

DO YOUR STUDENTS STRUGGLE WITH



Identifying what the prompt is asking



Finding the key details in passages



Analyzing graphs and data tables



Interpreting diagrams

Practice Problem 1

Ecologists study how the removal of a species affects the balance of an ecosystem. In a food web, species at different trophic levels depend on one another for food and survival. Scientists use models to track how populations change when a species is removed.

The graph shows how the populations of grass, rabbits, snakes, and hawks changed over 15 years following the removal of hawks from a prairie ecosystem at year 5.

Which claim is best supported by the data in the graph?
A. Removing hawks from the ecosystem only affected the rabbit population.
B. After hawks were removed, the snake and grass populations increased.

Practice Problem 3

Ecologists study ocean food webs to understand how energy moves through an ecosystem and how species are connected. Each organism in a food web can have multiple feeding relationships, and a species may serve as prey for several different predators.

In an investigation, scientists model the feeding relationships among organisms in an ocean ecosystem.

Which two statements are best supported by the model?
A. Phytoplankton are consumed by zooplankton, which are then consumed by sardines and herring.
B. Zooplankton are producers in this food web because many other organisms consume them.
C. Sharks are at the top of the food web as they eat tuna and seals, but nothing eats them.
D. Zooplankton are the top predators in this food web because they consume phytoplankton.

WHAT IS THIS GRAPH ABOUT?

1 How bacterial population size changes over 20 hours at three different temperatures

2 How temperature changes when bacteria reproduce

3 How bacteria move from one environment to another

4 How food availability affects bacterial growth

What is the Independent variable?

1 Number of bacteria

2 Time (hours)bject

3 Temperature

4 Food supply

What is the dependent variable?

1 Number of bacteria

2 Time (hours)bject

3 Temperature

4 Food supply

At 37°C, what happened to the bacterial population between 0 and 8 hours?

1 It decreased from 2,000 to nearly 0

I've Got You Covered

- ✓ 5 Days of strategies focusing on one key strategy a day
- ✓ Guided release moving from whole class to individual practice
- ✓ 4 NGSS-aligned practice problems a day (with a Google Form for the last practice problem)
- ✓ Explanation of the strategy and why it is important
- ✓ Identifying and understanding the prompt, reading and analyzing diagrams, graphs, and data tables



"This resource is exactly what I was looking for. Worth the purchase!" - Shannon

SCIENCE TEST PREP

Life Science / Biology

Practice Problem 2

Scientists study how matter and energy move through living systems. Photosynthesis and cellular respiration are two processes that involve the exchange of matter and energy between organisms and their environment. Understanding how matter and energy move through ecosystems helps scientists explain how living things obtain the resources they need to survive.

In one investigation, scientists model how energy is transferred and how matter is cycled among the sun, plants, and a deer.

Cycling of Energy

Which two statements are best supported by the model?

A. The sun provides energy directly to the deer without passing through the plant.
B. Water and carbon dioxide are used by the chloroplast and then released by the deer.
C. Energy from the sun is captured by the plant, transferred to the deer, and then released as ATP, showing a one-directional flow of energy through the ecosystem.
D. The deer produces radiant energy that is returned to the sun, completing the cycle.
E. Matter and energy both cycle repeatedly through the ecosystem.

Practice Problem 2

of invasive species on native ecosystems. An invasive species is a non-native species introduced to an environment where it has no natural predators. Invasive species can harm native ecosystems by consuming native organisms.

Staghorn coral was introduced to the Western North Atlantic around the year 1900. The populations of red lionfish, staghorn coral, sponges, and queen angelfish have changed since their introduction. The graph shows a percentage of their normal population levels.

Western North Atlantic region

Year	Staghorn coral	Sponges	Queen angelfish	Red lionfish
0	100%	100%	100%	100%
10	100%	120%	80%	150%
20	100%	140%	60%	250%
30	100%	150%	50%	300%

Which two statements are best supported by the graph?

