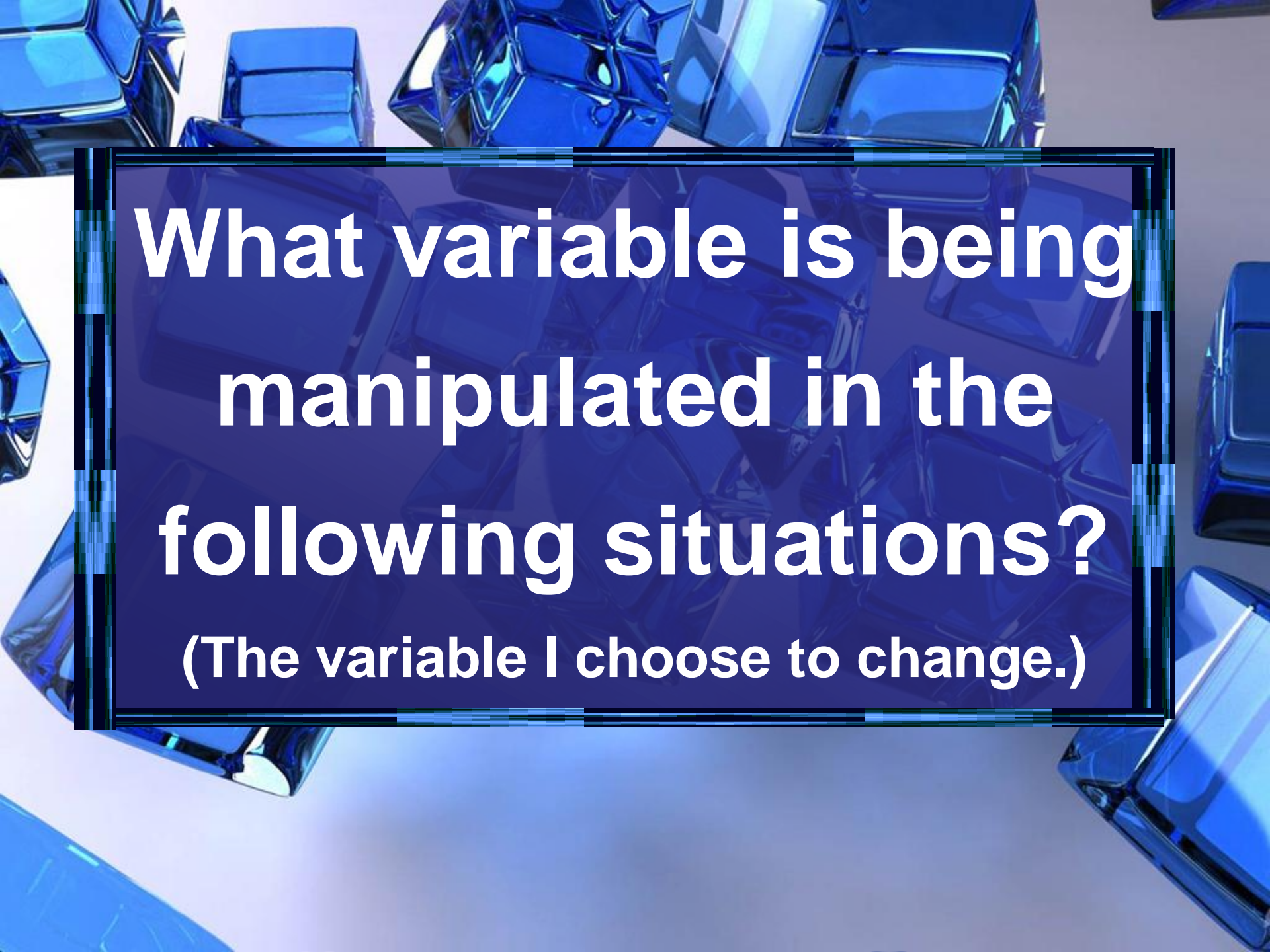
