

# Contents: Chapter 7

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# Chapter 7:

## Measurement



# MATH TEAM

## Measurement



We can compare both strings to something else.

Good idea!

We can use this red string to compare the green string and the blue string.

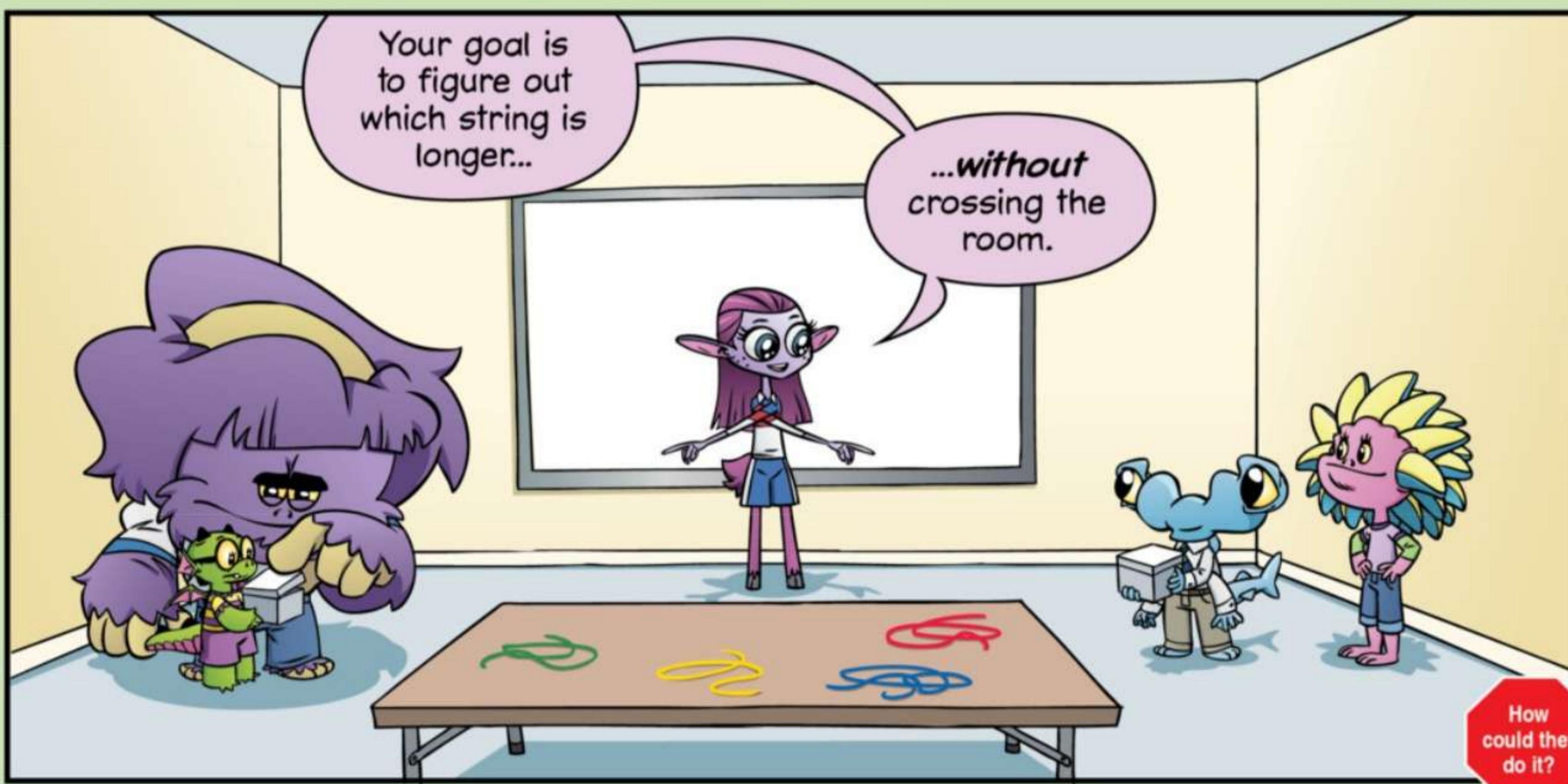
The green string is a little shorter than the red string.

