

Extra-Credit Assignments for the Extra-Industrious

Extra credit science assignments can be the key to motivating students to explore topics and report on their own investigations. Learn how this extra credit program can challenge your students with minimal teacher organization.

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Guidelines for Science Extra Credit

The science extra credit assignments are designed to encourage you to explore a science topic more in depth. Take the challenge and be a scientist!

- Every * equals one point. You are responsible for keeping track of your own extra credit sheets.
- Every 5 points from a single topic will be equivalent to one regular classroom assignment.
- Every 10 points accumulated from a single topic will be awarded with a specially designed sticker. (Keep stickers in your notebook!)
- Every 20 points accumulated from a single topic will be equivalent to a perfect quiz score. (You may choose to cash in on either the 20 point category or four 5 point categories, but not both.)
- The person with the most stickers and points at the semester's end will receive a free lunch (with a friend) provided by me (your teacher).
- Make appointments with me to receive credit for completed assignments. These meetings will be scheduled for times before or after school, or at lunch. (Avoid asking for your work to be evaluated during passing periods or class.) All assignments must be evaluated one week before the end of the semester.
- Independent work is expected. If you do group work, it is necessary to obtain permission prior to starting the assignment. Have Fun!

| Rating | Assignments | Teacher's initials and date |
|---------------|---|------------------------------------|
| 1*** | Keep a diary of observations on a 'garden bird' over a period of at least 2 weeks. Describe and identify the observed birds. | |
| 2*** | Take part in a local, ornithological group activity such as a bird survey and write a brief report. | |
| 3** | Make a collection of bird feathers from different birds. Label feathers. | |
| 4* | List 10 potential threats to the bird life in your area. | |
| 5** | Use a hand lens or microscope to draw details of feather structure. | |
| 6** | Watch a wild bird for 15 minutes. Record all the behaviors you observe in detail. Organize your notes chronologically. | |
| 7** | Research the path of a migrating bird that travels near your town. Draw a map of its path and list facts about the bird. | |
| 8*** | Make a bird feeder and observe the birds that use it. Provide a photo of your construction or bring it to school. | |
| 9** | Design and report in simple experiments to see which types of food are eaten most quickly by a particular species of bird. | |
| 10* | Find out as much as you can about the habits etc, of a local bird species. Make a small poster to show your findings. | |
| 11*** | Keep a list of every bird species you see in a 2 month period. List the bird's common name and the date you spotted it. Use a local bird book for assistance. | |
| 12** | Find out as much as you can about the history of an introduced bird species. Write an article (200 words) about it for your school newspaper. | |
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| 13* | Make a list of all the ways in which birds in a garden are useful to humans. | |
| 14* | Write a poem or song about your favorite species of bird. | |
| 15** | Make a poster publicizing an endangered species of bird. | |
| 16** | Write a story involving a bird, which includes details of its activities throughout the year. (300 words). | |
| 17** | Write an illustrated report about a flightless bird. | |
| 18** | Visit an aviary. List all the birds you saw. Describe in detail your favorite bird. | |
| 19** | Design a poster to show the common breeds of domestic fowls. | |
| 20* | Make a list of the birds definitely found in your area. Check off the ones you personally have seen. | |
| 21** | Explain why some birds such as hawks have their eyes at the front of their head and other birds such as pigeons have their eyes at the side. Draw diagrams. | |
| 22* | Research an extinct bird. Try to explain why that bird went extinct. Write a short article. | |
| 23** | Watch an hour long educational show (try a show on the Discovery Channel) on birds. Write 20 facts about interesting things you learned. | |
| 24** | Sketch 8 different bird beaks and heads. List what each bird eats. Write about how the bird's beak is adapted to its food and environment. | |
| 25** | Make tape recordings of a number of different birds. | |

