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The GED Science Test

Passing the GED Science Test

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#22 Passing the GED Science Test

> Reason, Observation, and Experience — the Holy Trinity of Science.
> Robert G. Ingersoll (1833-99), U.S. lawyer.

Test Overview:

- ✓ Time: 80 minutes

- ✓ 50 multiple choice questions with 5 possible answers

- ✓ The test consists of questions from a mix of three categories:
    - o Life Science (~45%)
        - ▪ Topics such as cells, genetics, health, animal and plant life, photosynthesis, and adaptation
    - o Earth and Space Science (~20%)
        - ▪ Topics such as the origin and structure of the Earth, the origin and evolution of the universe, earthquakes, and weather
    - o Physical Science: Physics and Chemistry (~35%)
        - ▪ Topics such as energy, gravity, magnetism, matter, atoms, and elements

- ✓ Two types of questions:
    - o 20% of the questions are from passages that you will read and then answer relating to the passage.
    - o 80% are from interpreting graphics, tables, charts, and graphs and then answering relating to those items
- ✓ The test is not organized by content area, so you might see a life science question followed by a chemistry question. In other words, you will <u>not</u> turn to a section with all chemistry questions then go to the next section for all of the physics questions. Questions can be intermixed depending on the topic.
- ✓ The passages will have all of the information you need to answer the questions, but they will be easier to answer if you have some background in each subject of topic.
- ✓ Understanding basic facts and concepts will definitely help.

Test Taking Hints:
- ✓ Try to do the easier questions first, then come back to the more difficult questions.
- ✓ Make sure you read all of your choices, and then eliminate some of the incorrect choices.
- ✓ If in doubt, guess. There is no penalty for an incorrect answer.

Scoring:
- ✓ The scoring center will convert your total number of correct answers into a three-digit number between 200 and 800 points. In California you must have a standard score of 410 or higher to pass the science test.

Video 22 Focus: gives basic information on what to expect on the test and what you need to pass it.

You Will Learn From Video 22:

➢ The setup of the GED Science Test.
➢ Helpful hints to pass the GED Science Test.
➢ What science is and what some scientists do.
➢ Why it is important to know about science.
➢ How science affects your daily life.

Points to Remember:

- Read all questions thoroughly and carefully.
- The answers are given to you within the material.
- Don't skip a question, give your best educated answer.
- Don't be afraid to guess, it doesn't count against your score.
- Memorization of scientific facts is not necessary, but background knowledge is helpful.
- No trick questions, but with only one correct answer, there will be 4 "distracters."
- Often you can dismiss one obvious distracter right away.

Words You Need to Know:

While viewing the video, put the letter of the meaning by the correct vocabulary word. Answers are on page 13.

_____1. hypothesis

_____2. life science

_____3. earth/space science

_____4. physical science

_____5. scientific method

a. possible answers to a problem in our environment
b. subject concerning matter and energy
c subject concerning the Earth and its place in the universe
d. a system where ideas are formed and then tested to prove they are correct
e. subject concerning living organisms

GED Science Test

You may not realize it, but scientific information helps us make all kinds of decisions everyday, and the more information you have about science the better you will be able to understand not only about the world around you, but also about yourself.

For example, have you ever asked yourself the following questions? Which meal would be healthier for dinner, steak or spaghetti? Why should I exercise more and take vitamins? What will my children look like? Why does hitting your "funny bone" hurt so much? Why are people more impolite or irritable during days with hot dry "Santa Ana" winds, yet when they sit next to the ocean's surf or by a waterfall, they feel more peaceful? The answers to all of these questions are related to science.

Much of what is included in the GED Science Test deals with everyday questions and everyday information that you can get just from becoming more aware of the world around you. Start watching the many programs on television or reading magazines that talk about nature and the environment, health and exercise, and the latest medical research, or space exploration. By doing so, you will start to gain a valuable background into the areas from which the GED test questions will be drawn.

What is Science?

Are you a scientist? Probably not by profession, but everyone does practice science. Everyday, people see things that make them ask the question, "why?" Why is a powerful question. Ever since you were a little kid, you have probably asked questions like, "Why is the sky blue?" "What is a rainbow?" or "Why can birds fly and we can't?"   Sometimes you receive an answer, sometimes you do not. The discovery of answers is what drives scientists. In fact, most of us practice science when confronted with a "why" question, especially when we test our educated guesses and then discover the true answer. That is the **scientific method.**

The Scientific Method

The scientific method is the best way yet discovered for winnowing the truth from lies and fantasies. The simple version looks something like this:

Step 1 - Observe the world around you. Think of a question for which you would like to find the answer. For example, an animal keeper at a zoo might notice how a jaguar has been pacing back and forth in its enclosure. Why does it do this?

