

PERSONAL BEST TEST TRAINING

TECHNICAL READING STUDY GUIDE

ACT and PSAT/SAT and Other Standardized Tests

 Doorway to College
FOUNDATION
Supporting the transition to higher education™

SAMPLE PAGES

Chapter One

Introduction

YOUR PERSONAL BEST

You can't do better than to reach your highest potential. If you reach your PERSONAL BEST score on the PSAT, the SAT, or the ACT, you deserve it, and you should be proud of it.

Unfortunately, not everybody reaches their personal best. There are many reasons why this happens. Sometimes people don't know what to expect on the test. They don't know the best way to attack the test. Anxiety makes them freeze up. They just don't prepare well. Or they set their expectations too low.

The goal of this book is to help you reach your highest potential score on the PSAT, the SAT, or the ACT. The program was developed to help you get over the obstacles that can keep you from getting there. No matter how high you climb on the score scale, if it's the very best you're capable of, you shouldn't be disappointed with it.

Please note: The PSAT and SAT are essentially the same test, with very few differences. Unless otherwise stated, when we refer to the SAT, we are referring to both tests. The College Board is the publisher of the PSAT and SAT. ACT, Inc. is the publisher of the ACT.

Take Control of the Technical Reading Test

Think of a college entrance exam as a competition. You do not need to let ACT, Inc. or the College Board control every aspect of this contest. The more you take control, the better chance you have at reaching your highest personal potential.

THE TEST PUBLISHER CONTROLS—

- 1) Date and location of the test
- 2) Environment for administration
- 3) Technical specifications of the test
- 4) Sequence of test items
- 5) Raw score (number correct) to ACT or PSAT/SAT score conversion

These five elements are beyond your control. These are the "givens." There are other important elements, however, that you can control.

YOU CONTROL—

- 1) Level and intensity of advance preparation
- 2) Your personal scoring goals
- 3) Attack strategy for each type of question
- 4) Sequence of questions as you choose to answer them
- 5) Mental attitude before and during the test

Do not surrender control of the factors you can control.

GOAL: To help you achieve your PERSONAL BEST on the ACT or SAT Technical Reading questions

Your personal “highest-possible score” depends on your academic ability in each subject area tested. When you take the ACT or SAT, there are a number of factors that can lower your score. The goal of test preparation is to minimize the effects of those negative factors.

OBJECTIVE 1: To demystify the Technical Reading questions

In order to reach your personal best on a Technical Reading Test, you need to know as much as possible about it. This program will give you insights into how the tests are constructed. It will expose you to the types of questions you can expect to see on the test, the difficulty levels you should expect, and the content you need to master.

OBJECTIVE 2: To reduce test anxiety and its negative effects on your scores

College-admissions tests are guaranteed to create as much anxiety as possible. Although we can't change the testing situation, we can help you take control of it. These study materials will help you know what to expect so that you will find the situation more familiar. And when the test actually begins, your preparation will reduce your overall anxiety. You will be less likely to panic during the test because you will have a variety of strategies to employ when you don't know the answer to a question.

OBJECTIVE 3: To teach you both general and specific strategies for taking multiple-choice tests

This *Study Guide* covers numerous strategies for taking tests. Some of these methods will become tools that you may apply to any multiple-choice test. Other strategies are specific to the types of items that appear on a Technical Reading Test.

The emphasis of this book is on what to do when you don't immediately know the correct answer to a question. The main strategy, called *ZAPPING*, teaches you to identify and eliminate incorrect choices before selecting an answer. This strategy is modified slightly for each type of question. *ZAPPING* is a technique you can transfer to every multiple-choice test that you take in high school or college.

tip
11 **You won't be tested on technical terminology.**

The Technical Reading test will not question you on the meaning of technical words like *bacillus* or *magnetometer*. And you won't be expected to know the vocabulary of historical researchers, or astronomers, or biologists. So relax when you see scientific or technical terms, and just think logically to answer the question.

tip
12 **Every question has one—and only one—correct answer.**

If it sometimes seems to you that two answers are correct, first double-check the question, then go back to the information set. If two choices still appear to be equal, then they are probably both wrong, since they cannot both be correct. Although the test editors are not infallible, the odds of you catching them with two correct answers are about zero.

tip
13 **Use only the information given in the passage—not experiments you did in class.**