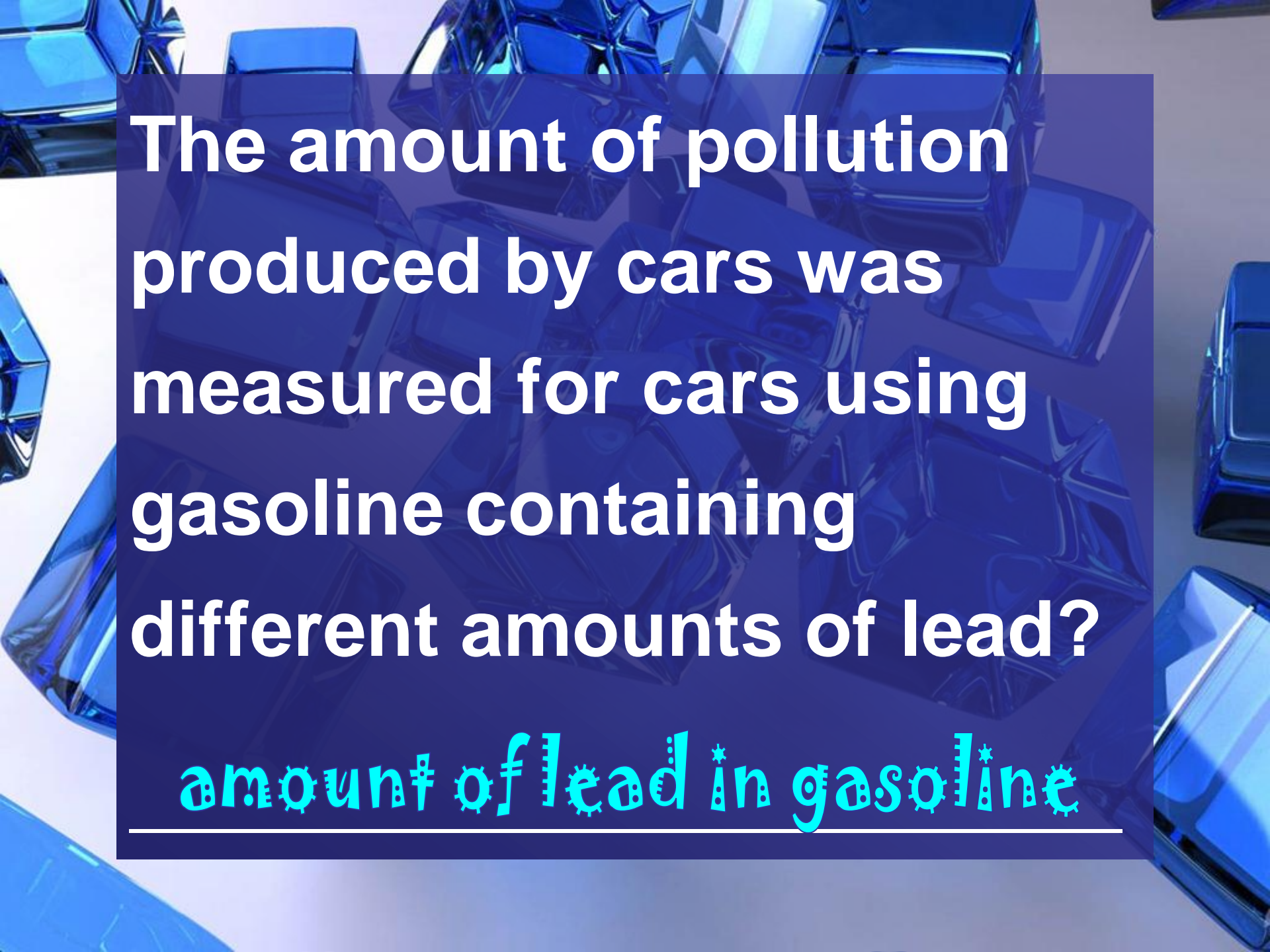