Step 2 - Invent possible answers to those questions called **hypotheses**, which are consistent with what you have observed. For example, could the pacing be caused by changes in the weather or changes in its diet? Is the enclosure too small? Is it due to boredom?

Step 3 – Create tests by experimentation or observation for those hypotheses to see if they are correct or not, then modify the hypothesis in the light of your results. For example, the keeper could wait to see what happens when the weather changes. If the pacing continues, then the keeper would modify the hypothesis to a possible diet change. The keeper would then check the records to see if there have been any changes to the jaguar's diet. If no changes have occurred, then again alter the hypothesis. The keeper could then test the new hypothesis by moving the jaguar to a larger enclosure.

Step 4 - Repeat steps 2 and 3 until there are no inconsistencies between the theory and the experiment or observation. This means the keeper would have to test all hypotheses over and over again to ensure that she has discovered the correct answer.

Finally, when the results remain consistent, the hypothesis becomes a **theory**. A theory is a set of statements that explains an event, an observation, or an experience and has been thoroughly tested or is widely accepted as true. Theories are often used to predict occurrences of many natural phenomena such as the weather, animal behavior, and even human behavior

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TIP TIME

While taking the GED Science Test, remember to read everything carefully and try to understand what is being asked!

One of the most common mistakes is not to read all of your choices. Often people feel rushed to complete the test, so they will pick the first "good" answer they come across. Remember in a multiple choice test you must pick the "best" answer, so read all of the choices and then choose the best one.

Reading Charts, Graphs, and Diagrams

Since most of the questions are going to be based on your ability to understand charts, graphs, and diagrams, it is a good thing to know the common types and how to read them.

Charts, also called graphs, are often used to display factual data necessary for proving a scientific hypothesis. The most common types of charts are the pie chart, the line graph, and the column chart.

Below is an example of a **column chart**. Column charts and bar charts are very similar, except that column charts are vertical and bar charts are horizontal. In order to better understand a graph, you first must read the graph's title or label, its key, and both of its **axes**. An axis is a straight line of a chart that represents something needed to describe data. The x-axis is the horizontal line and, in this example, represents months. The y-axis is the vertical line and, in this example, represents temperature. Without these two axes labeled, it would be hard to figure out what the chart was trying to describe. You could probably have figured out that the x-axis was talking about months, but what would the numbers on the y-axis mean?

The **key** describes from where the data in each of the colored columns comes. In this case, red represents San Diego, blue represents Los Angeles, and green represents San Francisco.

