



THE DENSITY OF AN OBJECT IS THE RELATIONSHIP BETWEEN IT'S WEIGHT AND THE VOLUME IT OCCUPIES.

$$\text{Density} = \frac{\text{Weight}}{\text{Volume}}$$

AS YOU CAN SEE, IRON IS MUCH MORE DENSE THAN COTTON.

WHAT'S THE USE OF KNOWING DENSITY?

ARCHIMEDES, A SCIENTIST OF ANCIENT GREECE SOLVED A MYSTERY WITH DENSITY.

KING HIERRO OF SYRACUSE GAVE A KILOGRAM OF GOLD TO A GOLDSMITH TO HAVE A CROWN MADE. HE SUSPECTED THE GOLDSMITH KEPT SOME OF THE GOLD.

IT IS A VERY NICE CROWN YOUR MAJESTY.

BUT I AM NOT SURE IT IS PURE GOLD!

CAN YOU TELL ME IF ALL THE GOLD IS THERE WITHOUT DAMAGING THE CROWN?

OF COURSE I CAN, BECAUSE IF THE CROWN IS PURE GOLD IT HAS TO HAVE THE DENSITY OF GOLD.

IF WE WANTED TO MAKE AN EXACT COPY, WE WOULD NEED EXACTLY THE SAME KILOGRAM OF GOLD?

YES

AND THE GOLD WILL OCCUPY A CERTAIN VOLUME, WHICH WE CAN MEASURE BY THE WATER IT DISPLACES, WHEN WE PUT IT IN THIS BATH.

INDEED IT WOULD.

OK, LET'S PLACE YOUR CROWN IN THE BATH AND MEASURE HOW MUCH WATER IS DISPLACED.

HOW COULD IT NOT BE GOLD?

IF THE GOLDSMITH MIXED THE GOLD WITH SILVER AND KEPT SOME OF THE GOLD, THE CROWN WOULD WEIGH THE SAME BUT OCCUPY MORE VOLUME.

1 KILO

1 KILO

WHAT HAPPENED?

THE CROWN WASN'T PURE GOLD AND THE GOLDSMITH ENDED UP IN JAIL.

THAT'S REALLY COOL.

NOT FOR THE GOLDSMITH, LET ME TELL YOU.