The girl sitting next to you may be a physics star who has done enough force and motion experiments to win the Nobel Prize. She still needs to use only the data that's given on the test. Don't think you can outsmart the test editors by pulling in the results from an experiment you did in class or a video you watched on the Internet. Use only the information given, because that's the information you're being tested on.

tip
14 **Trust your intuition, but verify if necessary.**

In items where all four choices need to be considered, quickly *ZAP* any choice that seems intuitively wrong. Then examine the remaining choices. If you are unable to verify that one of these is the answer, go back and reconsider the choice that you instantly *ZAPPED*; it's possible that you *ZAPPED* the correct answer by accident.

tip
15 **Watch out for the negativity trap.**

Many questions contain a negative twist, such as:

- Which of these contradicts *X*?
- Which of the experiments does NOT support *Z*?
- Which of the following discoveries would weaken the theory of Scientist *Q*?
- To which of the following would the data be LEAST relevant?
- Which of these was NOT a critical factor in the experiment?

Although the word *not* is sometimes given in all caps, other negative words may not be highlighted at all. Take a minute to identify and circle the negative words in the questions above. Questions like these must be handled carefully—and with deep concentration. It's very easy to get turned around as you consider all of the choices. When that happens, you might reach a correct conclusion, but answer the item incorrectly.

tip
16 **Keep moving.**

You need to work at a very healthy pace to finish on time. Although you should study the Technical Reading passages and graphic illustrations with some intensity, don't dawdle on any of the items. If you stop and really contemplate every choice, you'll have difficulty completing the test.



At the five-minute warning, adjust your strategy.

When you hear the five-minute warning, take a quick assessment of where you are. If you're on the last page, you may be able to work through to the end without concern. But if you have a lot of questions left to answer, it's time to switch into a different gear. Use that time to take a shot at ZAPPING through the remaining items. Do not leave any blanks.

When you get to the end, return to where you left off and continue working. As you determine each correct answer, simply erase the previous incorrect guess. Don't let time run out while you still have three or four blank spots on your answer sheet. On the ACT and SAT, every question affects your score.



Attacking complex graphs and tables

When you run into a complex graph or table, you won't have time to thoroughly study every detail. Below are four simple steps to maximize the use of your time. Quickly do these steps, and you'll have a much better chance of finding the correct answer to the question.

STEP 1: Identify the main idea—the title.

When you see a complex graph, chart, or table, the first thing you should do is find out what it's about. Most graphic illustrations will have some sort of title. In some cases, you will need to read a paragraph to find out the subject of the graph.

STEP 2: Identify the variables.

- What is the horizontal variable?
- What is the vertical variable?
- Is there a third variable? Sometimes there will be. Many students miss one of the questions because they overlook a third variable.

STEP 3: Identify the scales.

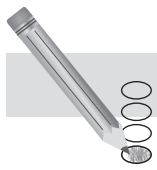
- Is the scale continuous or categorical?
- What are the units of measure?
- What are the minimum and maximum values on the scale(s)?

STEP 4: Read the question.

Graph-reading questions generally fall into one of two categories:

- Questions asking you to read or determine a value.
- Questions asking you to understand trends and relationships.

Know what you're being asked before you start looking for the answer.



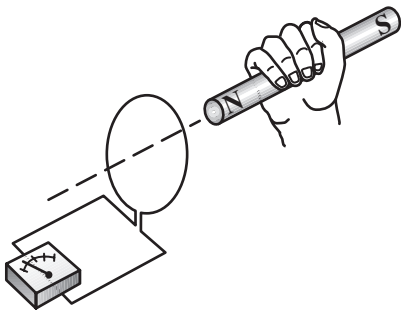
Practice Set 214

Use the information that follows to answer questions 1–6.

