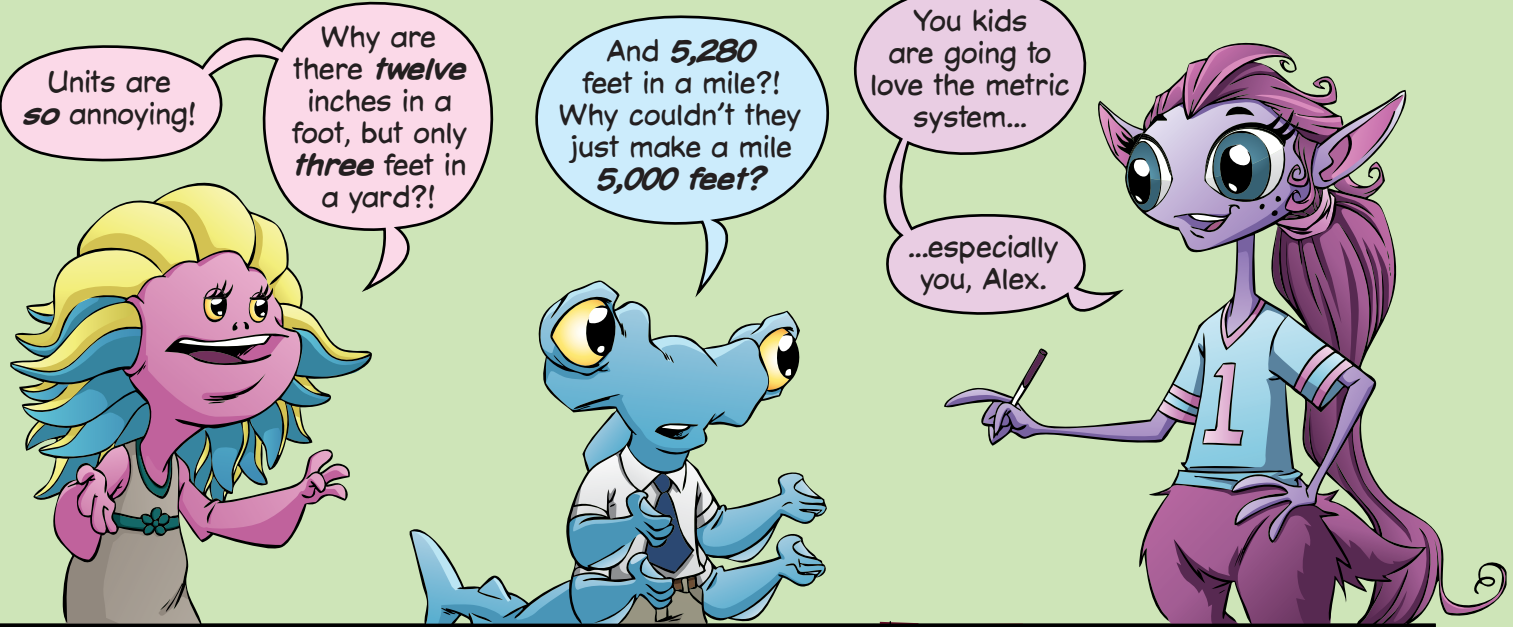




# MATH TEAM

The Metric System

Before today's math meet, we are going to learn a whole new system of measurement!



Units are so annoying!

Why are there **twelve** inches in a foot, but only **three** feet in a yard?!

And **5,280** feet in a mile?! Why couldn't they just make a mile **5,000 feet**?

You kids are going to love the metric system...

...especially you, Alex.



In the metric system, length can be measured in centimeters, meters, and kilometers.