Hopefully, all the graphs you will ever read will have a title at the bottom or top of the graph. This title is extremely helpful in describing what you are seeing. The title of this graph is "Average Daily Highs from the 1st Three Months of 2004."
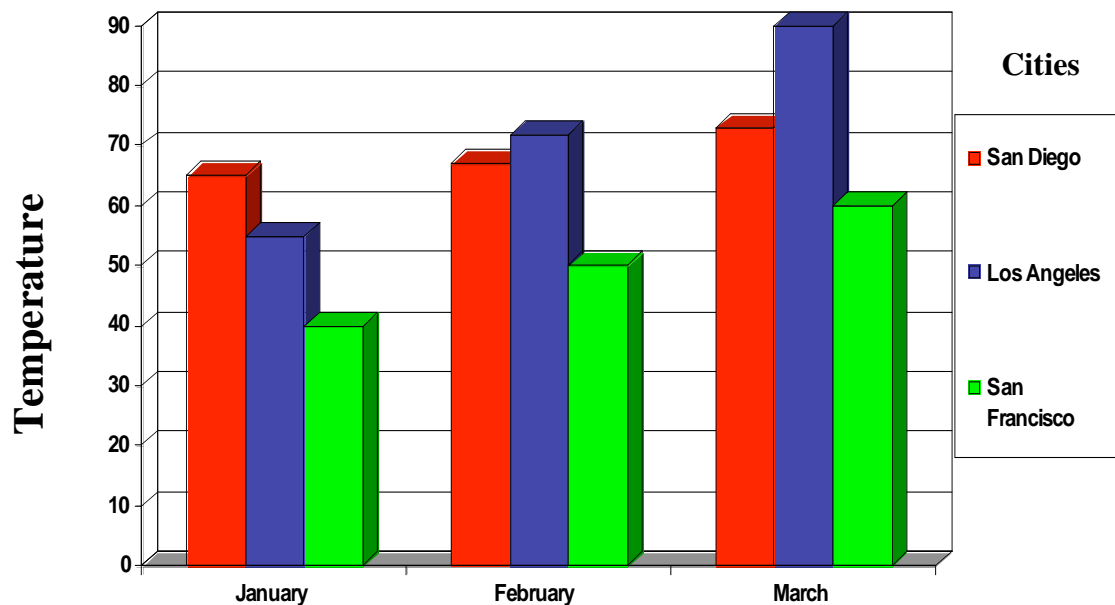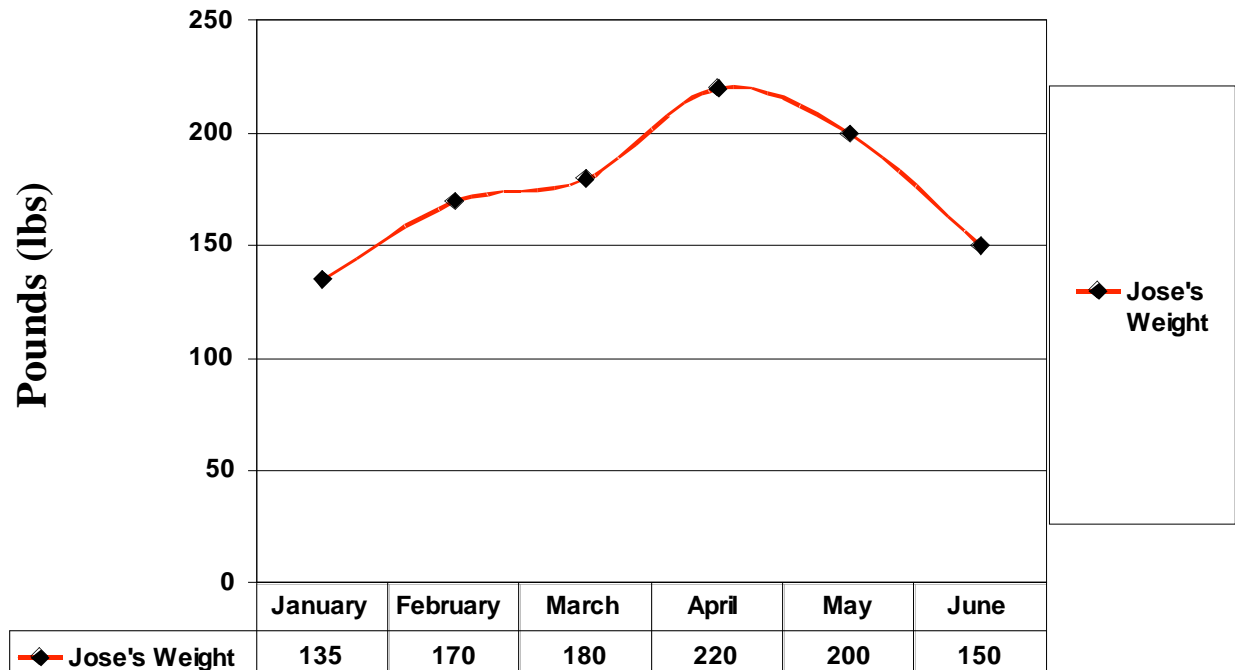

Average Daily Highs from the 1st Three Months of 2004

Test Your Knowledge:

Please answer the following questions as they relate to the above information. <u>Answers are on page 13.</u>

1. Which city had the highest average daily temperature in March?

2. What was the daily high for San Francisco in January?

3. What color represents San Diego?

The second chart is called a **line graph**. Line graphs are often used to show how two pieces of information are related. The numbers on the y-axis is called the **scale.** Each plotted triangle is connected by a colored line. This makes it easy to follow the trends in weight over a period of 6 months. In this example the actual weights are given to you in a data table below the graph, but not all charts will have this.
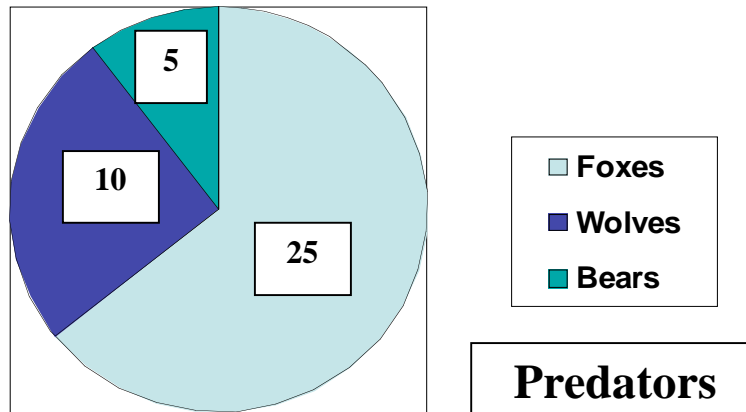

