

GOOD YEAR BOOKS

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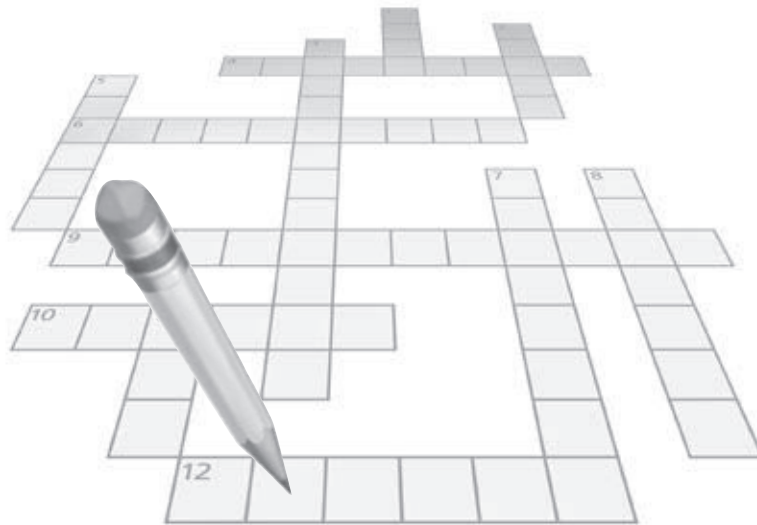
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SCIENCE PUZZLERS

200 Fun
and Amazing
Puzzles



Nancy De Waard & Jack De Waard



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Cover Design: David Fischer
Text Design: Second edition revision by Doug Goewey
Text Illustrations: Doug Klauba, except "Earth" drawing, pages 63–123,
by beggarstaff, courtesy iStock.com

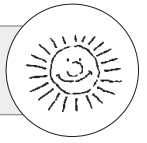
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ISBN-13: 978-1-59647-134-4
ISBN-eBook: 978-159647-181-8

1 2 3 4 5 6 7 8 9 ML 13 12 11 10 09 08 07

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As parents and teachers ourselves, we have a strong interest in encouraging learning. Some of the strongest motivators for learning are wonder, fun, and competition. We have also found that one of the biggest barriers to adults learning science is the intimidating vocabulary involved. (One researcher has found that introductory biology involved learning more new terms than in a first-year foreign language class.) However, the “vocabulary barrier” is more in the minds of teachers and parents; children don’t know that science words are hard until some adult tells them. Thus, if kids are left to have fun, explore, and compete, they can grow up enjoying learning science terminology, gaining a solid foundation before they realize they weren’t supposed to like it.

Background

The word lists upon which the puzzles in this book are based were drawn from the most widely used fourth-, fifth-, and sixth-grade science textbooks. Thus, they comprise much of the specialized vocabulary that most upper elementary students will be expected to master.

Organization

The book is organized into four units that mirror the major areas of science that most elementary science programs cover—Life Science, Earth/Space Science, Physical Science, and the Human Body. These units are further broken down into topics such as Plants, Motion, Solar System, and Digestive System. While most modern elementary programs integrate multiple disciplines into each of their chapters, our goal was to provide a generic volume that would be useful to all.

Each topic has a single word list consisting of about twenty words that are used to construct five different types of puzzles—matching, word search, fill-in, crossword, and word jumble puzzles. This sequence introduces the children first to the words and then to the definitions (clues) in a progressively more challenging

format. If they do all of the puzzles in a topic, they will have mastered the age-appropriate vocabulary usually introduced at the upper elementary level.

Ideas for Using This Book

Parents

We suspect that a good number of these books will be selected by parents and grandparents for either budding science whizzes or kids that are struggling with a topic. The science whizzes will do the puzzles because they are fun and challenging. You can use the puzzles to help a “struggler” by “preteaching” the vocabulary through the puzzles and giving a child a boost in self-confidence. Then they will be able to focus on other aspects of science as they progress through their program.

We strongly suggest that you actively participate in a child’s progress, working with him or her as they do the puzzles or review the results together. Remember that the clue format used with the puzzles limits the extent of the definitions that can be given and that there are major differences between a broad dictionary definition of a word and a precise scientific definition. (To prove this point to yourself, look up the words *insect* and *energy* in a dictionary.)

To encourage interaction, control the solutions to the puzzles printed at the back of this book. Either tear out one or more puzzles for the children to solve or remove the answers for use when the two of you review the child’s solutions.

Teachers

You probably know how you want to use these puzzles. However, a quick read through the next section may give you some additional ideas. We have found the puzzles useful in three areas: pre-teaching the vocabulary, reviewing the vocabulary, and using puzzles as extra credit and enrichment activities. On the next page are some additional ideas for each type of puzzle.

