Science Investigation Detectives

Tell when scientists are observing, researching, or testing a planned change.

SC.5.N.1.2 "Explain the difference between an experiment and other types of scientific investigation."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the sentences that describe an investigation with no planned change, circle the sentence that tells why Maya's second investigation is an experiment, and number the conditions she keeps the same.

Butterflies in the Garden

1. At a school garden, Maya wonders which flowers a butterfly visits most. She watches one sunny hour each day for a week. She records the kind of flower, the number of butterflies, and the time. Maya does not change the flowers or tell butterflies where to go. This is an observation investigation. It helps her describe what happens naturally.

2. Later, Maya wants to test whether flower color affects butterfly visits. She plants the same kind and number of flowers in two equal garden beds. One bed has yellow flowers, and the other has purple flowers. She gives both beds the same soil, water, sunlight, and growing time. Then she counts butterfly visits. This is an experiment because Maya changes one factor, flower color, while keeping other conditions alike.

3. Scientists use many investigations. In an observation, they gather information without purposely changing what they study. In a model or research investigation, they may use a model, books, measurements, or existing information to answer a question. An experiment is different because it tests the effect of a planned change. A fair experiment changes only one factor at a time and compares results while other important conditions stay the same.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why is Maya's first garden investigation an observation investigation?

2. What one factor does Maya change in her experiment?

3. Name two conditions Maya keeps the same in the experiment.

4. How is an experiment different from a model or research investigation?

3 YOUR TURN

Your own words

Choose a question about a schoolyard or home object. Write four sentences: describe an observation investigation for the question, then describe an experiment that changes one factor and keeps at least two conditions the same.

ANSWER KEY

Science Investigation Detectives

GRADE 5 · SC.5.N.1.2

PART 1 · READ AND MARK

Underline the sentences that describe an investigation with no planned change, circle the sentence that tells why Maya's second investigation is an experiment, and number the conditions she keeps the same. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why is Maya's first garden investigation an observation investigation?	**She watches and records butterflies without changing the flowers or directing the butterflies.**
2	What one factor does Maya change in her experiment?	**She changes the flower color, using yellow flowers in one bed and purple flowers in the other.**
3	Name two conditions Maya keeps the same in the experiment.	**Any two: the kind and number of flowers, garden-bed size, soil, water, sunlight, or growing time.**
4	How is an experiment different from a model or research investigation?	**An experiment tests the effect of a planned change. A model or research investigation may use models, books, measurements, or existing information to answer a question.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My question is whether shade changes how quickly ice cubes melt. For an observation, I would watch ice cubes already placed in sunny and shady spots and record melting times without moving them. For an experiment, I would place equal ice cubes on matching plates, putting one in sun and one in shade. I would change only the amount of shade and keep the cube size, plates, and starting time the same.

Accept equivalent explanations that correctly identify an observation as gathering information without a planned change and an experiment as testing one planned change while controlling other conditions. For Your Turn, accept reasonable questions and plans if the observation does not purposely change the situation and the experiment identifies one changed factor plus two controlled conditions.