Pounds (lbs)	January	February	March	April	May	June
◆ Jose's Weight	135	170	180	220	200	150

Test Your Knowledge:

Please answer the following questions as they relate to the above information. <u>Answers are on page 13.</u>

4. Between which two months did Jose show the smallest amount of weight gain?

5. Between which two months did Jose show the largest amount of weight loss?

6. What do the numbers on the y-axis represent?

The third example is the **pie chart**. A pie chart is a circle graph that is divided into parts. Each part represents a piece of information, and usually is related to the amount of something. The sum of the parts make**s** up the whole pie. In a pie chart there is no x-axis or y-axis.

In the chart below, each slice of the pie represents the number of animals found in a particular forest, and each slice corresponds to a type of animal species listed in the key. Often, the data given in a pie chart are in numbers or percentages.

5

10

25

☐ **Foxes**
☐ **Wolves**
☐ **Bears**

Predators

Test Your Knowledge:

Please answer the following questions as they relate to the above information. <u>Answers are on page 13.</u>

7. How many foxes are there?

8. What predator has the fewest numbers?

9. Wolves make up what percentage of predators in that forest? (Hint: There are a total of 40 predators in that forest.)

10. What would be an appropriate title for this graph?

Tip Time

Since your incorrect answers are not counted against your score, remember not to leave any question unanswered. It might mean the difference between a passing score and a failing score.

Accustom yourself to reading charts and diagrams. The more you read them, the better off you will be during the test. Also, try reading the nutritional content labels on packaged food and come up with some possible test questions from them.

Hints For Taking Multiple Choice Tests

The following are some basic suggestions on taking any multiple choice test.

1. **Test Taking Strategies:**
   a. Read the directions carefully.
   b. Know if each question has one or more correct choices.
   c. Know if you are penalized for guessing.
   d. Answer easy questions first, then go back to answer the harder ones.

2. **Strategies on Answering:**
   a. Read over the choices first, then read the question and try to answer it in your own words. Then, select the choice that most closely matches your answer.
   b. Read the question with each choice separately to see if it makes sense
   c. Treat each choice as a true-false question, and choose the "most true."

3. **Strategies to Answer Difficult Questions:**
   a. Eliminate any choices you know to be incorrect.
   b. Question choices that grammatically don't fit with the stem or question.
   c. Question choices that are totally unfamiliar to you.
   d. Question choices that contain negative or absolute words. Try substituting a qualified term for the absolute one, like *frequently* for *always* or *typical* for *every*, to see if you can eliminate it.
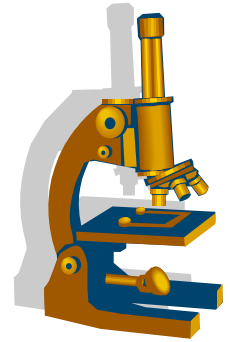
4. **"All of the above":**
   If you know two of three options seem correct, "all of the above" is a strong possibility.

5. **Number answers:**
   Often, but <u>not</u> always, you can toss out the high and low numbers and consider the middle range numbers.

6. **Guessing:**
   a. Always guess when there is no penalty.
   b. Do not guess if you are penalized for wrong answers, so if you have no basis for your choice, do not "wild guess."
   c. Don't change your answers unless you are sure of the correction. Often your first guess is the best one.
   d. Use hints from questions you know to answer questions you do not.

GED Practice Exercises

Please read the following chart and then circle the best answer to questions 1-4 below.
Answers are on page 13.