To study the relationship between electricity and magnetism, a student conducts the following experiments:

Experiment 1

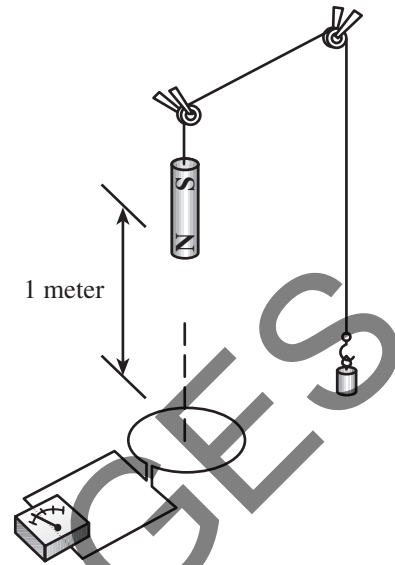
The student constructs a circular loop of electrical wire. The two ends of the wire are connected to an ammeter which measures the amount of electrical current passing through the wire (measured in amperes, abbreviated as “A”). The student then moves a bar magnet through the center of the loop and observes the needle on the ammeter, as shown below:



The student finds that the needle on the ammeter deflects whenever the bar magnet moves toward or away from the wire loop. However, the meter does not deflect when the magnet is stationary, even when it is within the loop.

Experiment 2

The student then attaches the bar magnet to one end of a thin cable whose other end is connected to a hook on which a small, non-magnetic weight can be hung. The cable is supported by two pulleys as shown below. The wire loop/ammeter apparatus is positioned below the bar magnet so that the bar magnet falls through the center of the loop. The setup is shown below.



The mass of the magnet is measured to be 1 kg. The student positions the bar magnet exactly 1 meter above the wire loop and releases it, observing the maximum deflection of the ammeter needle as the magnet falls through the loop. This is performed several times, each time with a different amount of weight hung from the hook. The results are displayed below:

	Mass Hung on Hook				
	No weight added	0.2 kg	0.4 kg	0.6 kg	0.8 kg
Max. Current Generated	4.43 A	3.62 A	2.90 A	2.22 A	1.48 A

Use the information that follows to answer questions 1–10.

High Plains Aquifer Water Level Monitoring Study
Average water level change by state, predevelopment through 1980 and 2000 through 2013, in feet

Time period	State							
	Colorado	Kansas	Nebraska	New Mexico	Oklahoma	South Dakota	Texas	Wyoming
Predevelopment (about 1950) to								
1980	-4.2	-9.9	0.0	-9.8	-11.3	0.0	-33.7	0.0
2000	-9.0	-18.2	0.7	-14.5	-13.3	0.3	-34.5	-0.1
2001	--	--	--	--	--	--	--	--
2002	-9.5	-18.3	0.2	-14.5	-13.2	0.2	-34.7	-0.2
2003	-9.9	-18.9	-0.3	-14.4	-13.7	0.2	-34.9	-0.2
2005	-10.9	-19.2	-0.5	-15.1	-13.2	0.2	-35.2	-0.2
2007	-12.8	-22.7	-1.0	-15.7	-12.4	0.0	-36.9	-0.4
2009	-13.2	-22.8	-0.9	-15.1	-12.3	0.0	-36.7	-0.4
2011	-12.9	-23.6	0.2	-14.9	-11.1	0.3	-39.0	-0.9
2013	-14.3	-25.5	-0.3	-16.5	-12.3	1.8	-41.2	-0.8

Source: United States Geological Survey, Nebraska Water Science Center, ne.water.usgs.gov/ogw/hpwlms/tablewlp.html

Note: The change from the predevelopment baseline is recalculated annually in the table above.

1 _____ 3 _____

According to the passage, the main reason that water levels in the Ogallala Aquifer are falling is

- A) lesser amounts of rain and snow are falling in the Rocky Mountains.
- B) deep wells can now reach water tables 1000 feet below surface.
- C) water levels in the Ogallala Aquifer vary from state to state.
- D) the demand for groundwater has increased among farmers.

The statistics in paragraph 2 concerning water use are intended to support the author’s claim that

- A) the Ogallala Aquifer is under threat from depletion.
- B) groundwater is in jeopardy from agricultural pollutants.
- C) wells are created by drilling below ground and into the water table.
- D) water in semi-arid regions such as the Great Plains evaporates rapidly.

2 _____

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 30–34 (“The Ogallala . . . rivers”)
- B) Lines 38–43 (“With . . . rate”)
- C) Lines 48–52 (“The problem . . . Texas”)
- D) Lines 60–63 (While . . . recharge”)

4 _____

In lines 64 and 69, the author uses the words “ominously” and “looming” to suggest that

- A) the Great Plains may soon face more serious water problems.
- B) contamination of the Ogallala Aquifer is a second serious threat.
- C) farmers and government officials aren’t heeding warning signs.
- D) reducing the amount of irrigation may lead to a food crisis.



