6th Grade Math

Objectives

The students will be able to identify the type of bias or other fallacy in a math example by using critical thinking skills.

The students will be able to explain why this example is biased or contains a fallacy.

The 6 Types of Fallacies

Type of fallacy	Definition	Example
Experimenter bias	Results may be incorrect in an experiment because information may have been given to participants which may have influenced their decisions.	A man is selling a boat. In the background, the man displays his open laptop to a page of a comparable boat of a similar age with a price similar to the price of the boat he is selling.
Confirmation bias	Accepting something as true because you want it to support your ideas	A girl has a few subjects of homework to do. She has 5 math problems, 2 sentences to correct, and 3 paragraphs to read. A girl likes English class but not math. Since she will get home late, she can only do two of her homework assignments. She decides that she must do the 2 sentences and 3 paragraphs first before she takes a break. She does not explore all possibilities or combinations of doing the homework.

The 6 Types of Fallacies

Type of fallacy	Definition	Example
Correlation is not causation	Two or more things are related, but one does not cause the other.	A house has 17 rooms in it, and another house has 3 rooms in it. It is thought that the house with 17 rooms in it is larger than the other house without measuring them.
Random chance	A way in which luck or chance occurred for an event to happen with no strategy being involved.	Mary and her 5 friends won $1,194 from a raffle. Mary stated quickly without calculating, "We will divide this money evenly so that everyone gets the same amount of money.
Lack of control group	An experiment or researched study does not include a group being experimented on in which to compare.	Three different liquids (milk, lemonade, and tea) are provided to see if stirring them changes the temperature. Only these three liquids were stirred and measured.

The 6 Types of Fallacies

Type of fallacy	Definition	Example
Overgeneralization	The belief that one event or action is an example for the whole.	A student looks at an odd-shaped country. The capital city is located in the center of the country. Without measuring, the student states "All cities on the coast are the same distance from the capital.

Skit Activity

Get into a group of 3 to 5 students. Each group will create a word problem. Then they will plan to act it out in front of the class. For each skit, the rest of the class will work the word problem and discuss the fallacy type and how this error played a part in the word problem.

Topics

Measure/classify angles

Unit prices

Greatest common factor

Compare integers

Probability of one event

Understanding percentage

Divisibility rules

Fallacies

Experimenter bias

Confirmation bias

Correlation is not causation

Lack of control group

Random chance

Overgeneralization

Discussion

Each group should act out their skit. The other groups should identify the fallacy type. Then discuss the answer and how the example has that fallacy in it.

Review

Type of fallacy	Definition	Type of fallacy	Definition
Experimenter bias	Results may be incorrect in an experiment because information may have been given to participants which may have influenced their decisions.	**Random chance**	A way in which luck or chance occurred for an event to happen with no strategy being involved.
Confirmation bias	Accepting something as true because you want it to support your ideas	**Lack of control group**	An experiment or researched study does not include a group being experimented on in which to compare.
Correlation is not causation	Two or more things are related, but one does not cause the other.	**Overgeneralization**	The belief that one event or action is an example for the whole.

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