A. The population of red lionfish increased rapidly to over 300% while the queen angelfish population decreased to 50% of its normal level.
B. The population of sponges increased to 150% of its normal level while the population of staghorn coral remained at 100% of its normal level.
C. The population of queen angelfish decreased to 50% of its normal level while the population of staghorn coral remained at 100% of its normal level.
D. The population of red lionfish increased to 300% of its normal level while the population of sponges increased to 150% of its normal level.
E. The population of queen angelfish decreased to 50% of its normal level while the population of red lionfish increased to 300% of its normal level.

What Are *students* Doing?

- ✓ **Marking the text**
- ✓ **Analyzing and interpreting data, graphs, and diagrams**
- ✓ **Identifying what the question is asking**
- ✓ **Identifying the correct answer to the question**

SCIENCE TEST PREP

Life Science / Biology

Practice Problem 1

Biologists compare the embryos of different species to look for structural similarities that may indicate common ancestry. An embryo is an organism in the early stages of development before it is born or hatched. Scientists observe embryos at multiple stages to track how development changes over time.

Stages of Embryo Development

	Calf	Chicken	Fish	Human	Pig	Salamander
Stage 1						
Stage 2						
Stage 3						

Which statement is best supported by the model?

A. All six species shown are identical at every stage of embryo development.
B. Fish embryos develop more quickly than human embryos.
C. The embryos of all six species look most similar to one another at Stage 1.
D. Fish and human embryos share no structural features at any stage.

Practice Problem 2

A disturbance is any event that disrupts an ecosystem's normal conditions and causes changes in the number of multiple species at different trophic levels to track how an ecosystem changes over time.

Species in the Shortgrass Prairie Ecosystem

Legend: Grass (blue), Rabbits (orange), Snakes (green), Hawks (red)

Drought caused all four species to decline sharply between years 9 and 15, dropping to approximately 25% by year 15, while snakes remained at relatively steady but reduced levels. Rabbits and grass populations best support the student's claim? By year 9, dropping to approximately 25% by year 15, while snakes remained at 100%, but by year 15, all four had dropped to between 25% and 50% populations. Rabbits and grass populations recovered to 100% by year 25, while grass and rabbits remained below 50% by year 30. Snakes recovered to 100% by year 30, rising back above 75% by year 30. Hawks recovered to 100% and 40% from year 20 through year 40, never recovering to 100%.

Different ways to use the test prep lessons

✓ One strategy a day for one week of test prep

✓ Google Form Option for Problem 4: Individual practice for analytics

✓ One question a week, 5-10 minutes a day, focusing on one strategy a week

SCIENCE TEST PREP

Test taking Strategies

Practice Problem 1

Evolutionary biologists study how environmental changes affect which traits help organisms survive. Natural selection occurs when individuals with certain traits are more likely to survive and reproduce than those without them. Over time, advantageous traits become more common in a population.

reduced the supply of soft seeds, birds with different beak lengths

Practice Problem 3

Paleontologists study fossils to understand how life on Earth has changed over time. Fossils are the preserved remains or traces of organisms from the past. Scientists examine the rock layers in which fossils are found to compare the ages and types of organisms at different locations.

In one investigation, scientists compared fossils found in rock layers at two locations 1,200 miles apart, one in Montana and one in Texas.

Fossil Remains in Different Locations

Number of Birds
3
8
22
27
18

a Drought

ths.
question?
ngths were still present
r beaks.
more nutrition.

Which statement is best supported by the model?
A. Fossil B is older than Fossil D because Fossil B is found at a shallower depth in the rock layers.
B. Fossils A and D are found in rock layers of the same age in both Montana and Texas, so they are the same species once lived across a wide geographic area.
C. Fossil D is found only in Texas and is therefore the oldest fossil shown in the model.
D. The rock layers in Montana and Texas were deposited at completely different times and cannot be compared.