Understanding Variables




**What variable is being
manipulated in the
following situations?
(The variable I choose to change.)**

The background of the slide is a close-up photograph of several blue-tinted ice cubes. The cubes are scattered across the frame, with some in sharp focus and others blurred in the background. The lighting creates bright highlights and deep shadows on the facets of the ice, giving it a three-dimensional appearance. A semi-transparent dark blue rectangular box is overlaid on the center of the image, containing white text.

**The amount of pollution
produced by cars was
measured for cars using
gasoline containing
different amounts of lead?**

amount of lead in gasoline

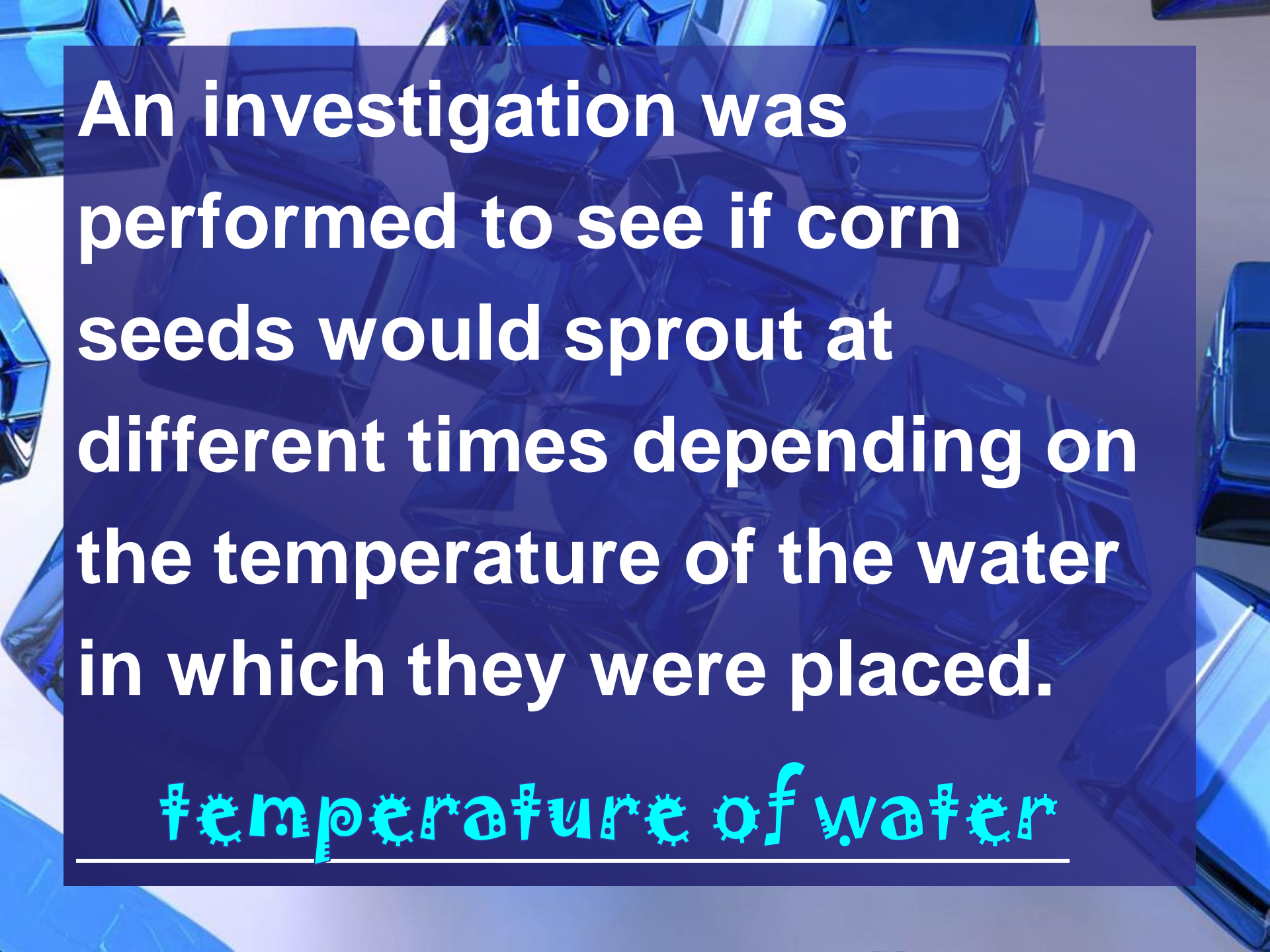
The background of the slide is a close-up, top-down view of numerous clear, faceted ice cubes. The cubes are scattered across the frame, with some in sharp focus and others blurred in the foreground and background. The lighting creates bright highlights and deep shadows on the facets of the ice, giving it a three-dimensional appearance. The overall color palette is dominated by various shades of blue and white.