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| 1* | What are CFC's? What kind of damage do they do in the environment? | |
| 2** | Research the possible consequences of increased CO ₂ in our atmosphere. Summarize your findings and cite your resources. | |
| 3** | What is causing the increase in atmospheric carbon dioxide? Make a publicity pamphlet to inform people on what they can do to reduce the amount of carbon dioxide being produced. | |
| 4* | Draw a colorful diagram of the atmosphere, showing the ozone layer. Label all layers. | |
| 5* | Draw a flowing diagram of the CFC molecules reacting with the ozone layer. Label. | |
| 6** | Research three ways of generating electricity. Take notes and discuss your findings. Which is the most environmentally friendly? | |
| 7** | Design a survey sheet asking specific questions to find out what people know about pollution. Survey 10 people and report your results. | |
| 8** | Write a 300 word newspaper article about an environmental issue that concerns you and submit it to your school newspaper. Include photos, diagrams or drawings. | |
| 9** | Collect newspaper clippings about a world-wide environmental problem such as global warming or ozone depletion. Make them into a poster with a title. Summarize the articles for a class presentation. | |
| 10** | Pesticides are found in many homes in insect sprays, garden sprays, flea collars, etc. Find and list at least 5 found in your home or garden store. List the active chemical in each and precautions that should be taken. | |
| 11** | List 10 ways that you can conserve water. Try to use less water for 1 week. Describe your experience. | |
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| 12** | Find out what can be recycled in your community. Design a pamphlet to inform people about what and where they can recycle. | |
| 13*** | How much trash does your household produce each week? Weigh it using a bathroom scale for 3 separate weeks. Compare your number to the average produced per family in your town. Graph your findings and make a conclusion. | |
| 14*** | Carry out a trash observation at your school. (e.g. Where is the most litter dropped? What type of litter is dropped the most?) Take data for 3 days. Show your results on a poster with some suggestions on how to reduce the amount of trash dropped. | |
| 15** | Take a microhike. Place a meter stick on the ground in a natural outdoor location. Look at the ground carefully within 5 cm of the stick. Write 10 detailed descriptions of your observations. A magnifying glass is helpful. | |
| 16*** | Place a mixture of household trash including vegetable peelings, paper, plastic and cans in a bucket half filled with damp soil. Record what you have used. Mix thoroughly and keep damp but not wet. Leave for 4-5 weeks and then examine the contents and record the changes to each item. Take pictures of the process. | |
| 17** | Draw a cartoon strip to encourage people to recycle their waste. Idea: include what will happen to our country of people don't recycle. | |

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| 18* | Find out where your town's water source is. Write 5 reasons why conserving water is a good idea in your town. | |
| 19* | Research the water usage of 5 household appliances. Make a bar graph with your data. | |
| 20*** | Write a 300 word story on "A day without water". Describe the hardships of such a day. | |

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| 1** | Walk around your neighborhood and document 5 examples of erosion (soil, building, rock, paint). Hypothesize reasons for each case of erosion. | |
| 2** | Write a 300 word report on the father of geology, James Hutton. | |
| 3* | Draw a map of California. Sketch the San Andreas fault on the map. | |
| 4** | The USA is famous for its thermal areas around Yellow Stone. Design, write and illustrate a simple publicity brochure to tell tourists what kinds of things they will see (e.g. geysers, boiling mud, etc.). | |
| 5** | Draw a line graph which shows the half lives in years of a carbon-14 atom as it decays. | |
| 6** | Make a bar graph to compare the magnitudes of volcanic eruptions of six volcanoes. | |
| 7** | Find out how retrofitting bridges and roofs can help prevent collapse during earthquakes. What is done to the bridge or roof? | |
| 8** | Collect 5 different minerals. Write a brief description of each giving color, texture, luster and reactivity to a dilute acid. If possible, classify each mineral using mineral identification books. | |
| 9* | Diagram convergent and divergent plate boundaries. Under the diagrams, state where you can find two examples of each. | |
| 10* | Make a collection of five different kinds of rocks. Design a hardness tester and use it to rank them in order of hardness. | |
| 11* | How was Half Dome formed and when? Sketch a flow chart of its formation. | |
| 12* | Collect 2 newspaper articles on geology related topics. Attach the articles to a paper and, in your own words, summarize each briefly. | |
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| 13*** | Make a PowerPoint presentation about 10 minerals. Include a picture, name, uses, chemical composition, hardness and crystal form for each mineral. | |
| 14** | Alfred Wegener first proposed the idea of drifting continents. Write a 300 word biography of him. | |
| 15* | Design a flow chart on how fossils are formed. | |
| 16** | Make a collection of 6 fossils. On individual index cards, state where each was found, its identity, and its estimated age. | |
| 17** | Research and report on the history of seismographs. Make a sketch of the earliest and the most modern instruments. | |
| 18* | The three main rock types are igneous, sedimentary and metamorphic. Sketch a diagram showing how each one is formed. | |
| 19** | Pretend you are a news reporter describing effects of one recent earthquake in the California. Write a 300 word article. | |
| 20*** | Find a road cut or cliff that exposes rock layers. Colorfully sketch the different layers. Include any faults or intrusions. | |
| 21** | Grow a crystal type under 2 different environmental conditions. Draw the crystals carefully. Compare and Label. For 2 extra stars, do the experiment again and compare your results. | |
| 23** | Sketch pictures of the Earth and Mars. List underneath each | |