Check out what teachers just like you have said about my other test prep activities:



This was a great resource to use to prep for our state science test! It really helps to be able to explain the purpose behind each strategy so that they are able to become better test takers. Thanks!- Leslie B



Worked well for what I needed with middle school students. Test prep is hard to come by. I used this to prepare them for Illinois State Testing prep. - Emily



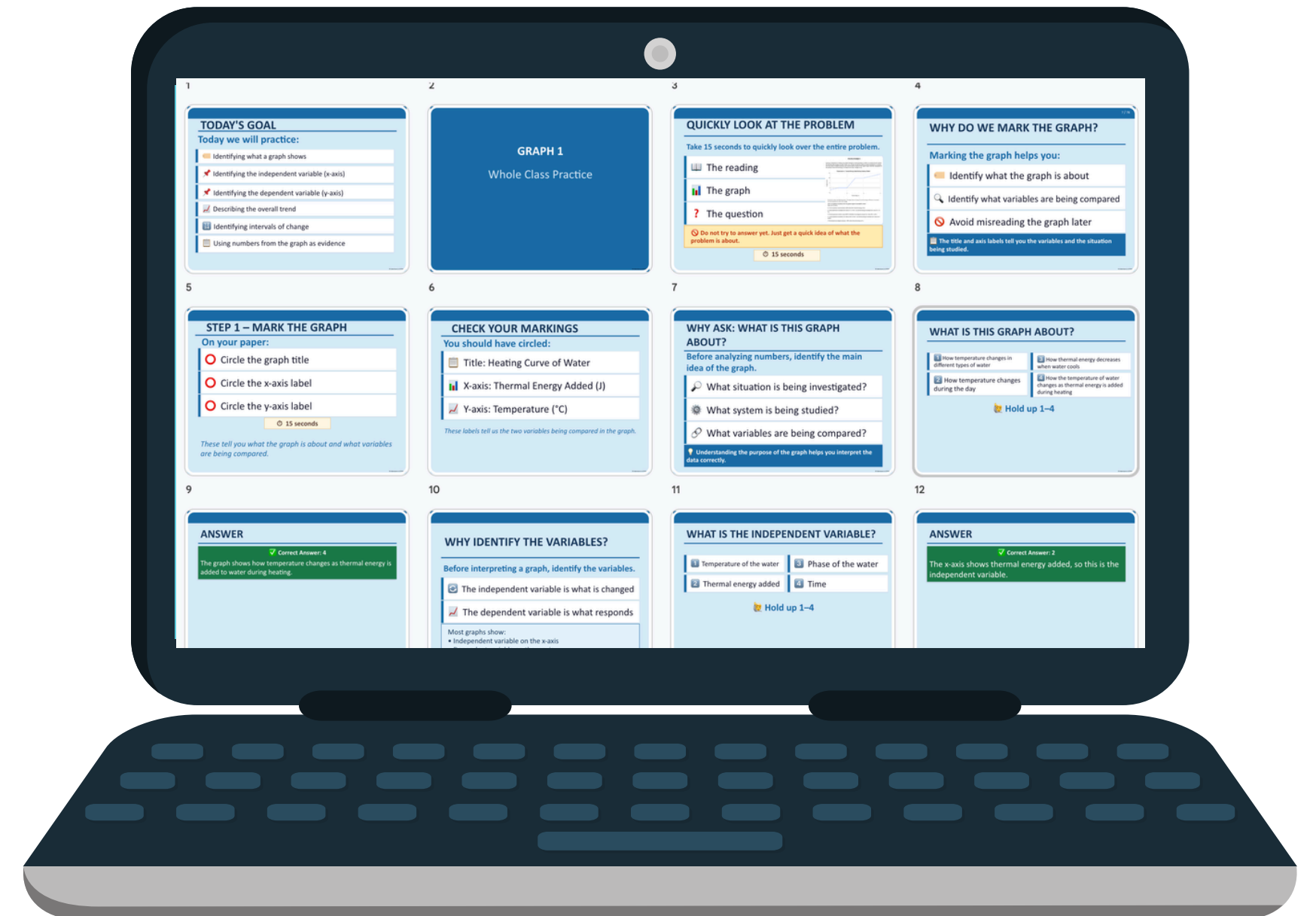
This was an awesome resource! Thank you so much for putting your time into creating this to make life easier and more stress free! Used it with each bell-Thanks!-Trish Bruw and her Science Crew