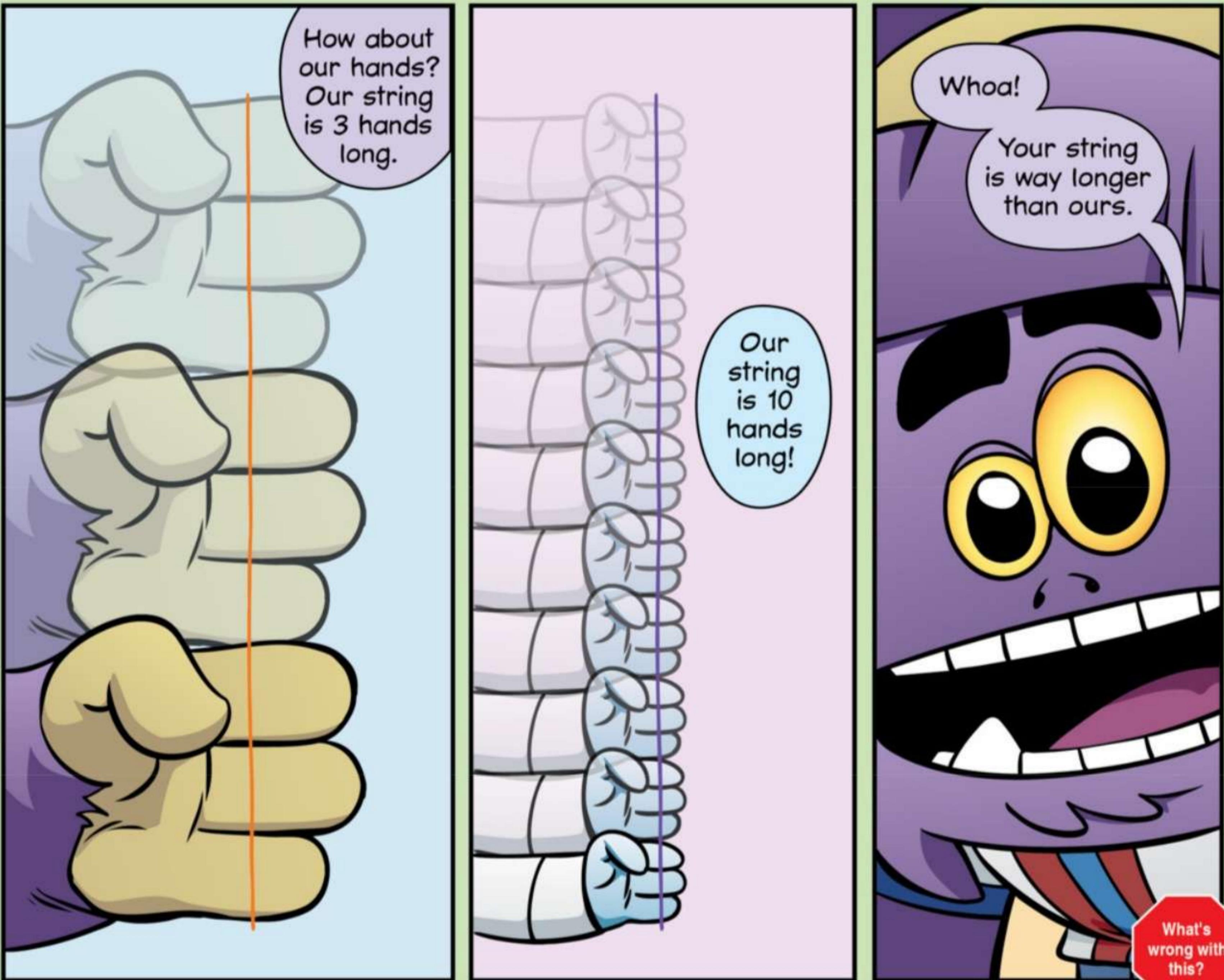
The blue string is a little longer than the red string.

