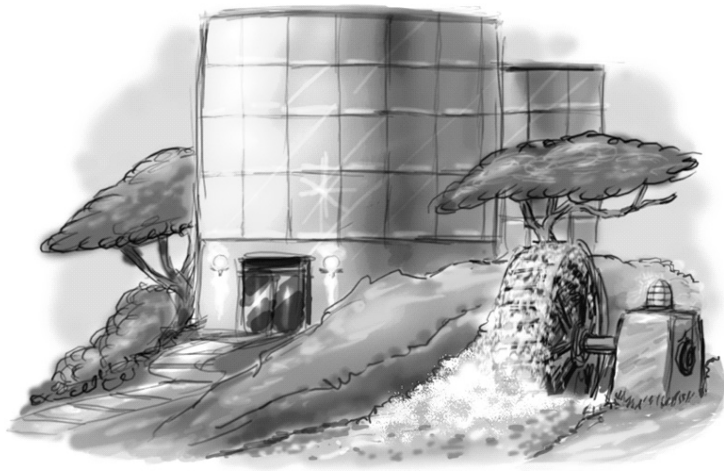


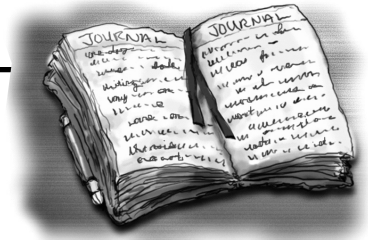
PROTECTING THE Magic



Supplemental Activities Packet

This packet contains classroom activity suggestions and worksheets to reinforce concepts from the Playbook® story and to go beyond the story into the content areas of Language Arts, Math, Science, Social Studies, Art, Health, etc., as well as Character Development.

Activities range in age appropriateness and skill level so that teachers can choose activities that best suit their particular students. An Answer Key is provided on the last page.



VOCABULARY DISCOVERIES

Directions: Match the words from the word bank with the definitions, writing the letter of the correct words on the lines provided.

1. _____ calm
2. _____ to look over hastily
3. _____ a globe shaped part of a plant from which a new plant can grow
4. _____ material used to create heat or power
5. _____ to stay in one place longer than expected
6. _____ a package
7. _____ aspect; feature; side
8. _____ to follow, seek, or strive to gain or accomplish
9. _____ something that represents something else
10. _____ small floating ball used for fishing
11. _____ a structure turned by water to provide power for machinery or other use
12. _____ something discovered or disclosed

A. facet	B. bobber	C. pursue	D. bulb
E. scan	F. symbol	G. parcel	H. tranquil
I. revelation	J. linger	K. fuel	L. water wheel

SOLVING THE MYSTERIES (OF MATH)

Part A: Find the greatest common factor.

1. 57 and 33 _____

2. 68, 20 and 8 _____

3. 56 and 51 _____

4. 5 and 12 _____

Part B: In the Playbook® story, *Protecting the Magic*, the characters solved a lot of mysteries step by step. Be detectives like Billy and Casey and find the missing operations in the problems.

5. $(5 + 2 - 3 \square 5 - 1) = 8$

6. $7 \square 3 + 4 = 8$

Part C: Billy's dad needs to find the area of a specific space available for his power plant project. Find the areas of the partial circles described.

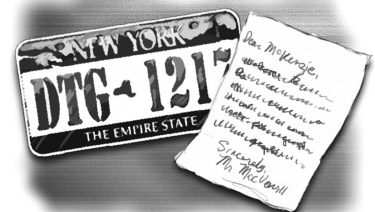
7. radius = 34 ft Find the area of $\frac{1}{9}$ of the circle. _____

8. diameter = 19 ft Find the area of $\frac{6}{7}$ of the circle. _____

Part D: Solve the word problems.

9. Billy collected $\frac{5}{6}$ of a barrel of flower bulbs today. Yesterday he collected half of a barrel of flower bulbs. How many barrels of flower bulbs did he collect in the last two days?

10. Mr. Barnsley's car contained 12 gallons of flower bulb-enhanced gasoline yesterday. One-sixth of the gas was used yesterday. Three-fourths of the gas was used today. What fraction of the gas has been used in total?



FINALLY ANSWERS

Directions: Answer the questions about the Playbook® story, *Protecting the Magic* on the lines provided.

1. Explain what Billy found on the rock that Loplolly dug up. How did he identify it?

2. What did Billy's mother find in the attic and what new information did her discovery provide?

3. Do you think the idea of the Three Sisters non-profit organization is a sound plan? Explain why or why not. What will the money earned go towards?

4. Why do the characters believe it is important to keep the magic of the rocks and the fuel they produce a secret? What do **you** think?

5. In your opinion, did the characters trust Mr. McKenzie more or less easily than you think would be wise? Why or why not?

BEHIND THE TALE

Directions: The idea of the Three Sisters as portrayed in the Playbook® story, Protecting the Magic, is based upon the true Native American (Iroquois) practice of “interplanting” corn, beans, and squash together on the same plots. Use the Internet to go on a fact hunt and answer the following questions on the lines provided.

1. Explain the scientific reasons behind the benefits of interplanting beans, corn, and squash together.

2. How do corn, beans, and squash complement each other in regards to their nutritional content?

3. Approximately when did the Iroquois begin interplanting these three crops? _____
4. What were the Three Sisters spirits believed to watch over the crops called?

