the storage unit? (Volume = Area × Height)**

A 50 m^3

B 612 m^3

C 744 m^3

D 7200 m^3

6 **Scientific investigations require all of the following *except***

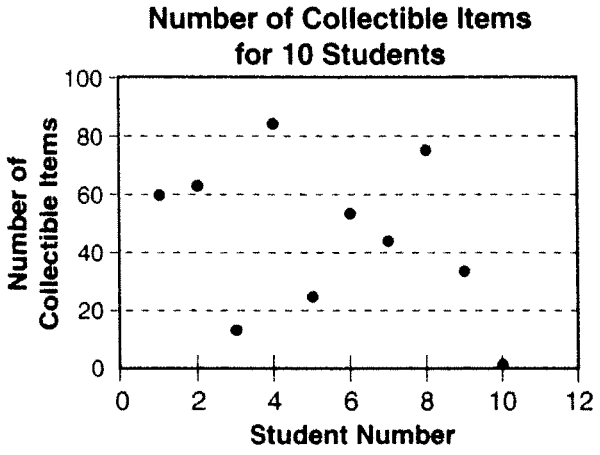
A asking questions.

B including an experiment.

C collecting data.

D drawing conclusions from data.

7 **The graph below shows the survey results for ten students and the number of collectible items that they own. Which is the *best* way to describe the relationship shown in the graph?**



A $y = x$

B $y = kx$

C linear

D nonlinear

8 **The key difference between controlled and variable parameters is that**

A controlled parameters always change.

B variable parameters always remain constant.

C an experiment can only involve controlled parameters.

D controlled parameters are conditions that remain constant.

9 **You collect data and graph it. It seems to have a constant slope. You can conclude that the relationship is**

A linear.

B nonlinear.

C quadratic.

D exponential.

10 **A student rubs a balloon against the head of another student. The hair seems to stick to the balloon. What is the *best* hypothesis for the observation?**

A The hair has gum in it.

B Air from the balloon came out and blew the hair around.

C The hair and the balloon were repelled by one another.

D Rubbing the balloon caused the material of the balloon to change.

11 **A block of wood has a base area of 2 m^2 and exerts a pressure on the ground of 50 Pa. What is the downward force of the block of wood? (Force = Pressure × Area)**

A 25 N

B 52 N

C 100 N

D 200 N

12 **What is the difference between linear and nonlinear relationships on a graph?**

A Linear relationships have variable slopes.

B Nonlinear relationships have constant slopes.

C Linear relationships show data points that form a line.

D Nonlinear relationships can be represented by $y = kx$.

13 **A student designs an experiment to test the properties of elements in the periodic table. The student performs the experiment three times and gets the same results each time. Which is the *best* statement the student can make about the accuracy of the data?**

A The data is accurate and cannot be contested.

B The data is accurate enough to support the conclusion.

C The data is inaccurate and should be thrown out.

D The data is inaccurate and the student should redesign the experiment.

14 **A jogger runs at a constant speed of 4 kilometers per hour. In 3 hours, how many kilometers will the jogger have covered?**

A 4 km

B 7 km

C 12 km

D 24 km

15 **A student designs an experiment to see the effects of exposing a block of ice to sunlight over time. The student makes a hypothesis that the ice will melt more quickly with longer exposure to sunlight. Which parameter should the student collect data about?**

A the freezer where the ice is kept

B the color of the ice cube trays the student uses

C the amount of water that melts from the ice

D the number of people who witness the experiment

16 **A student notices that a skateboard moves faster on a smooth surface than a rough surfa The student hypothesizes that the type of surf affects the amount of friction between an obje and a surface. The student measures the speed of the same five objects on a rough and a smoo ramp. As the experiment was described, which most likely a variable parameter?**

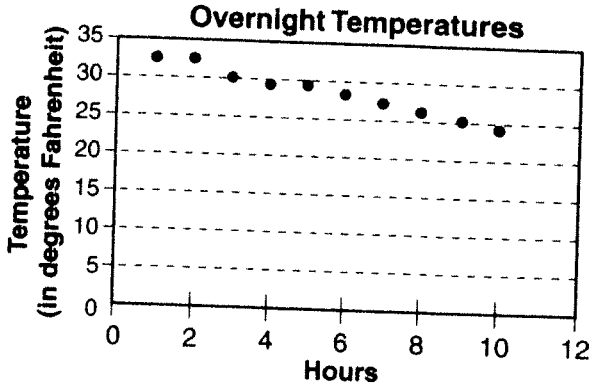
A the surface of the ramp

B the angle of the slope

C the objects she used

D the friction between objects

17 **Which statement *best* describes what happens t the temperature as time passes?**



A It increases.

B It decreases.

C It increases and decreases.

D It remains constant.