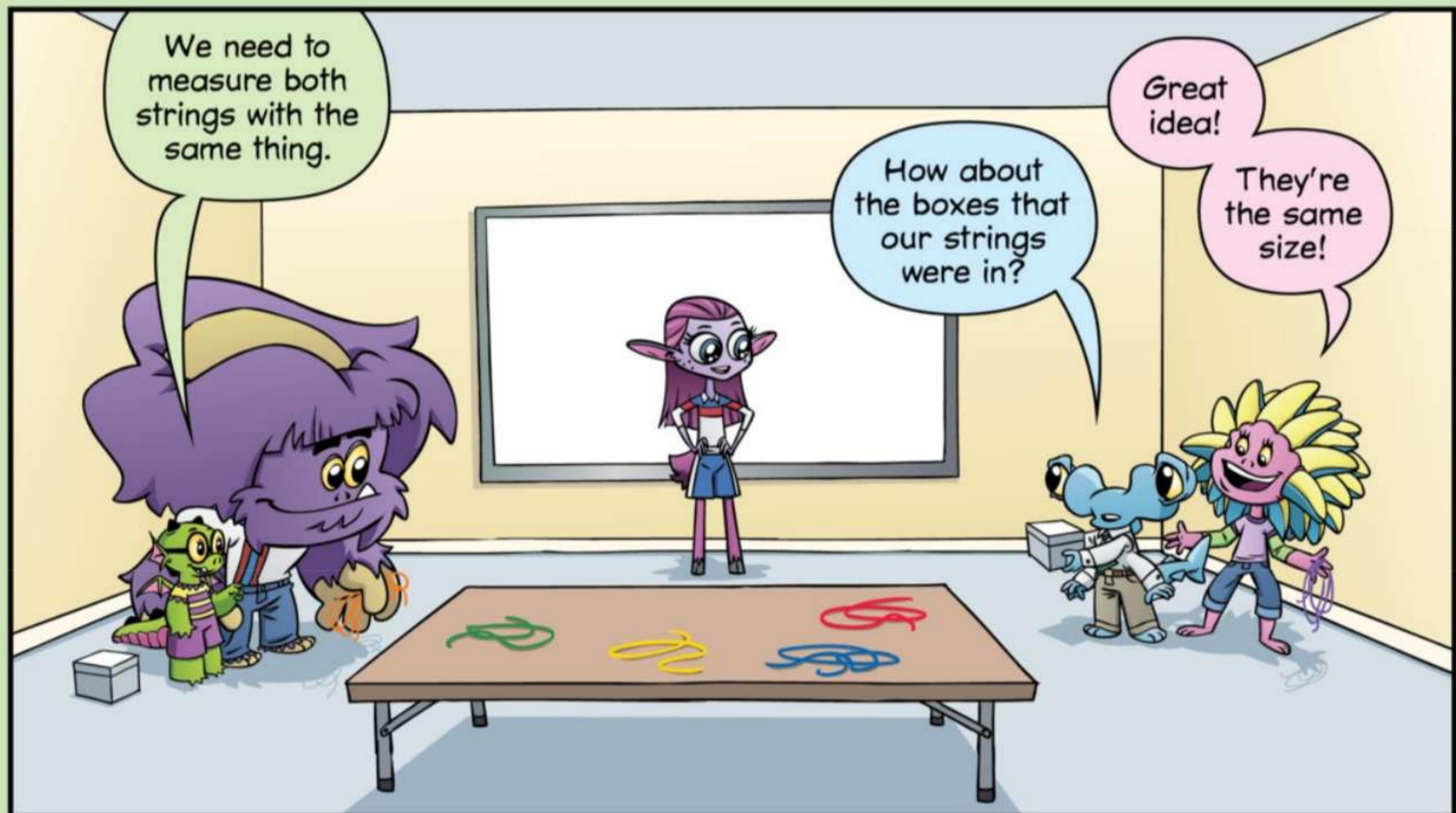
So, the blue string is longer than the green one.