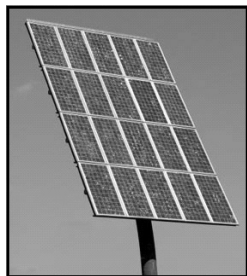
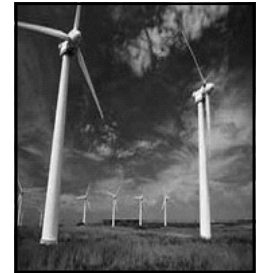
5. The change in Iroquois life from _____
to cultivating crops brought about the development of permanent villages.
6. Who was responsible for growing crops in Iroquois society? _____
7. Were all three crops planted at the same time? Why or why not?

8. Look up the legend of the Three Sisters, print it out and bring to class. In a class discussion, compare and contrast the versions of the story found by you and your classmates.

NEW ENERGY

In the Playbook® story, *Protecting the Magic*, Billy's father takes a special interest in how the amazing resources found on Mac's farm could help the world with our energy problem. Today, our society's main source of energy is from **fossil fuels**, material found in the earth that contains carbon. We face a challenge because these fuels are being used up much faster than new sources are developing. In the story, Mr. Barnsley discovers that juice from the special flower bulbs extends the use of these fuels to help get us by while other power source research is in process. Burning fossil fuels also releases carbon dioxide into the air, which causes the earth's temperature to permanently rise. Because of these problems, we must develop sources of energy that will not run out, and will be safer for the environment. Here are three real-life alternative energy sources being explored and used today!

Wind power has been used for thousands of years for water travel with sails, pumping water, and grinding grain. Wind mills were developed in some places before the year 500 AD, and people have continued to improve its design and use to this day. Today's wind machines convert energy produced by the spinning blades on a wind machine into electricity that can power homes just the same as electricity produced by traditional power plants!



Solar power comes from the sun and can be used to make electricity with large panels that collect sunlight and create an electric charge with silicon. We can use solar power to heat water and air for our homes with shiny solar panels on the roof of the house. Currently, more than 10,000 American households use 100% solar power as their electricity source. Solar power works very efficiently. The silicon in *one ton* of sand used in solar panels can produce the same amount of electricity as burning *500,000 tons* of fossil fuel!

Hydropower is energy produced by the flow of water, using either a river or a storage area called a dam that collects water and then releases it when needed. Water is channeled into pipes, where it turns a blade in a generator to make electricity. Hydropower made up 71% of renewable electricity generation (non-fossil fuels that can not be used up) in 2007, making it the most widely used renewable energy source. The more basic water wheel, used in the story to power the "Three Sisters" headquarters, can also perform mechanical tasks or generate electricity.



Design and Draw an Energy Efficient House

Part A: Currently, most renewable energy sources are usually used to produce electricity in large plants. These plants either sell to energy companies or directly to households. These sources of energy are usually quite expensive to produce or to use. Imagine one day the methods of producing electricity from these sources becomes so advanced that each house, or each neighborhood, could afford it's own system for producing electricity. Think about what a neighborhood with it's own wind power, solar power, or hydropower source might look like.

On a separate sheet of paper, draw an illustration or diagram showing how a neighborhood with one of those three power sources would be set up. How would energy from the wind, sun, or water be captured and sent to household electrical lines? Where would the electricity generators be located? Be creative and have fun with your ideas!

Part B: Create your own water wheel from a plastic bottle! (*Teachers, refer to the answer key for a web link for this activity.)

Source: <http://www.eia.doe.gov/kids/energyfacts/sources/renewable/wind.html>, <http://www.eia.doe.gov/kids/energyfacts/sources/renewable/water.html>

To download and print extra copies of this page, visit www.playbooks.com/supplements.

ANSWER KEY

PROTECTING THE MAGIC

FOR TEACHER USE ONLY

Vocabulary Discoveries

1. H
2. E
3. D
4. K
5. J
6. G
7. A
8. C
9. F
10. B
11. L
12. I

Solving the Mysteries (of Math)

1. 3
2. 4
3. 1
4. 1
5. +
6. -
7. 403.32 ft
8. 1023.42 ft
9. 1 1/3 barrels
10. 11/12

Finally Answers

1. Billy found an engraving of three women, which turned out to be a symbol of the Three Sisters from Iroquois mythology. He identified it through reading a section in a book at the library about Native American agriculture.
2. She found a journal entry written by Billy's great-grandmother revealing the existence of a family secret that has to do with the gardening practice of the Three Sisters.
3. *Answers will vary.*
4. They believe it needs to be protected because Grandma Beatrice explained it was a secret the Three Sisters have revealed to certain people when they are ready to use it wisely.
5. *Answers will vary.*

Behind the Tale

1. Corn provides a pole for beans to grow on, beans provide nitrogen on their roots to help other crops grow, and squash shades the soil to keep moisture from escaping.
2. Corn provides carbohydrates, beans provide protein, and squash provides vitamins in the flesh and oil in the seeds.
3. As early as the 1300s.
4. hunting and gathering
5. women
6. No. The plants would interfere with one another or not help each other optimally if all planted at the same time. Plant the bean seeds when the corn is about 6 inches high, then plant the squash seeds in less abundance than the other two crops so they do not overwhelm the garden.

New Energy

Part A: *Student responses vary.*

Part B: Visit this website for an activity to help your students build a water wheel. Includes accompanying discussions and expansions.

http://www.teachengineering.org/view_activity.php?url=collection/cub /activities/cub_energy2/cub_energy2_lesson08_activity2.xml



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