Change It or Watch

Sort studies by whether researchers assign a condition.

MA.912.DP.5.6 "Determine the appropriate design, survey, experiment or observational study, based on the purpose. Articulate the types of questions appropriate for each type of design."

NAME _____ DATE _____

EXPERIMENT

Researchers deliberately assign different treatments or conditions. Use an experiment to test whether changing one factor causes a change in an outcome.

A baker uses two rising times for dough and measures the volume of each loaf.

OBSERVATIONAL STUDY

Researchers measure or record what already happens and do not assign conditions. Use an observational study to find patterns or associations, not to prove cause and effect.

An astronomer records star brightness during clear nights without changing anything.

1 SORT

8 items

For each situation, circle EXPERIMENT or OBSERVE, then choose two item numbers and explain what the researchers do, or do not do, that proves each choice.

1.	A school randomly assigns ninth graders to use either paper planners or digital planners, then compares missed assignments.	EXPERIMENT OBSERVE
2.	A wildlife team counts foxes seen in two forest areas.	EXPERIMENT OBSERVE
3.	A health researcher measures students' screen time and hours of sleep.	EXPERIMENT OBSERVE
4.	A coach assigns one team a new warm-up routine and another team its usual routine, then compares sprint times.	EXPERIMENT OBSERVE
5.	A museum records which exhibits visitors enter first.	EXPERIMENT OBSERVE
6.	A cafeteria gives randomly selected lunch periods a new menu label and compares vegetable sales.	EXPERIMENT OBSERVE
7.	A library randomly assigns some patrons text-message due-date alerts and others email alerts, then compares late returns.	EXPERIMENT OBSERVE
8.	A geologist measures rock temperatures at shaded and sunny locations.	EXPERIMENT OBSERVE

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Write one new EXPERIMENT example and one new OBSERVE example.

EXPERIMENT _____

OBSERVE _____

CHALLENGE

A report shows that students who eat breakfast often have higher quiz scores. Write an experiment that could test whether eating breakfast causes the score difference.

ANSWER KEY

Change It or Watch

HIGH SCHOOL · MA.912.DP.5.6

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	A school randomly assigns ninth graders to use either paper planners or digital planners, then compares missed assignments.	**EXPERIMENT**	The school assigns students to planner conditions.
2	A wildlife team counts foxes seen in two forest areas.	**OBSERVE**	The team only records fox sightings.
3	A health researcher measures students' screen time and hours of sleep.	**OBSERVE**	The researcher measures existing behaviors and outcomes.
4	A coach assigns one team a new warm-up routine and another team its usual routine, then compares sprint times.	**EXPERIMENT**	The coach assigns the warm-up routines.
5	A museum records which exhibits visitors enter first.	**OBSERVE**	The museum records visitor behavior without assigning anything.
6	A cafeteria gives randomly selected lunch periods a new menu label and compares vegetable sales.	**EXPERIMENT**	The cafeteria assigns the new label to selected lunch periods.
7	A library randomly assigns some patrons text-message due-date alerts and others email alerts, then compares late returns.	**EXPERIMENT**	The library assigns patrons to alert types.
8	A geologist measures rock temperatures at shaded and sunny locations.	**OBSERVE**	The geologist measures naturally occurring conditions.

PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **EXPERIMENT**: A teacher randomly assigns students to use practice quizzes or flash cards, then compares their unit-test scores.
- **OBSERVE**: A researcher records students' daily water intake and afternoon tiredness without telling them what to drink.

Challenge: Researchers randomly assign consenting students to receive a free school breakfast each morning or to continue their usual morning routine, then compare quiz scores after four weeks.

Accept any explanation that names the deciding feature from the rule box for the chosen item. For Part 2, students should identify whether researchers assign a treatment or only measure existing conditions. Accept varied Part 3 examples when the experiment includes an assigned condition and the observational study does not.