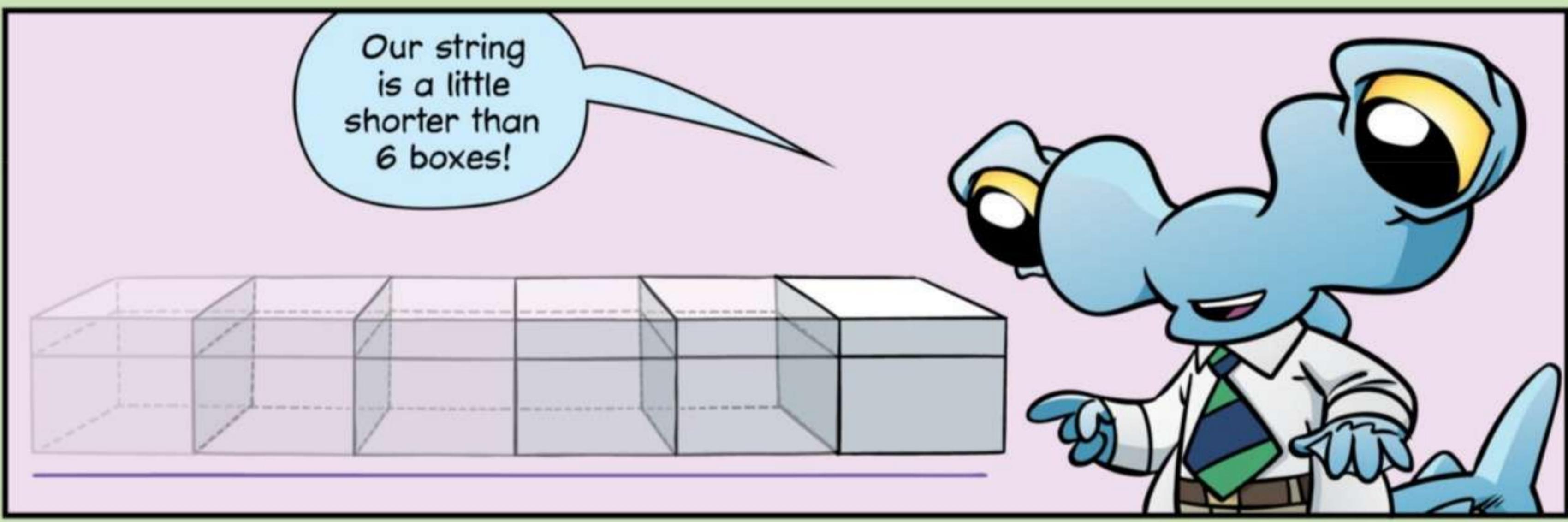
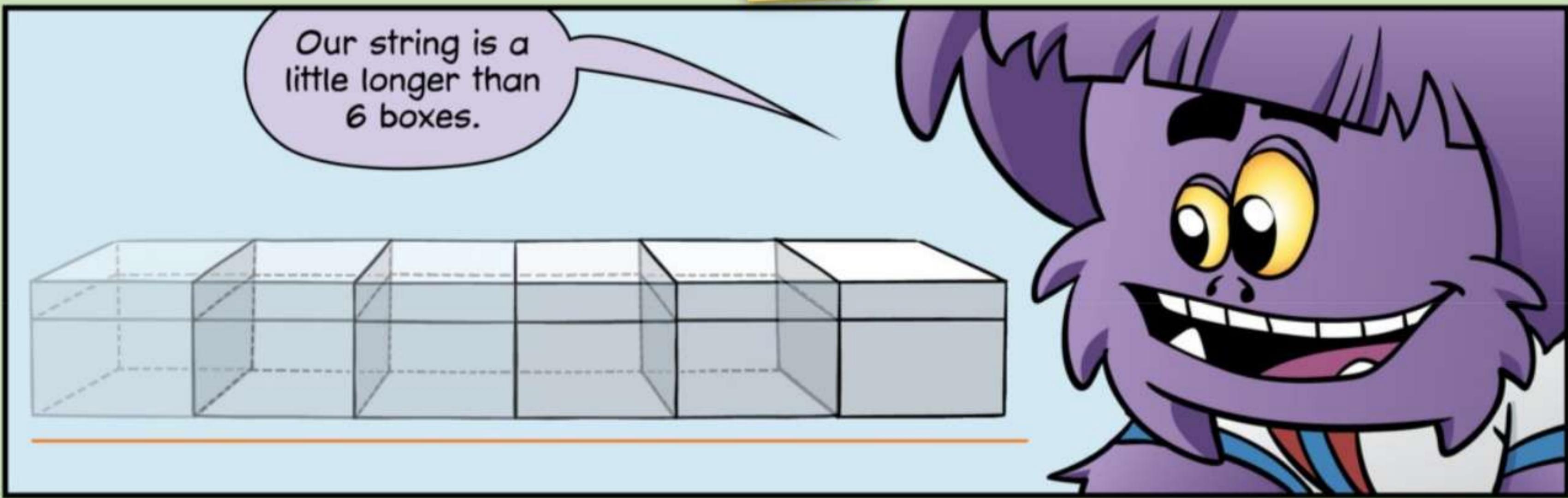
Great work.