Practice Set 217

Use the information that follows to answer questions 1–6.

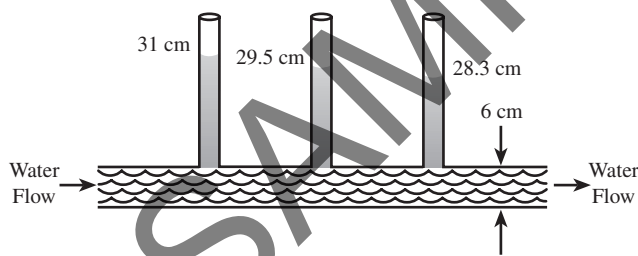
Bernoulli’s law states that a fluid in motion possesses energy of motion, or kinetic energy. This energy can be measured as fluid pressure. A student conducts three experiments to study the flow of liquids. In each experiment, water flows through a horizontal glass tube with three openings on top. From each opening, a thin tube extends vertically. These tubes are open at the unconnected end. As the water flows through the horizontal tube, water is forced upward into the smaller tubes by the water pressure in the main tube. By measuring the height of the water in each of the smaller tubes, the student is able to make approximate measurements of the differences in water pressure at the three points in the main tube. It is assumed that atmospheric pressure, which also affects water height in the vertical columns, is the same for each.

Experiment 1: Water Pressure

The student uses a horizontal tube with a 6 cm diameter throughout its length. The apparatus and the resulting heights in the smaller tubes are shown:

The student finds the heights in the vertical tubes to be 31 cm, 29.5 cm, and 28.3 cm, from left to right. He concludes that the water pressure in the tube decreases as measurements are taken farther downstream.

Apparatus Used for Experiment 1

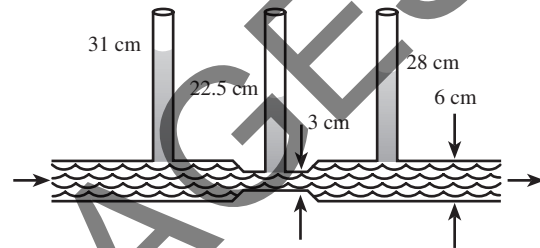


Experiment 2: Narrowing the Tube

The same type of tube is used, except the middle portion of the tube has a diameter of 3 cm instead of 6 cm. The apparatus and results are shown:

The heights are measured to be 31 cm, 22.5 cm and 28 cm, from left to right. The student concludes that since the water level is significantly lower in the middle tube, there must be less water pressure in the thinner segment of the horizontal tube.

Apparatus Used for Experiment 2

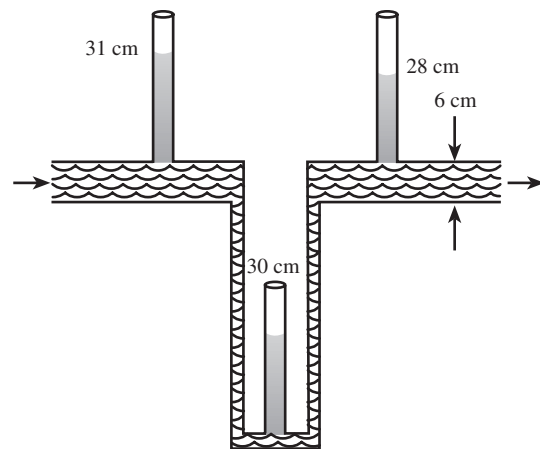


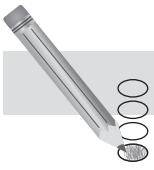
Experiment 3: Narrowing and Lowering the Tube

To see what effect elevation has on water pressure, the student uses an apparatus similar to that of Experiment 2, only the middle portion is below the other two by 1 meter.

The measured heights are 31 cm, 30 cm, and 28 cm.