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| | picture their geologic similarities. Next, list and suggest reasons for their geologic differences. | |
| 24*** | Visit a local or regional geologic site (a fault, outcrop, volcano, etc.). Take pictures or make sketches of what you observe. Write about why the site is significant. | |

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| 1** | Collect 5 newspaper articles on Health topics. Briefly summarize each. | |
| 2* | Explain what "muscle recovery time" means and how it works. | |
| 3* | Draw and explain the feedback control system for insulin production | |
| 4** | Get the butcher to cut a beef femur bone longways and draw and label it. | |
| 5*** | Visit a hospital laboratory and write a report on the laboratory's activities. | |
| 6** | Describe 5 types of cancer. What is thought to cause them and how can you reduce your chances of getting them? | |
| 7* | What would the affects of a thinning ozone layer have on your outside activities? | |
| 8* | Describe anorexia nervosa. State its symptoms and treatments. | |
| 9* | What does A.I.D.S. stand for? What causes A.I.D.S. and how can you avoid it? | |
| 10** | Draw graphs showing the change in death rates for the 5 most common causes of death over the last 100 years in the USA. | |
| 11** | Find out the difference between good and bad posture in the standing position and lifting position. Draw simple diagrams to show the difference. Observe the posture of the next 30 people you meet. Estimate the % of people who are showing good posture. | |
| 12* | List 5 genetic human diseases. Find out for each if has been mapped on a specific chromosome. | |
| 13** | Interview a nurse, doctor or other health worker about his/her job. Ask at least 8 questions. Write up the interview in Q and A format. | |
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| 14** | Find your pulse. Count the number of times your heart beats per minute while you are relaxing, then compare it with the number per minute when you are doing various physical activities. Is your resting pulse different at different times of the day? Show all your results as a bar graph. | |
| 15*** | Complete a course in first aid. Bring in your certificate to class. | |
| 16*** | Find out what vaccinations we should have and at what ages. Design a poster about vaccinations, the diseases they prevent and the dangers of not getting vaccinated. | |
| 17*** | Are you eating a balanced diet? Find out the main food groups. Work out which groups you need to eat each day and roughly how much. Keep a careful record of all the food and drink you consume over 24 hours. Comment on your diet. Can it be improved? If so, how? | |
| 18* | Collect as many pamphlets as possible on food and diet and make a display in poster form. | |
| 19** | Design a board game to help people learn: a) the main organs in the human body and their function; or b) the main parts of the circulatory system and the function of the blood. | |
| 20** | Give a 5 minute talk to your teacher on a human biology | |

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| | topic of your choice. | |
| 21** | List 3 things that contribute to people getting heart disease and list 3 things that can help prevent heart disease. | |
| 22** | Draw a skeleton of a bat next to the skeleton of a human. Label all of the major bones. List the differences and similarities. | |
| 23* | Compare a human eye to an octopus eye. List the similarities and differences. | |