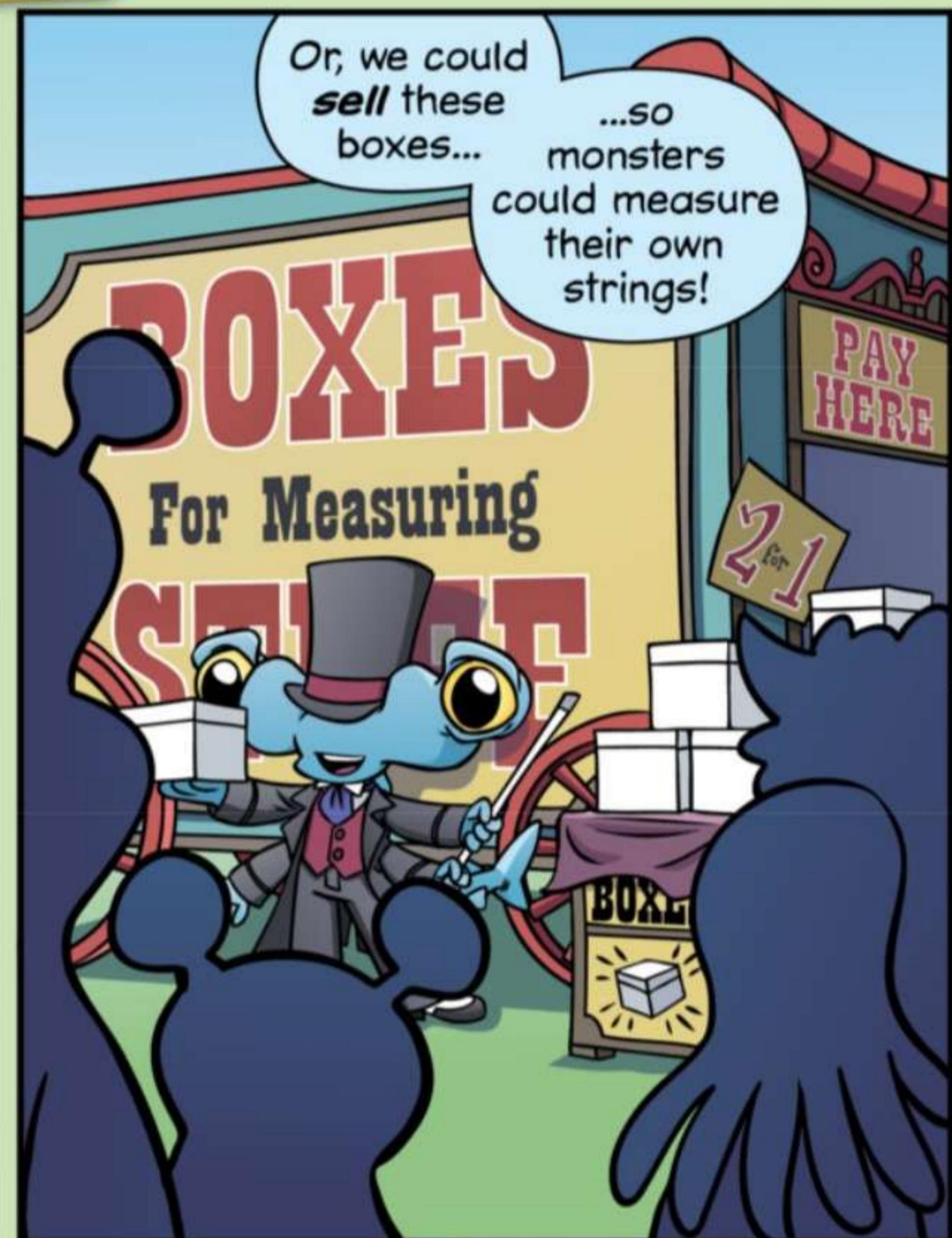
We can compare two strings by comparing them both to something else.











# Ms. Q. Rulers



\*YOU'LL NEED A RULER, TOO! FIND ONE, AND USE IT AS YOU READ THIS SECTION!



\*1 FOOT IS EQUAL TO 12 INCHES. YOU'LL LEARN MORE ABOUT FEET AND INCHES IN THE NEXT SECTION.

What do we use a ruler for?

We measure stuff with it.

Good. Look at the first problem on your worksheet.

How do we measure a line with a ruler?

Practice:

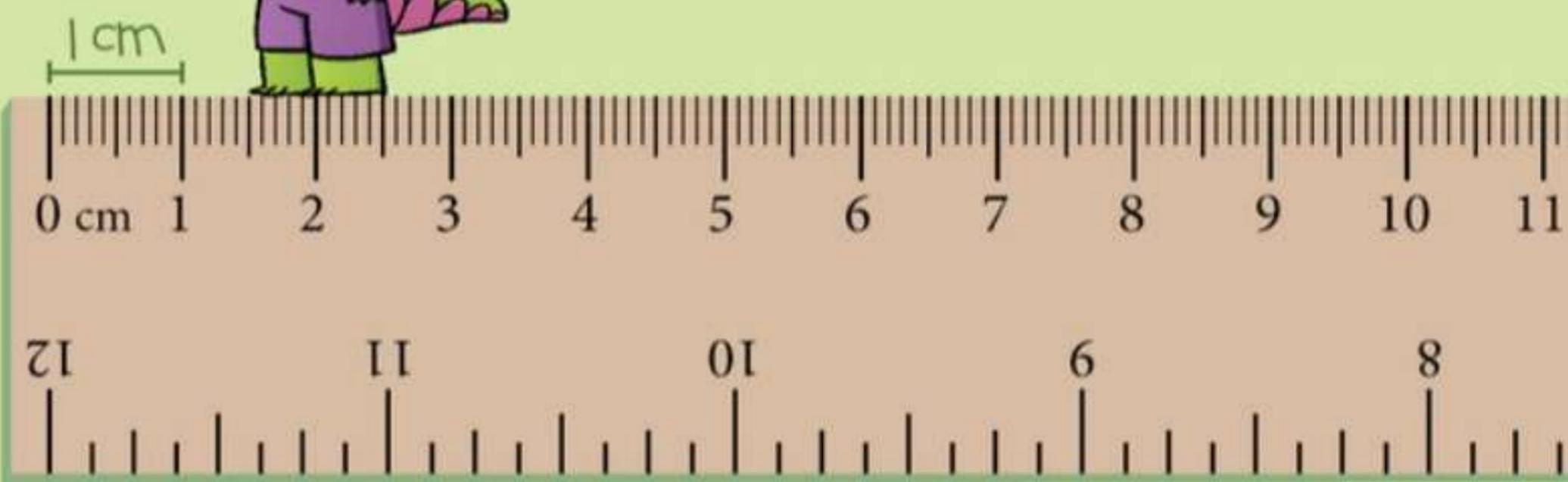
1. Use a ruler to measure the line below in inches.

Can you measure it?

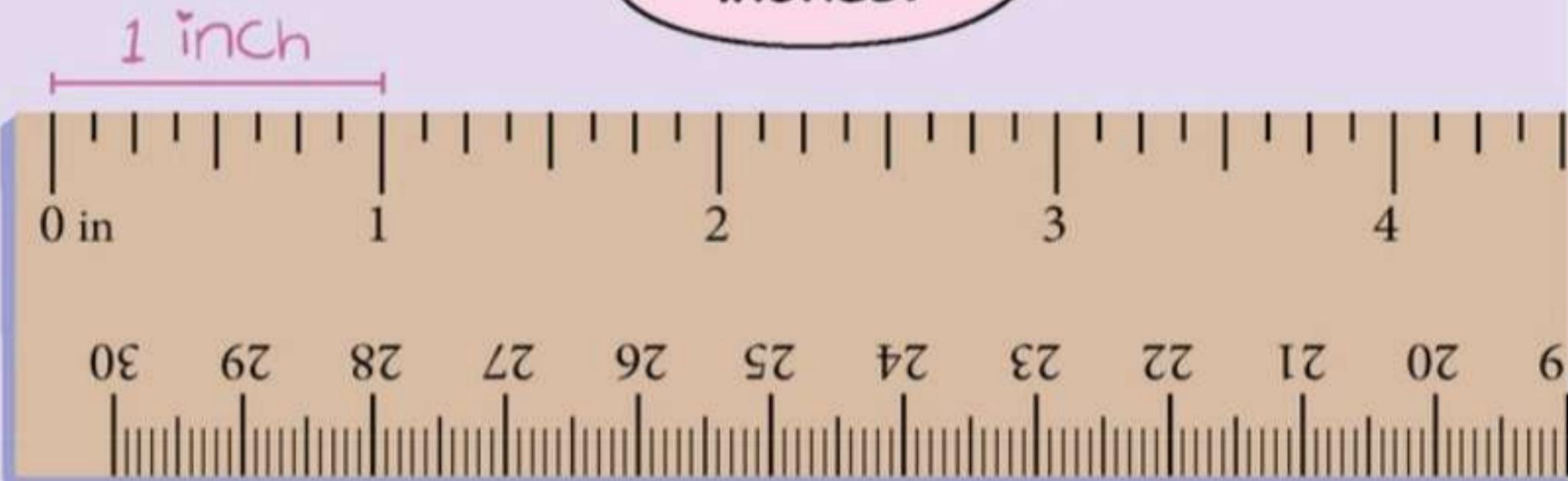
There are numbers on both sides of my ruler. Which ones do I use?



The side labeled "cm" is marked with **centimeters**.



And the side labeled "in" is marked with **inches**.