Apparatus Used for Experiment 3

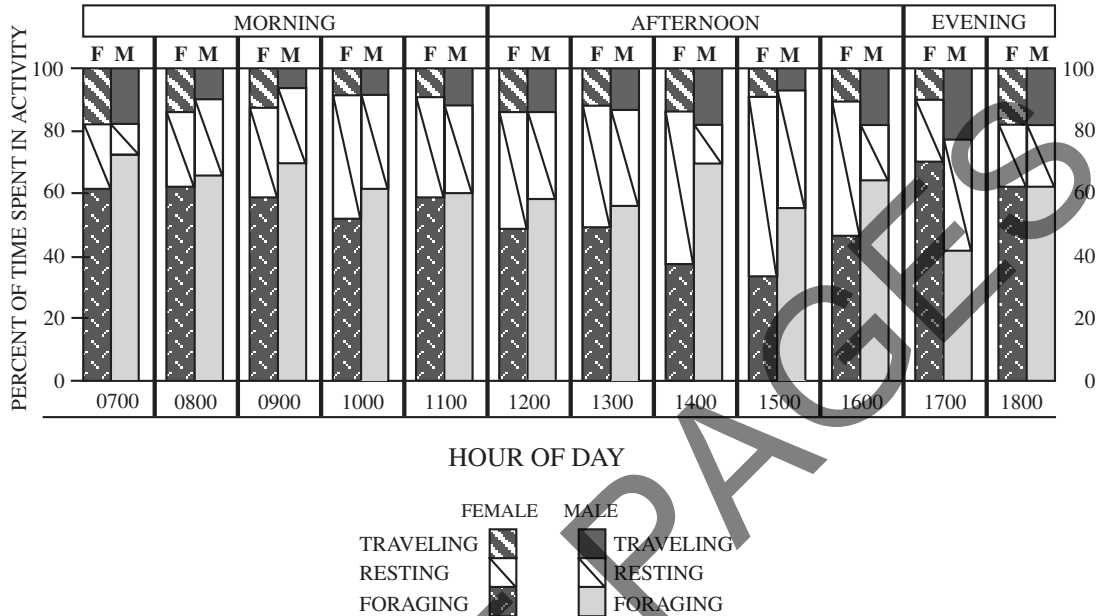




Practice Set 220

Use the information that follows to answer questions 1–5.

The bar graphs below compare how much time male and female chimpanzees spent traveling, resting, and foraging for each hour of a typical day.



Graph derived from "The Social Ecology of Chimpanzees" by Michael Ghiglieri, *Scientific American*, June 1985.

1

Which of the following conclusions about life in chimpanzee communities is NOT supported by the data in the graph shown above?

- A) Roles are sharply divided, with males given the responsibility for foraging.
- B) Males tend to do more traveling than females in the afternoon.
- C) Males tend to rest less than females during the day.
- D) Females tend to reduce their foraging activity during the middle of the day.

2

During which hour covered by the graph are chimpanzees LEAST likely to be resting?

- A) 0700
- B) 0800
- C) 0900
- D) 1000

- 9 C Only C is supported by the data in the chart. Again, it's critical to understand what the numbers mean—in this case, how much an advertiser has to spend in order to get one person to buy the shoes. "More effective" advertising means you're spending less money on average per person that you convince to buy the product. In the West, the advertiser has to spend \$14.06 on TV ads in order to get one person to buy the shoes, but only \$12.90 on online ads to accomplish the same thing, meaning that in the West, online ads are more effective than TV ads.

Practice Set 216

(SAT Reading)