Rank	Total numbers of tornadoes	Deaths per 10,000 sq miles	Number of killer tornadoes
1	Texas	Massachusetts	Texas
2	Oklahoma	Mississippi	Oklahoma
3	Florida	Indiana	Arkansas
4	Kansas	Alabama	Alabama

1. Which state has the most tornadoes?
    1) Massachusetts
    2) Mississippi
    3) Arkansas
    4) Texas
    5) Georgia

2. Which state has the second highest number of "killer" tornadoes?
    1) Texas
    2) Oklahoma
    3) Massachusetts
    4) Alabama
    5) Indiana

3. Which state has the most deaths per 10,000 square miles?
    1) Texas
    2) Massachusetts
    3) Mississippi
    4) Alabama
    5) Florida

4. The state of Florida is third in which category?
    1) total number of tornadoes
    2) deaths per 10,000 sq miles
    3) number of killer tornadoes
    4) number of earthquakes
    5) all of the above

The pH Scale
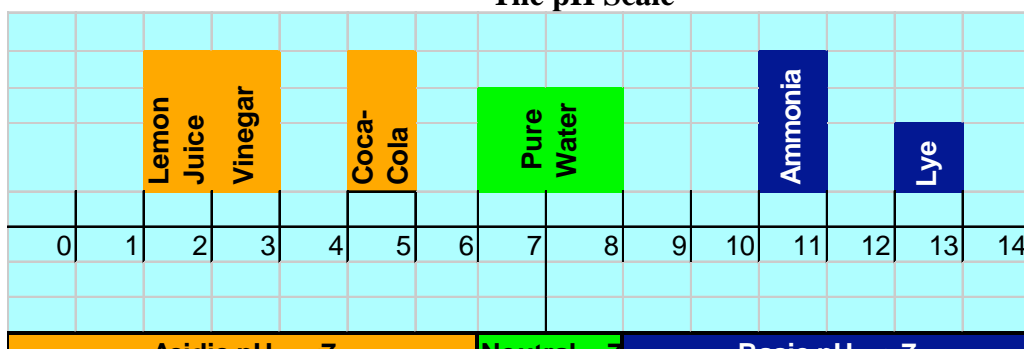
The pH scale shows us whether a substance is acidic, neutral, or basic. pH is measured on a scale from 0 to 14. The smaller the pH, the more acidic the solution; 7 is considered neither acidic nor basic, and anything higher than 7 is considered a base. The above chart shows approximately where some common substances fall on the pH scale.

Lemon Juice = 2   Pure Water = 7
Vinegar = 3   Ammonia = 11
Coca-Cola = 4   Lye = 13

Circle the best answer to questions 5-7 based on the above information. Answers are on page 13.

5. Which of the following best describes the pH of lye?
    1) extremely acidic
    2) slightly acidic
    3) slightly basic
    4) extremely basic
    5) neutral

6. Compared to Coca-Cola, ammonia is
    1) more acidic.
    2) more basic.
    3) more neutral.
    4) more sweet
    5) none of the above.

7. With the knowledge that baking soda is less acidic than pure water but more acidic than ammonia, between which numbers do you think the pH of baking soda would most likely be?
    1) between 11and 12
    2) between 2 and 3
    3) between 6 and 7
    4) between 8 and 9
    5) above 13

Two main types of tea are popular around the world, black tea and green tea. Black tea is created when tea leaves are left to age, or oxidize. Oxidation is similar to the rusting of metal, where the tea leaves react with the air, and this process will change the color of the tea leaves as it ages. Oolong, a popular Chinese tea, is only partially oxidized, while in green tea, oxidation is not allowed to occur at all because the leaves are quickly steamed first. Today, scientists and doctors have discovered proof that green tea helps prevent cancer due to a substance found in tea called polyphenols. Because green tea, more so than black tea, does not undergo oxidation, they believe that drinking 4 cups or more of green tea daily can aid in the prevention of some types of cancer.

Circle the best answer to questions 8-11 based on the above information. <u>Answers are on page 13.</u>

8. Which substance in green tea helps prevent some cancers from forming?
    1) oolong
    2) caffeine
    3) polyphenols
    4) oxidation
    5) sugar

9. Which process is similar to the rusting of metal?
    1) oxidation
    2) polyphenols
    3) cancer prevention
    4) deoxidation
    5) cancer

10. Which type of tea is partially oxidized?
    1) green
    2) oolong
    3) black
    4) chamomile
    5) none of the above

11. What is the best reason for why green tea does not go through the oxidation process?
    1) They are picked green.
    2) They are left to age longer.
    3) They are popular in China.
    4) They are quickly steamed.
    5) They are roasted.

Answers & Explanations

Page 3: Words You Need to Know

1. a
2. e
3. c
4. b
5. d

Pages 7-8: Test Your Knowledge

1. Los Angeles
2. 40 degrees
3. red
4. February and March
5. May and June
6. pounds
7. 25
8. bears
9. 25%
10. predators in the forest, number of predators, etc.

Pages 10-12: GED Practice

1. 4
2. 2
3. 2
4. 1
5. 4
6. 2
7. 4
8. 3
9. 1
10. 2
11. 4