Resource *includes*

- ✓ 20 practice problems with science passages, data and diagrams to interpret
- ✓ Google Form for each Problem 4 to see how well each student understands the strategy
- ✓ Teacher presentation to guide students step-by-step on how to break down the question, identify key parts, and then answer the questions
- ✓ Answer key

SCIENCE TEST PREP

Test taking Strategies



HOW TO USE THE RESOURCE IN

3 simple steps

1

Print the PDF version, make copies, and hand out to students

2

Use the digital version by clicking the titles in the RED BOX to make your own copy (found at the end of the PDF)

3

Share the resource with your students using your favorite LMS (Google Classroom, Powerschool (schoolology), Canva...)

Teacher Directions

Objective:
Scholars will learn test-taking strategies to help them on state, district, and class NGSS science tests.

Directions:

1. Print out the handouts so that students can write on them.
2. Go through the presentation to guide students in answering the questions.
 1. Problem 1: whole class
 2. Problem 2: Group practice (scholars work in groups of 3-4 as they move through the problem)
 3. Problem 3: Pair practice (scholars work with a partner as they move through the problem)
 4. Problem 4: Individual practice (scholars do this on their own)
 - a. I have provided a Google Form for problem 4 if you would like to see how each of your scholars did individually

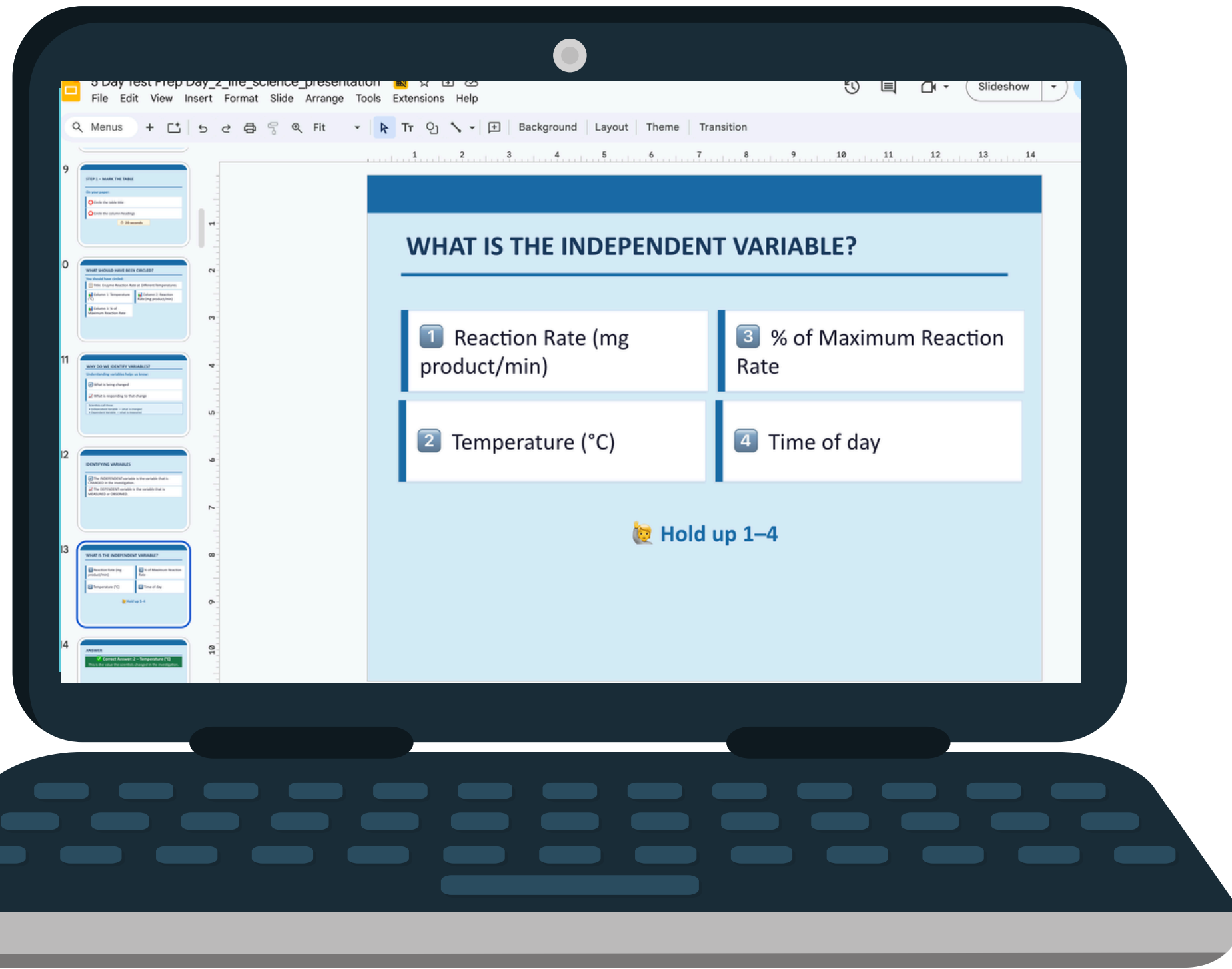
Time Frame:
This is designed to take 20-25 minutes per day, with four problems focusing on a specific strategy. There is a google form for each day that you could use for Problem 4: Individual practice to give you analytics on how each student is doing with each strategy