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| 1* | Find 10 leaves with different boarder patterns. Copy the patterns on paper and label the patterns properly (e.g. toothed, smooth, etc). | |
| 2* | Make a collection of pressed leaves from 10 different trees. (Identification of the trees is not necessary but will earn an extra star). | |
| 3*** | Keep a diary of the growth of a specific kind of seed for 4 weeks. (Draw the stages of growth at 1-2 day intervals). | |
| 4* | What is an "old growth" forest? Describe such a forest and why it is important to conserve. | |
| 5** | Identify 10 native plants that would be successful in your local area. What are the benefits of planting native plants instead of introduced plants? | |
| 6* | Take a series of photographs of different trees to show their similarities/differences of a particular part of the tree. You may draw instead of taking photographs. | |
| 7** | Submit a plan for planting a flower-bed in your school garden. Show detail. | |
| 8** | Go to Alice Keck Park and make a list of 12 trees found in the park. | |
| 9** | Raise plants from cuttings in 2 different ways. Bring your results to your classroom. | |
| 10** | Make a collection of 10 different wild seeds. Mount them on index cards. Suggest hypotheses on how each is dispersed. | |
| 11** | Make a simple plant press and press 6 different flowers. Bring them in to class. | |
| 12* | Find 4 poems or songs with a botany theme. | |
| 13** | Sketch and identify 3 fungi you have found. | |
| 14* | Write a haiku or diamonte poem on flowers/trees/plants. | |
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| 15** | Find an internet site on CA endangered plants. Record the name of the site and 10 endangered plants. State reasons why each plant is endangered. | |
| 16** | Rewrite a traditional story with a botanical theme, in a modern setting (e.g. Jack and the Beanstalk or Little Red Riding Hood). | |
| 17** | Put up a bulletin board on some aspect of plants (e.g. different methods of seed dispersal; useful plants, poisonous plants, etc). | |
| 18*** | Visit a botanical gardens. Sketch or photograph two plants from each of the four distinct CA habitats. | |
| 19* | Design by hand or on a computer a botany logo for a T-shirt. (Two extra stars if you place the design on a T-shirt yourself.) | |
| 20* | Draw a cartoon with a botanical emphasis centered on an endangered CA plant. | |
| 21** | Research the effect of cattle or sheep on native plant species and write about your findings. | |
| 22*** | Research how plants in temperature or weather extremes survive. Design a power-point presentation on this theme. | |
| 23** | List the reasons for weeds being classified as noxious, and give 4 examples from your local area. | |
| 24** | Research and present your findings about a plant unique to CA. | |

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| 25** | Research and list 10 factors that endanger native plants. | |
| 26** | Find and record an interview of a person who makes his/her living in a botanical way. Use Q and A format. | |
| 27*** | Construct and keep records for 4 weeks of a working compost heap. | |
| 29* | Draw a chart explaining what organic gardening or hydroponic gardening means. | |