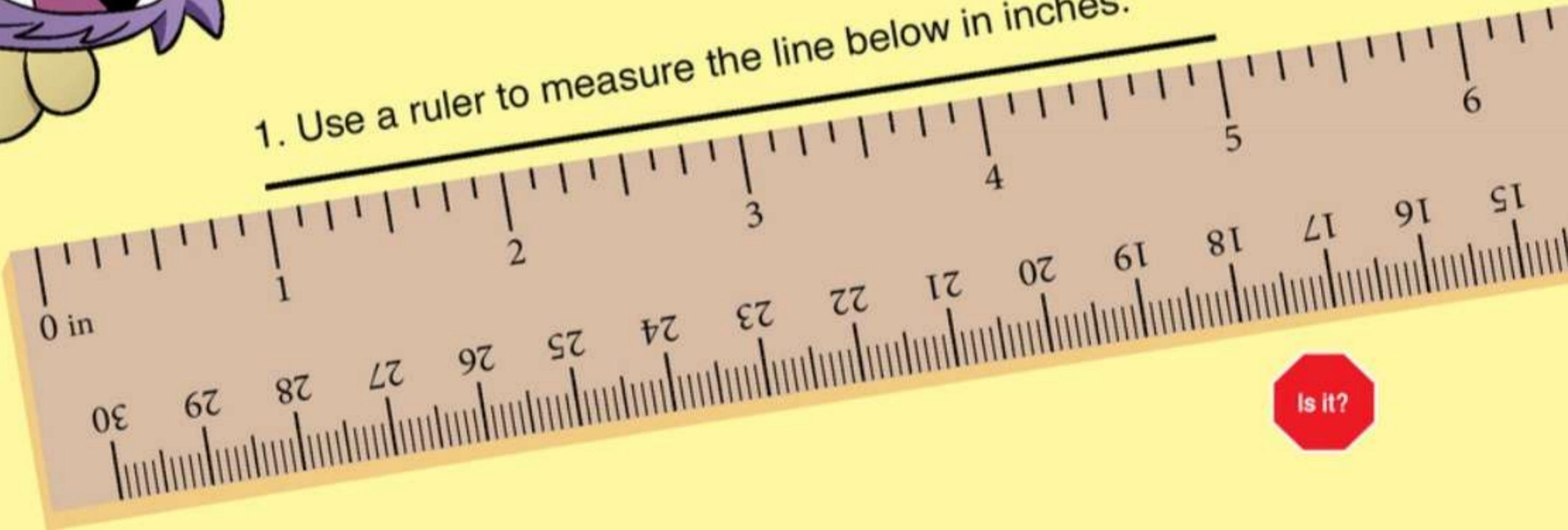


Got it.  
The question  
asks for inches,  
so we use the  
**inch** side.