Matching: Solving this puzzle demonstrates the student's knowledge of the relationship between a word and its definition, but it does not help the child demonstrate knowledge of either the word or its definition. Thus, the matching puzzles are most useful as seatwork or homework, familiarizing children with a word list. To introduce the entire word list, combine a matching puzzle with one of the following puzzles.

flan	An organism that lives by eating plants.
earthworm	Vertebrates that have fins, scales, and gills.
nocturnal	A kind of vertebrate that starts out with gills and later develops lungs.
amphibian	A mammal whose young develop in a pouch on the mother.
chordates	A segmented worm commonly found underground in gardens and lawns.
carnivore	Term for animals that are active at night.
marsupial	An organism that survives by eating meat.

Word Search: These puzzles fascinate kids but don't develop any particular skill. However, they do give us a chance to introduce the entire word list and provide students an initial brush with some unfamiliar words.

G B E N C L T O K C Q A V W F I S H T A H E R B I V O R E O N I V E R T E B R A T E T V D O T Y H N J R I A E O O P C X S Y L J I O A I L A V G C H T A J M D V H C I L R V G P O P U M W A O P T T A O M A X R Y R T P E R P L K U R B S O D S S E N H E S U A O R L I R A G C K D R I E U W C A N O T T K V A M A U B H P M E W A E E Q T S L N T T I M I Z N F L S A S W V E R O A A O A U L F H X B S A S M R N N M L R A T D E W E P C H O O P K L I G K	Vertebrate Amphibian Nocturnal Dinosaur Marsupial Chordates Placenta Mammals Scalps Hair Carnivore Earthworm Tribe Herbivore Protector Pupils Fish
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Fill-in: These puzzles combine an introduction to the word list along with some logical thinking. For example, if the initial given letter is a P and is followed by 13 empty boxes, the unknown word is 14 letters long and begins with a P. Consulting the word list yields *photosynthesis*, which fits perfectly.

Hay Splice Raptist Herbivore	Chordates Amphibian Tribe Fish	Mammals Marsupial Carnivore Earthworm	Dinosaur Vertebrate
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One very enjoyable way to use these puzzles is to have a student reproduce the puzzle on the chalkboard and then divide the class into two teams. Using your own criteria, such as a coin toss, decide which team goes first. Hand out copies of the word list to the teams and have them confer on the first word. Caution them to respond only through their captain. Accept only the first answer you hear. If correct, fill in the word on the chalkboard and award one point for each letter. If it is incorrect, award double points to the

other team for a correct answer. Next let the other team choose which intersecting word they want to identify. Continue until the puzzle is complete.

Crossword: These are the most familiar and straightforward of the puzzles. Use them as seatwork or homework, or copy the puzzle grid on the chalkboard or hand out copies. Make up clue slips containing a clue and its position (1 Down: The ability to do work.). Mix up the slips in a bowl and have the students draw one slip apiece. Then, in any order you determine, have them come up and pantomime the position and clue, like a game of charades, while the rest of the class tries to guess the word. If the class gets frustrated on one or two words, set a time limit, give them the word, and go on.

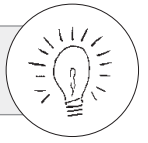
Across	Down
1. An organ in most mammals that provides nutrients to the young before birth.	1. A group of animals that start out with gills and later develop lungs.
2. Term for animals that are active at night.	2. Vertebrates and their relatives that have a backbone.
3. An animal adapted with an iron body segmented in three parts.	3. Organisms that survive by eating meat.
4. The outer body covering of most mammals.	4. A segmented worm commonly found underground in gardens and lawns.
5. Member of a large group of animals that have backbones.	5. A mammal whose young develop in a pouch on the mother.
6. A class of animals that have hair and feed their young milk.	6. An organism that lives by eating plants.
	7. An animal that feeds others for food.
	8. Vertebrates that have fins, scales, and gills.

Word Jumble: These are tough. Use them for extra credit and for students that are always done early and want something else to do. They do involve some logic and require a certain kind of mind to enjoy.

□ □ □	HISF
□ □ □ □ □ □ □	MMMLAAS
□ □ □ □ □ □ □ □ □	TMEQAWRRHO
□ □ □ □ □ □ □ □ □	TURNILCAO
□ □ □ □ □ □ □ □ □	ROIEBRHEV
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □	An extinct arthropod with an oval body segmented in three parts.

Puzzles are a fun and challenging way for kids to learn science terms. When a child solves a puzzle, there is more going on than rote learning. For example, solving the fill-in puzzles involves quite a bit of logical thinking, a higher-level skill. This is also true of the word jumble puzzles. However, we don't want to mislead you—the purpose of this book is age-appropriate vocabulary development and fun! Anything else is a bonus.

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Life Science



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Life Science: **Animals**

This puzzle has two lists—words and definitions. Match the words with their definitions by drawing a line between them.

fish

An organism that lives by eating plants.

earthworm

Vertebrates that have fins, scales, and gills.

nocturnal

A kind of vertebrate that starts out with gills and later develops lungs.

amphibian

A mammal whose young develop in a pouch on the mother.

chordates

A segmented worm commonly found underground in gardens and lawns.

carnivore

Term for animals that are active at night.

marsupial

An organism that survives by eating meat.

herbivore

Vertebrates and their relatives that have a notochord.