Lemon trees receiving the most water produced the largest lemons.

amount of water

The amount of algae growth in lakes seems to be directly related to the number of sacks of phosphorous fertilizer sold by local merchants.

of sacks of phosphate fertilizer sold

The background of the slide is a close-up photograph of several clear, faceted ice cubes. The lighting is bright, creating sharp highlights and deep shadows on the surfaces of the ice, giving it a three-dimensional appearance. The overall color palette is dominated by various shades of blue and white.

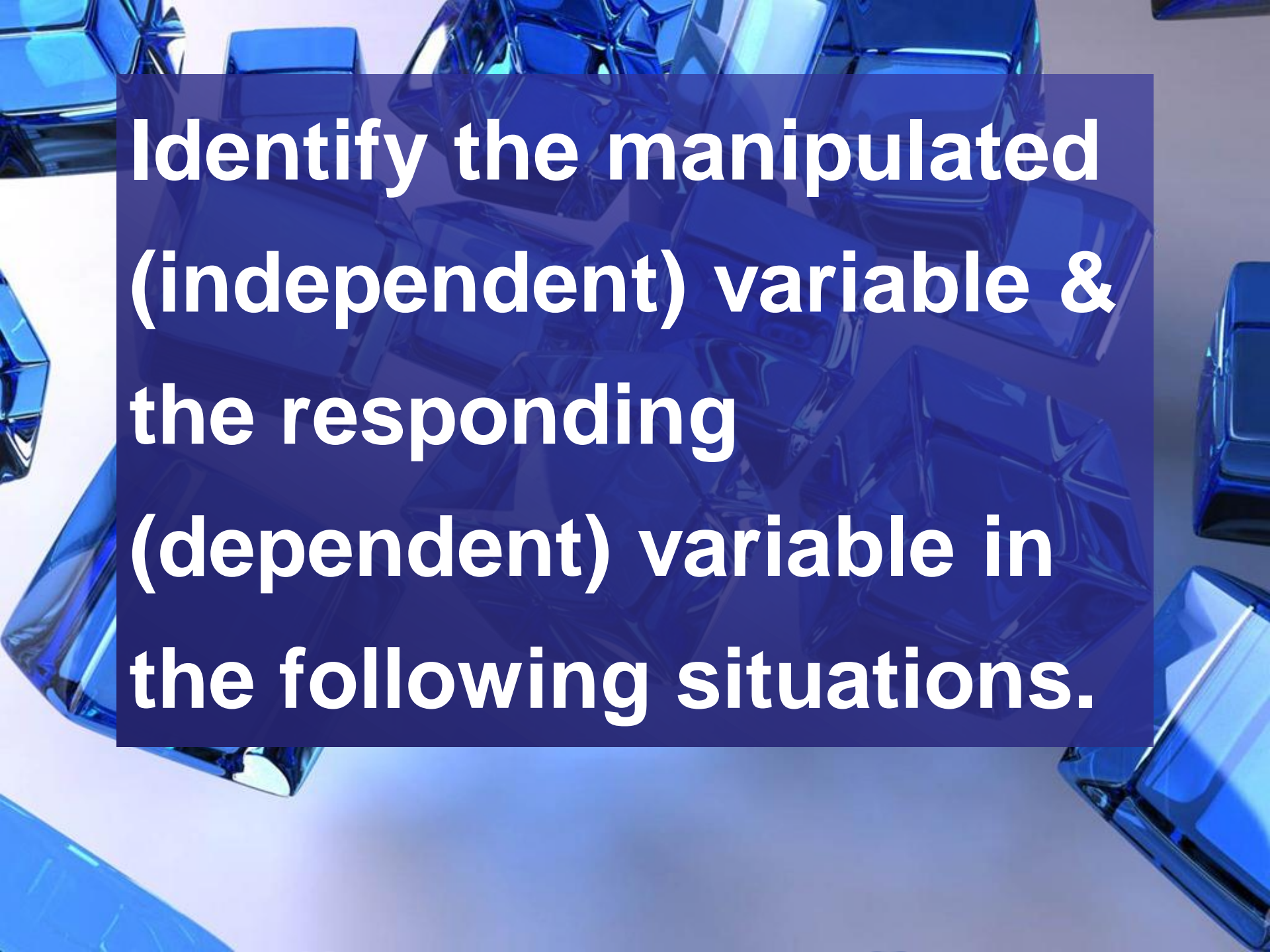
An investigation was performed to see if corn seeds would sprout at different times depending on the temperature of the water in which they were placed.