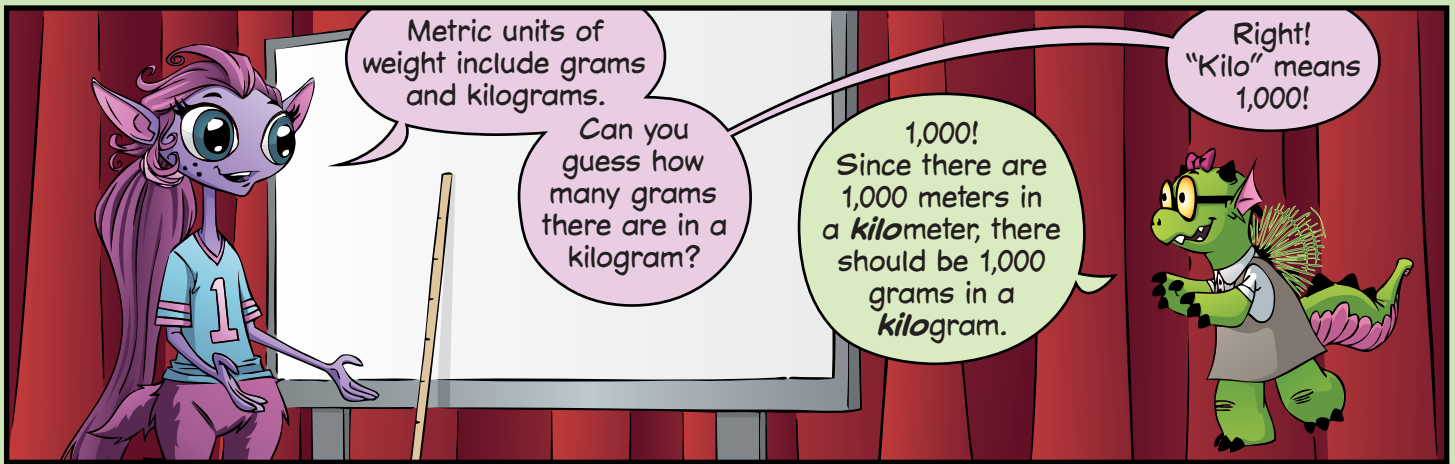
There are 100 centimeters in a meter...

...and 1,000 meters in a kilometer.

100 and 1,000...

...that's awesome!

THIS GRAY BOX IS ONE CENTIMETER TALL. ONE INCH IS A LITTLE MORE THAN TWO AND A HALF CENTIMETERS. ONE METER IS EQUAL TO 100 CENTIMETERS, WHICH IS A LITTLE MORE THAN 39 INCHES.



Metric units of weight include grams and kilograms.

Can you guess how many grams there are in a kilogram?

1,000! Since there are 1,000 meters in a *kilometer*, there should be 1,000 grams in a *kilogram*.

Right! "Kilo" means 1,000!

A PAPERCLIP WEIGHS ABOUT 1 GRAM. A PROFESSIONAL BASEBALL BAT WEIGHS ABOUT 1 KILOGRAM, WHICH IS A LITTLE MORE THAN 2 POUNDS.



And "cent" means 100!

That's right!

There are 100 *cents* in a dollar!

And 100 years in a *century*!

And 100 legs on a *centipug*!



Metric units of volume include *milliliters* and *liters*.

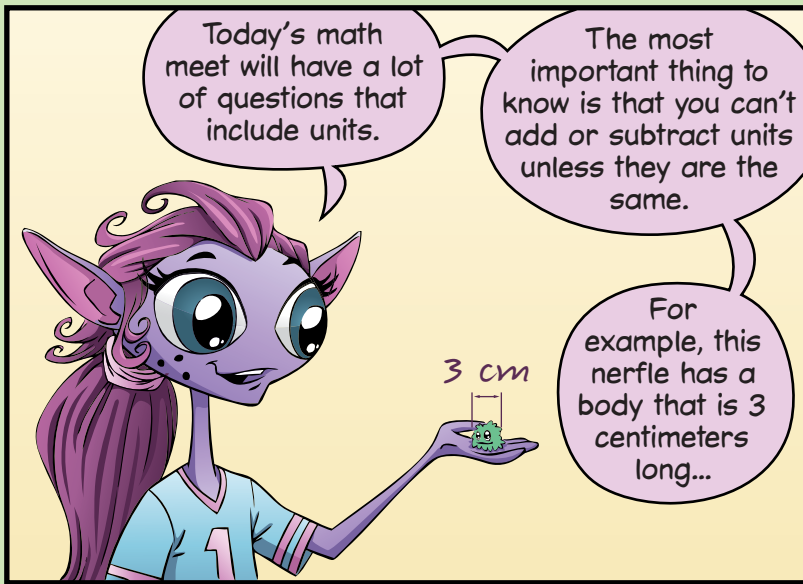
A milliliter is a very small amount. A teaspoon holds about five milliliters.

There are 1,000 milliliters in a liter.

Soda is often sold in two-liter bottles.

