

CAAP



Collegiate Assessment of Academic Proficiency

Science

Sample Test Questions Booklet

Note to Users

Welcome to the CAAP Sample Science Test!

You are about to look at some sample test questions as you prepare to take the actual CAAP test. The examples in this booklet are similar to the kinds of test questions you will see when you take the actual CAAP test. Since this is a practice exercise, you won't receive a real test score. The aim of this booklet is to give a sense of the kinds of questions examinees will face and their levels of difficulty. An answer key is provided at the end of the booklet.

We hope you benefit from these sample questions, and we wish you success as you pursue your education and career goals!

CAAP Science Test

The CAAP Science Test is a 45-item, 40-minute test that measures students' knowledge and skills in science. The contents of the test are drawn from biological sciences (e.g., biology, botany, and zoology), chemistry, physics, and the physical sciences (e.g., geology, astronomy, and meteorology). The test emphasizes scientific knowledge and reasoning skills.

The CAAP Science Test consists of eight passage sets, each of which contains scientific information and a set of multiple-choice test questions. A passage may conform to one of the three formats listed below:

- **Data Representation:** This format presents students with graphic and tabular materials similar to those found in science journals and texts. The test questions associated with this format measure knowledge and skills such as graph reading, interpretation of scatterplots, and interpretation of information presented in tables, diagrams, and figures.
- **Research Summaries:** This format provides students with descriptions of one experiment or of several related experiments. The test questions focus on the design of the experiments and the interpretation of results.
- **Conflicting Viewpoints:** This format presents students with several hypotheses or views that are mutually inconsistent owing to different premises, incomplete data, or differing interpretations of data. The passage may contain illustrations, charts, graphs, tables, diagrams, or figures. The test questions measure students' knowledge and skills in understanding, analyzing, and comparing alternative viewpoints or hypotheses.

The test questions fall into three major groups. Each group is intended to address an important element of scientific inquiry. These groups are described below:

- **Understanding:** Identify and evaluate scientific concepts, assumptions, and components of an experimental design or process; identify and evaluate data presented in graphs, figures, or tables; translate given data into an alternate form.
- **Analyzing:** Process information needed to draw conclusions or formulate hypotheses; determine whether information provided supports a given hypothesis or conclusion; evaluate, compare, and contrast experimental designs or viewpoints; specify alternative ways of testing hypotheses or viewpoints.
- **Generalizing:** Extend information given to a broader or different context; generate a model consistent with given information; develop new procedures to gain new information; use given information to predict outcomes.

Samples of test questions in the CAAP Science Test are provided on the following pages.

SCIENCE TEST

40 Minutes—45 Questions

DIRECTIONS: There are eight passages in this test. Each passage is followed by several questions. After reading a passage, choose the best answer to each question by circling the corresponding answer option. You may refer to the passages as often as necessary. You are NOT permitted to use a calculator on this test.

Passage I

Cavity-nesting birds must find trees that provide suitable sites for nest construction. These birds excavate nest depressions by removing wood from the tree, making a hollow cavity that provides a shelter for the nest. Once constructed, cavities may serve as nest sites for many years.

A study was done to provide information about the characteristics of trees used by 4 species of cavity-nesting birds. Such information could prove useful to resource managers who are concerned about creating a balance between resource exploitation (e.g., lumbering) and the preservation of wildlife (e.g., cavity-nesting birds).

Nest sites were sampled for yellow-bellied sapsuckers, hairy woodpeckers, downy woodpeckers, and black-capped chickadees. The characteristics of nest trees

used by these 4 bird species are shown in the Table 1. In addition, trees were investigated that appeared to be suitable for nesting but were not currently being used for that purpose by any of the study birds. These “non-nest” trees displayed at least 2 of the following qualities.

- Fungal conks (areas of fungal decomposition of the wood)
- Branch or stem stubs
- Old wounds or scars
- Existing woodpecker holes
- Dead portions (trees can be living with dead portions visible)

Both nest trees for the 4 species and adjacent non-nest trees were measured for total tree height and trunk diameter at chest height. Nest trees only were also measured for nest height and trunk diameter at nest height (see Table 2).

Tree characteristic	Number of nests			
	Yellow-bellied sapsucker	Hairy woodpecker	Downy woodpecker	Black-capped chickadee
Species				
Quaking aspen	26	7	1	9
American beech	2	0	0	3
Paper birch	0	4	0	6
Yellow birch	0	0	0	4
Red maple	6	5	2	7
Sugar maple	2	1	2	3
Other	2	4	2	12
TOTAL	38	21	7	44
Attribute				
Living	33	11	5	3
Broken top	14	11	4	41
Branch stub	38	19	6	10
Hard outer wood	34	18	6	11
Fungal conk	32	14	6	24
Soundness (% nondecayed wood)				
0–25	11	5	2	35
26–50	16	6	1	5
51–75	4	6	3	3
76–100	7	4	1	1
% bark cover				
0–25	0	0	0	3
26–50	0	1	0	9
51–75	4	0	0	9
76–100	34	20	7	23

Table 2								
	Yellow-bellied sapsucker (20 cm) ^a		Hairy woodpecker (19 cm) ^a		Downy woodpecker (14 cm) ^a		Black-capped chickadee (11 cm) ^a	
Tree measurement	NST	NNST	NST	NNST	NST	NNST	NST	NNST
Trunk diameter, chest height (cm)	33.6	28.1	27.1	23.9	30.7	20.4	15.8	16.1
Trunk diameter, nest height (cm)	22.8	—	22.4	—	17.1	—	13.2	—
Total height (m)	19.4	14.1	17.5	14.1	19.7	10.0	3.8	8.5
Nest height (m)	8.6	—	8.3	—	9.3	—	2.5	—

^a = total, live body length
 NST = nest tree
 NNST = non-nest tree

Tables adapted from D. E. Runde and D. E. Capen, "Characteristics of Northern Hardwood Trees Used by Cavity-nesting Birds." ©1987 by The Wildlife Society, Inc.

- The data in Table 1 suggest that black-capped chickadees tend to avoid which kind of tree?
 - Those with broken tops
 - Those with 25% or less sound wood
 - Those that are living
 - Birches
- Managed stands of timber usually have few older, dying, or dead trees. In such a forest, one would expect the number of cavity-nesting birds to be:
 - high, because of the great number of live trees.
 - high, because nest trees would have small trunk diameters.
 - low, because most of the trees would be sound.
 - low, because the average tree height would be over 10 m.
- Which of the 4 bird species studied would most likely be found nesting in woodlots containing *only* paper-birch and yellow-birch trees?
 - Yellow-bellied sapsucker
 - Hairy woodpecker
 - Downy woodpecker
 - Black-capped chickadee
 - I only
 - III only
 - I and III only
 - II and IV only
- Which of the following data from Table 2 would support the hypothesis that birds longer than 15 cm choose larger nest trees than birds less than 15 cm in length?
 - Tree trunk diameter at nest height
 - Tree trunk diameter at chest height
 - Total tree height
 - I only
 - II only
 - I and II only
 - I, II, and III
- Which characteristic of non-nest trees would researchers NOT be likely to identify?
 - Total height
 - Trunk diameter at nest height
 - Species
 - Soundness
- Which statement below *best* describes why the researchers considered the characteristics of both nest and non-nest trees?
 - Nest trees are used as an experimental control for non-nest trees.
 - Non-nest trees are used as an experimental control for nest trees.
 - Comparing both types of trees allows for a better definition of nest-tree criteria.
 - Non-nest trees are used as lookout points for spotting cavity-nesting birds.