temperature of water

The variable that may change as a result of the manipulation is called the

responding variable

dependent variable



**Identify the manipulated
(independent) variable &
the responding
(dependent) variable in
the following situations.**

More bushels of potatoes
will be produced if the soil
is fertilized more.

MV (IV) amount of fertilizer

RV (DV) # of bushels of potatoes

5 groups of rats are fed identical diets except for the amount of Vitamin A that they receive. Each group gets a different amount. After 3 weeks on the diet, the rats are weighed to see if their weight has changed.

MV (IV) amount of Vitamin A

RV (DV) weight of rats

An experiment was done with 6 groups of children to see if scores on their weekly spelling tests were affected by the number of minutes of spelling practice that they had each day.

MV (IV)

minutes of spelling practice

RV (DV)

score on spelling test

Students in a science class carried out an investigation in which a flashlight was pointed at a screen. They wished to find out if the distance from the light to the screen had any effect on the size of the illuminated area.

MV (IV)

distance from light to screen

RV (DV)

size of illuminated area

The State Agriculture Dept. has been counting the number of foxes in Brown County. Will the # of foxes have any effect on the rabbit population?

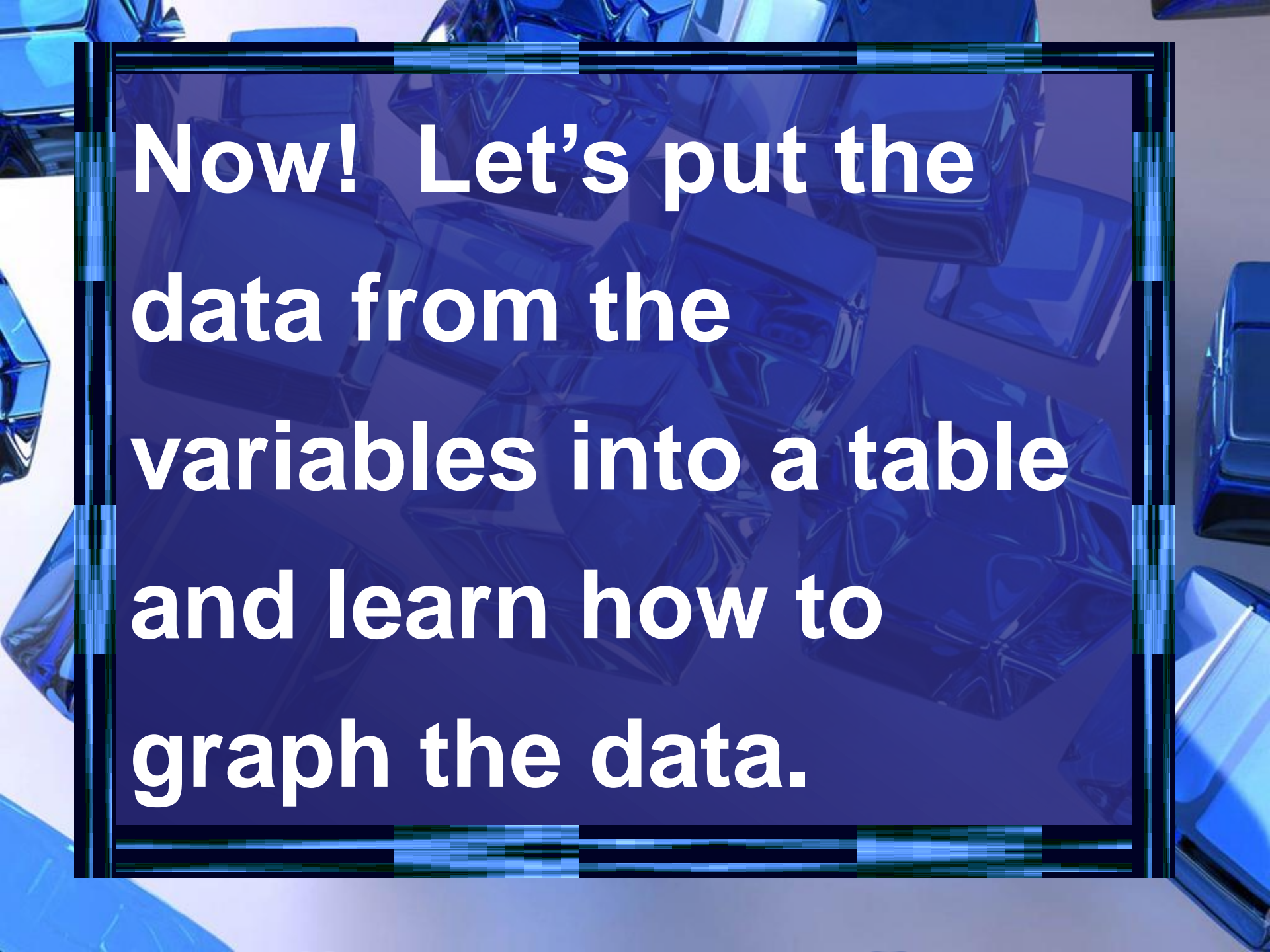
MV (IV) # of foxes

RV (DV) # of rabbits

A study was done with white rats to see if the number of offspring born dead was affected by the number of minutes of exposure to X-rays by the mother rats.

MV (IV) minutes of exposure to X-rays

RV (DV) # of offspring born dead

The background of the slide is a close-up photograph of several clear, faceted ice cubes. The lighting creates bright highlights and deep shadows, giving the ice a three-dimensional appearance. The overall color palette is dominated by various shades of blue and white.

**Now! Let's put the
data from the
variables into a table
and learn how to
graph the data.**

Length of Drop (cm)	Height of Bounce (cm)
10	8
30	24
50	40
70	56
100	80

Usually the manipulated variable (independent variable) is written on the left, but not always.

