

# 5<sup>th</sup> Grade Math

# Objectives

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

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

# The 5 Types of Fallacies

Bias

Experimenter bias

Confirmation bias

Correlation  
is not causation

Random chance

Lack of control group

Type of Fallacy

# Experimenter bias

## Definition

Results from an experiment may be incorrect because information may have been given to participants which may have influenced their decisions

## Example

A pie that is cut into 8ths is shown with 3 pieces cut out of it. A question is given. What is 1 minus  $\frac{3}{8}$ ths?



Type of Fallacy

# Confirmation bias

## Definition

Accepting something as true because you want it to support your ideas

## Example

Your number for a raffle is number 16. Out of 24 numbers, you know yours will be picked even though the probability shows that you have a  $1/24$  chance to win.



Type of Fallacy

# Lack of control group

## Definition

An experiment or researched study does not include a group being experimented on in which to compare.

## Example

Three different-sized containers are used. Each container is filled with ice and then water to the brim without spilling. The student wants to find out if the water spills over the side of the container when the ice melts. The volume for each shaped container is shown.

\*cube  $(3 \times 3 \times 3) = 27$  inches<sup>3</sup>

\*prism (base = 4 height = 2 inches) = 8 inches

\*rectangular solid  $(l \times w \times h) = 6 \times 2 \times 4 = 48$  inches

Type of Fallacy

# Random Chance

## Definition

A way in which luck or chance occurred for an event to happen with no strategy being involved.

## Example

It rained on the fourth day, eighth day, 16<sup>th</sup> day and 32<sup>nd</sup> day. The other days did not have any rain. What is the pattern?



Type of Fallacy

# Correlation is not causation

## Definition

Two or more things are related, but one does not cause the other.

## Example

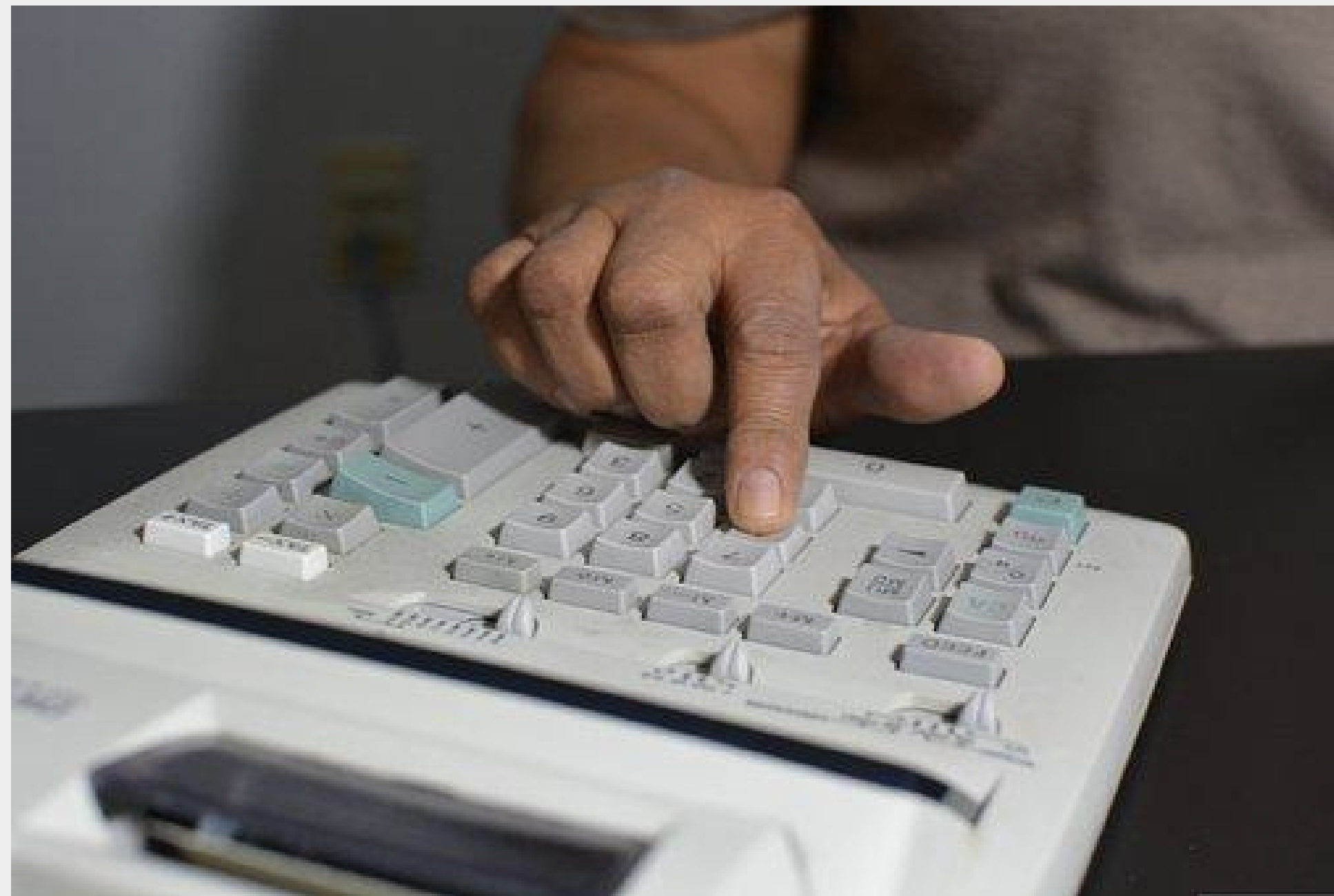
Two lines are not perpendicular, so they must be parallel.





# Create a word problem

Choose a fallacy type. Then write a math word problem using that fallacy type. The fallacy must be included in your word problem.



# Review

## The 5 Types of Fallacies

Bias

Experimenter bias

Confirmation bias

Correlation  
is not causation

Random chance

Lack of control group