- Modifications: You could do one strategy a week, doing only one problem a day, which would then only take up 5 minutes per day

The teacher presentation and Google Form links are at the end of this PDF.

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NGSS Test Prep Bundle

This test-taking strategies activity includes:

21 practice questions with graphs, data tables, and diagrams

Multiple-choice, multi-answer, and short (CER) questions

Teacher slide presentation to guide the students with the strategies and how they can help them

Answers for the example questions

“ This resource is exactly what I was looking for. Worth the purchase!- Shannon ”

NGSS TEST PREP BUNDLE

Practice 6

In 2004, the coast of Sumatra experienced a tsunami that was 50 m tall and reached 5 km inland. It caused an estimated \$10 billion in damages and resulted in the deaths of around 230,000 people. Today, we have tsunami warnings to help reduce the number of lives lost.

A tsunami is a series of waves that come from the ocean floor. Tsunamis are caused by earthquakes near the ocean floor. The 2004 tsunami was caused by an earthquake that was 6 earthquakes.

Earthquake	Location
Earthquake A	Coastline
Earthquake B	Mid-continent
Earthquake C	Ocean
Earthquake D	Mid-continent
Earthquake E	Mid-continent
Earthquake F	Mid-continent

(A) Earthquake A
(B) Earthquake B
(C) Earthquake C
(D) Earthquake D
(E) Earthquake E
(F) Earthquake F

Practice 3: Part A

An invasive species entering an ecosystem can disrupt it because they have no natural predators. The crown-of-thorns starfish is protected by its toxic spines and is naturally located in the Indo-Pacific region. However, it is described as an invasive species because it is causing the Great Barrier Reef to die.

Crown-of-thorns starfish

What question are the scientists trying to answer?
(A) What species are in the Indo-Pacific ecosystem?
(B) How many crown-of-thorn starfish are in the Indo-Pacific region?
(C) What does the crown-of-thorn starfish eat?

Digital and Print

Analyze Data, Interpret Data, Test-taking Strategies, NGSS state test Practice Questions

Click to learn more!