MAFS.912.S-IC.2.3 Also assesses MAFS.912.S-IC.1.2 Also assesses MAFS.912.S-IC.2.4 Also assesses MAFS.912.S-IC.2.5 Also assesses MAFS.912.S-IC.2.6	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. Decide if a specified model is consistent with results from a given data-generating process (e.g., using simulation). *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?* Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. Evaluate reports based on data.
Item Types	Editing Task Choice – May require choosing a purpose of a statistical model. Equation Editor – May require identifying a quantity. Hot Text – May require dragging and dropping values and/or an interpretation. GRID – May require dragging and dropping options to construct a model or to design an experiment, or complete a simulation to model data. Matching Item – May require matching models, flaws in a data collection method, or type of data collection. Multiple Choice – May require identifying a survey type or a sample. Multiselect – May require selecting acceptable models. Open Response – May require discussing aspects of a survey, explaining data reports, describing flaws in data collection, or recommending a correct course of action.
Clarifications	Students will use the purpose of a sample survey, experiment, and observational study to determine which would be the best statistical model for a given context. Students will understand the role of randomization in a sample survey, experiment, and observational study.

	Students will evaluate the randomization method chosen for a sample survey, experiment, or observational study to determine its probable effectiveness. Student will determine if a simulation is consistent with the theoretical probability. Students will design and perform a randomized experiment. Students will evaluate reports based on data.
Assessment Limits	Items should not require the student to complete a survey, perform an experiment, or do an observational study. Items will not require the student to perform a simulation.
Stimulus Attribute	Items should be set in a real-world context.
Response Attributes	Items may require the student to apply the basic modeling cycle. Items may require the student to choose and interpret units.
Calculator	Neutral

Sample Item	Item Type
	Multiple Choice

Jared is opening several ice cream stores. The walls of the stores can be yellow or blue. He designs an experimental study to determine if the color of the walls affects how much ice cream people eat.

Jared finds 164 volunteers. He randomly assigns half of them to a room with yellow walls and lets them eat as much chocolate ice cream as they want for one hour. He assigns the other half to a room with blue walls and lets them eat as much vanilla ice cream as they want for one hour.

Jared records the total amount of ice cream eaten in each room.

What is one flaw in Jared's study?

(A) There are too many volunteers.

(B) The room assignments were random.

(C) The groups had different flavors of ice cream.

(D) The groups did not have different numbers of volunteers.