FOR A LIST OF UNITS AND METRIC PREFIXES, SEE ALEX'S NOTES ON PAGE 100.



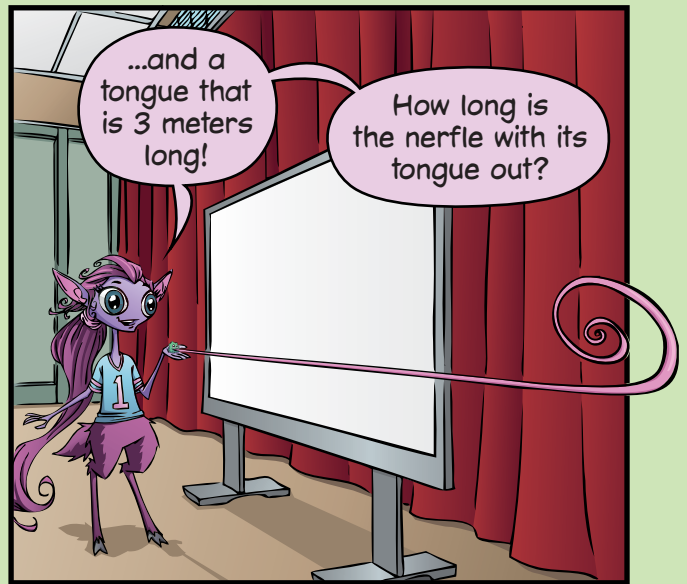


Today's math meet will have a lot of questions that include units.

The most important thing to know is that you can't add or subtract units unless they are the same.

For example, this nerfle has a body that is 3 centimeters long...

3 cm



...and a tongue that is 3 meters long!

How long is the nerfle with its tongue out?



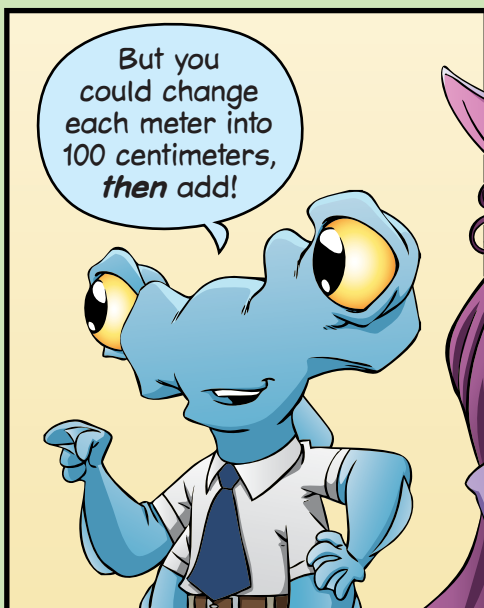
3+3 is 6, but when you add 3 centimeters plus 3 meters, you don't get 6 centimeters or 6 meters...

...the units are not the same!

It doesn't make sense to add two things that are not the same.

It's like trying to add 3 apples plus 3 orangutoads.

 +  = ???



But you could change each meter into 100 centimeters, **then** add!



That's right, but we shouldn't call it **changing**.

One meter is the **same** length as 100 centimeters.

When we replace 1 meter with 100 centimeters, we call it **converting** meters to centimeters.

To add 3 meters to 3 centimeters, we can **convert** the meters to centimeters.

Each meter is 100 centimeters, so 3 meters equals 300 centimeters.

3 meters + 3 centimeters

$$\begin{array}{r} 300 \text{ centimeters} \\ + 3 \text{ centimeters} \\ \hline 303 \text{ centimeters} \end{array}$$

3 meters plus 3 centimeters equals 303 centimeters, so the nerfle is 303 centimeters long.

Great!

How would you add 9 feet plus 2 yards?

What is 9 feet + 2 yards?

We can convert from yards to feet. Since one yard is three feet, 2 yards equals  $2 \times 3 = 6$  feet.

1 yard = 3 feet

2 yards = 6 feet

9 feet + 2 yards  
 = 9 feet + 6 feet  
 = 15 feet

Then we can replace 2 yards with 6 feet and add. 9 feet plus 6 feet is 15 feet.

So 9 feet plus 2 yards is 15 feet.

Perfect.

And now...

It's starting, go out and take your spots!

...please welcome the Little Monsters of Beast Academy and their opponents... the Bots.