- 1 D In paragraph 3, the author says that the advent of electric pumping in the 1940s increased grain and cattle farming, and the irrigation required to water crops depletes the water supply more quickly. Choices A, B, and C may or may not be true, but they aren't mentioned in the passage as a cause of the diminished water supply.
- 2 B Lines 38–43 explain that after 1940, electric pumping made possible more water-intensive farming practices (irrigation), which led to quicker depletion of the aquifer.
- 3 A By showing how extensively all people depend on groundwater, the author hopes to show that the threat to the Ogallala Aquifer from depletion is cause for concern.
- 4 A The author suggests that "ominously," even Nebraska, which is in comparatively better shape with its water table, may find itself in jeopardy. The "serious problem" of consistently falling water tables described in paragraph 4 is called a "looming crisis" in paragraph 5. These words are intended to suggest that the current water problems in the region might be getting worse.
- 5 C The paragraph containing line 79 discusses steps farmers are taking to reduce the amount of water they use. They are trying to slow, or restrain, the depletion of the aquifer.
- 6 A See the next-to-last paragraph in the passage. The author describes several methods with which farmers are trying to conserve water: planting crops that need less water and using irrigation systems or farming methods that conserve water. But while this might save some water, some question whether it will keep the water level in the aquifer from decreasing further.
- 7 C After describing the water-conserving farming methods, the author remarks in lines 78–80 that "some question whether, or how well, these measures can stem the depletion of the aquifer." Not everyone believes such methods will work as hoped.
- 8 D The passage deals generally with the problem of aquifer depletion and specifically with the challenges facing farmers on the Great Plains. But because a large percentage of Americans everywhere depend on groundwater for daily life, the author illustrates the seriousness of the problem with scenarios anyone anywhere can relate to.
- 9 D Consider whether each choice is supported by the table before choosing your answer. Choice A is not supported because there's no evaluation in the table about how critical any state's situation is. We only know the water level compared to the baseline, not whether that status actually poses a problem for the state. South Dakota had a higher-than-baseline water level for several years; however, Nebraska also had higher-than-baseline levels in 2000, 2002, and 2011, so B is not supported. C is incorrect because Colorado dropped 10.1', and Kansas dropped 14.6'. Both are greater than the 7.5' drop experienced by Texas. D is the last one left after the others have been eliminated, but it's easy to verify: The figures for Kansas get slightly lower every year since 2000, indicating a continuous drop.
- 10 B To find this answer, look for figures that are positive and the same or greater than the previous year. From 2012 to 2013, 2008 to 2009, and 2006 to 2007, there was just one (South Dakota in each year); from 2010 to 2011, there were two (Nebraska and South Dakota).

Practice Set 220

(ACT Science: Data Representation)

- 1 A** This question has a negative twist, asking which is *not* supported. This type of question often requires that you examine each answer choice against the chart to see which are true and which are not. A is not supported; males and females both spend a lot of time foraging (brick, gray) as shown on the chart. B is supported because male traveling (black) is larger in most columns than female traveling (zigzag). C is supported because resting (slash) is smaller in most columns for males than for females. D is supported because female foraging (brick) is smallest during the afternoon.
- 2 A** This question has a negative twist, asking during which hour the chimpanzees are least likely to be resting. The symbol (slash), which indicates time spent resting for males and females, is the smallest in the column representing 0700.
- 3 D** If you look at the column for 1500, you will see that female foraging is less than male foraging. The same is true at 1600: females foraged less than males. At 1700, females foraged more; at 1800, females and males foraged the same amount of time. The male foraging behavior is graphed as a straight, horizontal line, and the segmented line shows whether females foraged more or less than the males for each time period. If you keep in mind “less, less, more, same,” you will see that only D shows the female foraging to be less, less, more, same for the four hours plotted. Another way to approach this type of problem and save time is to look for the largest or smallest difference in the data (whichever is easier to spot), then find which graph in the foils matches that point. From there, you can quickly ZAP any graph that doesn’t match that point.
- 4 D** Where the activity patterns are similar—meaning that the chimpanzees spent the same amount of time traveling, resting, and foraging—the graphs for males and females appear the same. Above 1800, the graphs for males and females are identical.
- 5 C** For this question, you need to examine each of the answer choices, determining true from false conclusions. Choice A is false because resting (slash for both females and males) only decreases during the afternoon for males. B is false because resting (slash) is at its peak for both males and females in the afternoon. C is true. D is false because foraging (brick) decreases during the afternoon for females between 1200 and 1500.

(ACT Science: Research Summaries)

- 6 C** According to the chart for endothelial cells (Results of Experiment 1), the highest concentration of histamine is 10^{-3} , and the amount of HRP taken up at this concentration is 6.00 micrograms. Note that with negative exponents, 10^{-3} is greater than 10^{-4} .
- 7 B** As the concentration of histamine increases from 0 to 10^{-3} micrograms per milliliter, the amount of protein absorbed by the two types of cells increases. This is a positive effect: an increase in histamine causes an increase in HRP protein being taken up. The word *negligible* means *insignificant*. This is an example of how understanding college-level words is important the ACT and SAT, even though both claim not to put an emphasis on higher-level vocabulary. If you don’t know the meaning of words like this, start studying college-level words now.
- 8 B** The correct answer must be based on the results of the experiment. Experiments 1 and 2 show that histamines have an effect on how much HRP is taken up by cells. However, HRP is not mentioned in the descriptive information as having any relationship with hardening of the arteries. The first sentence explains that lipids are involved. The scientist is assuming that HRP and lipids are taken up by cells in the same way.