Length of Drop (cm)	Height of Bounce (cm)
10	8
30	24
50	40
70	56
100	80

The independent variable is always graphed on the

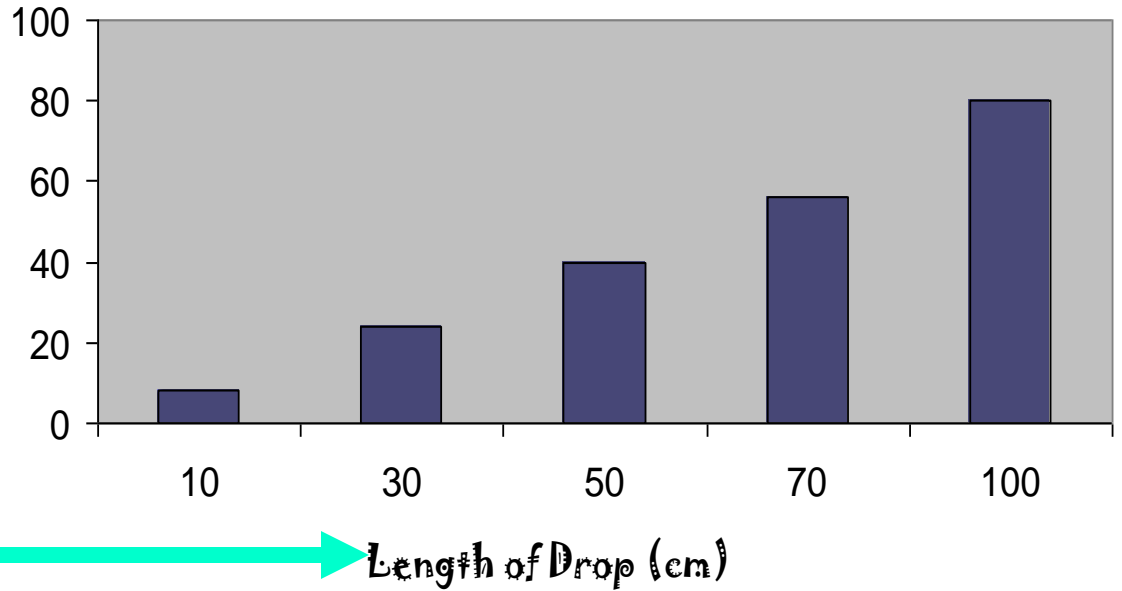


Length of Drop (cm)	Height of Bounce (cm)
10	8
30	24
50	40
70	56
100	80

Y-axis

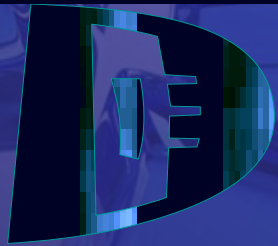
Height of Bounce (cm)

How High Will a Ball Bounce Dropped From Various Heights?

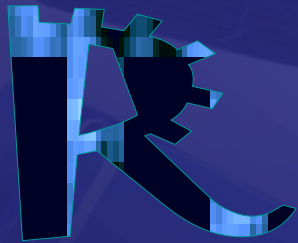


X-axis

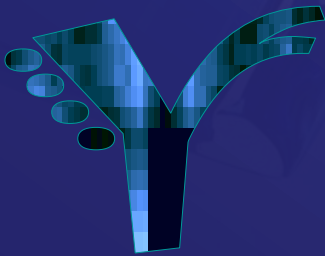
Length of Drop (cm)



DEPENDENT

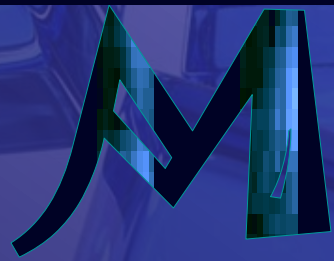


RESPONDING



AXIS

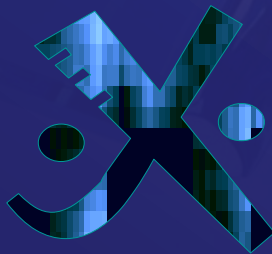


A large, stylized, black letter 'M' with a slight shadow effect, positioned to the left of the word 'MANIPULATED'.

MANIPULATED

A large, stylized, black letter 'I' with a slight shadow effect, positioned to the left of the word 'INDEPENDENT'.

INDEPENDENT

A large, stylized, black letter 'X' with a slight shadow effect, positioned to the left of the word 'AXIS'.

AXIS

A faint, semi-transparent watermark of the text 'X-axis' is visible in the bottom right corner of the image.