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| 2*** | Take part in a local ornithological group activity such as a bird survey and write a brief report of your experience. | |
| 3** | Make a collection of bird feathers from different birds. Label the feathers. | |
| 4* | List 10 potential threats to the bird life in your local area. | |
| 5** | Use a hand lens or microscope to draw details of feather structure. | |
| 6** | Watch a wild bird for 15 minutes. Record all the behaviors you observe in detail. Organize your notes chronologically. | |
| 7** | Research the path of a migrating bird that travels near your town. Draw a map of its path and list facts about the bird. | |
| 8*** | Read Rachel Carson's <u>Silent Spring</u> . Discuss her ideas about what causes declines on bird populations. What does the title mean? | |
| 9** | Design and report in simple experiments to see which types of food are eaten by a particular species of bird. | |
| 10** | Find out as much as you can about the habits etc, of a local bird species. Make a small poster to show your findings. | |
| 11*** | Keep a list of every bird species you see in a 2 month period. List the bird's common name and the date you spotted it. Use a local bird identification book for assistance. | |
| 12** | Find out as much as you can about the history of an introduced bird species. Write an article (200 words) about how this species has affected your area for your school newspaper. | |
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| 13* | Make a list of all the ways in which birds in a garden are useful to humans. | |
| 14* | Write a poem or song about your favorite species of bird. | |
| 15** | Make a poster publicizing an endangered species of bird that tells what we can do to help save it. | |
| 16** | Write a story involving a bird, which includes details of its activities throughout the year. (300 words). | |
| 17** | Write an illustrated report about a flightless bird. | |
| 18*** | Visit an aviary. List all the birds you saw. Describe in detail your favorite bird. Sketch or photograph that bird. | |
| 19** | Go to a pet store and find 5 exotic bird species. Write down the birds' names and where they are naturally found. | |
| 20* | Make a list of 10 birds commonly found in your area. Find and record the date you see each of these birds. | |
| 21** | Explain why some birds such as hawks have their eyes at the front of their head and other birds such as pigeons have their eyes at the side. Draw diagrams. | |
| 22*** | Make a PowerPoint presentation on 5 extinct birds. Include graphics and state some reasons for their extinctions. | |
| 23** | Watch an hour long educational show (try a show on the Discovery Channel) on birds. Write 20 facts about interesting things you learned. | |
| 24** | Sketch 8 different bird beaks and heads. List what each bird eats. Write about how the bird's beak is adapted to its food and environment. | |

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| 1** | Cut out pictures of all 10 cloud types from magazines. Mount the pictures on index cards and label. | |
| 2*** | Visit a government weather station. Write a report about your experience. | |
| 3** | Make and record daily observations of the weather for a week. Include temperature, wind direction, rainfall, cloud cover, etc. | |
| 4** | Make a simple wind direction gauge. Using the gauge and a compass, record wind speed and direction for 5 days at the same time each day. | |
| 5** | List 5 ways that accurate weather forecasting helps to protect human life. | |
| 6** | Take a picture of a rainbow. Explain how rainbows are formed. | |
| 7* | Find out what the Beauford Scale measures. Make a chart showing the scale. | |
| 8** | Make a barometer and check its reading daily for 5 days. | |
| 9* | Define the following: isobar, isotherm, millibar, front, prevailing wind, doldrums, cirrus, evaporation. | |
| 10** | Sketch a map of the outline of the USA. Draw a path of the jet stream on the map. Below the map, define jet stream. | |
| 11***** | Read <u>Isaac's Storm</u> . Make a small poster with pictures and a list of important facts and meteorological data from the book. | |
| 12** | Explain how rain, hail and snow are formed. Draw diagrams for each. | |
| 13** | Find out and list the dates of the last 20 El Niños. Describe the patterns you see. | |
| 14** | Describe how the last El Niño affected your town. State how this is different than what happens during a normal year. | |
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| 13** | On the internet, go to www.globe.gov . Look at the temperature data from any school that has at least 3 years of data. Make 3 conclusions about these data. | |
| 14** | Watch the sky for 1 hour. Every ten minutes describe changes you see. (Do this on a day with clouds present). | |
| 15** | Use a thermometer and read and record the outside temperature each half-hour over an 8 hour period. | |
| 16** | Learn how to use a minimum-maximum thermometer. Record the maximum and minimum temperatures each day for a month. Graph your results. | |
| 17** | Write a 200 word newspaper style article on the new US hurricane plane. Include graphics. | |
| 18* | List 15 pieces of information you can get from the weather page in the local newspaper. | |
| 19* | Explain how 2 of the following occur: a tornado, a hurricane and monsoon rains. | |
| 20***** | Read <u>The Perfect Storm</u> . Design a book cover for it using 6 facts relating to meteorology. Discuss the book with your teacher. | |
| 21* | Find and record 6 meteorological records (highest wind speed, most destructive hurricane, etc.). Cite your resources. | |
| 22** | Research how Doppler radar works. Using a diagram, explain your findings. | |
| 23*** | Interview a meteorologist or a weather person. Ask and | |

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| | record 8 questions and answers relating to their profession. Write up in Q and A format. | |
| 24*** | List 5 sources scientists rely on to measure past climate changes on the Earth. Briefly describe how each works. | |