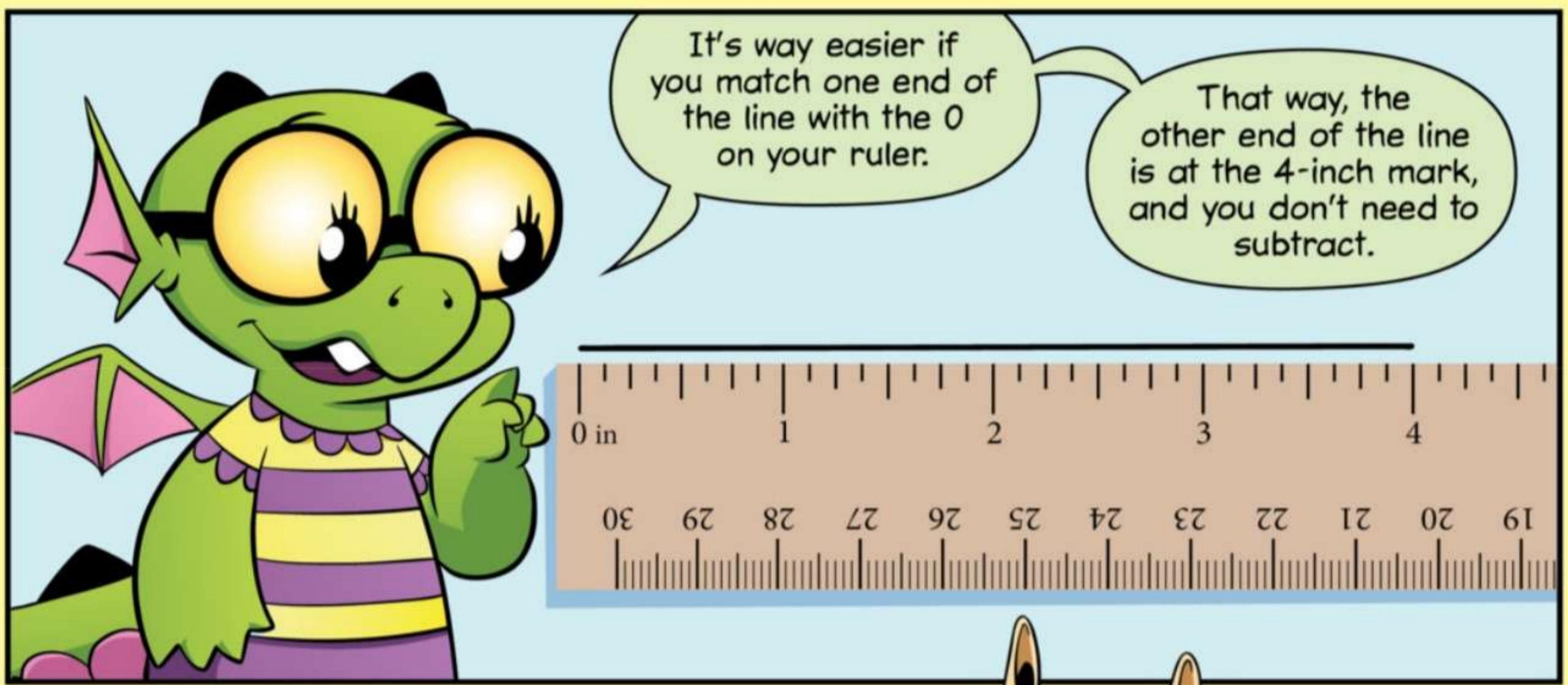
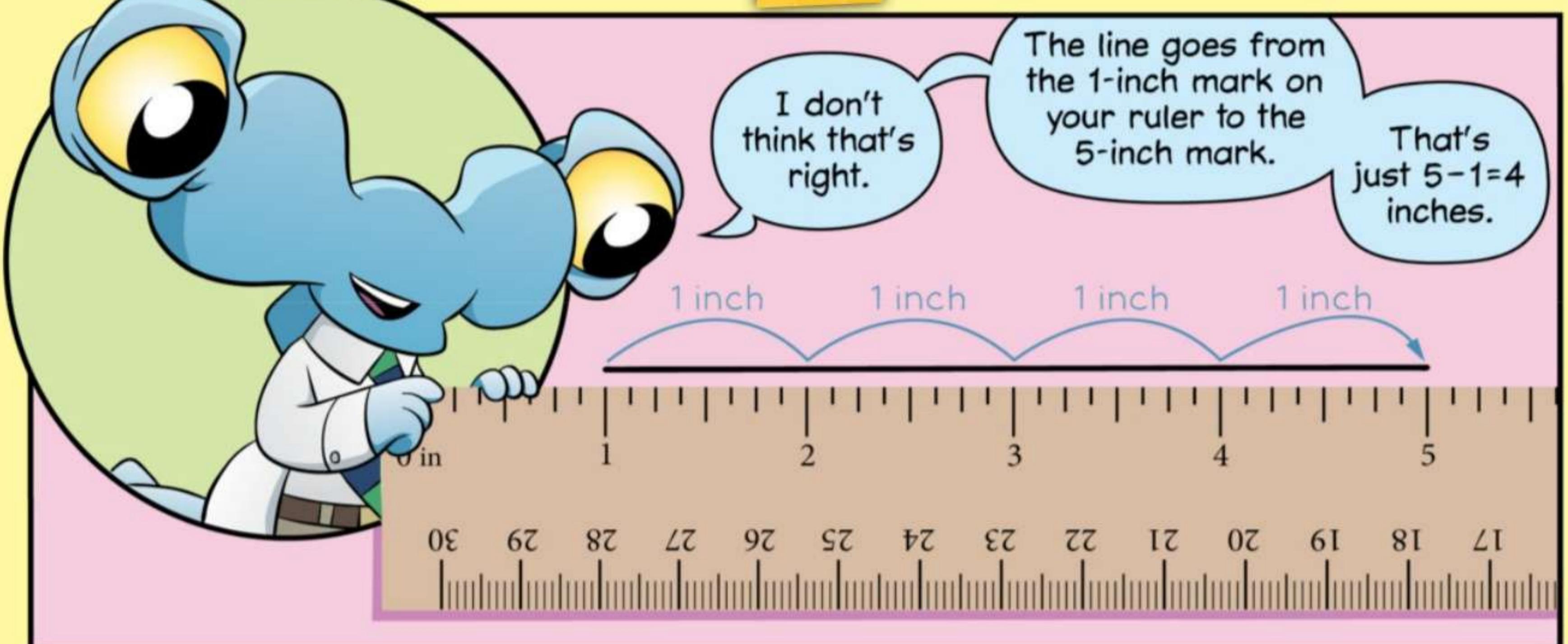
Is the line...

...5 inches  
long?

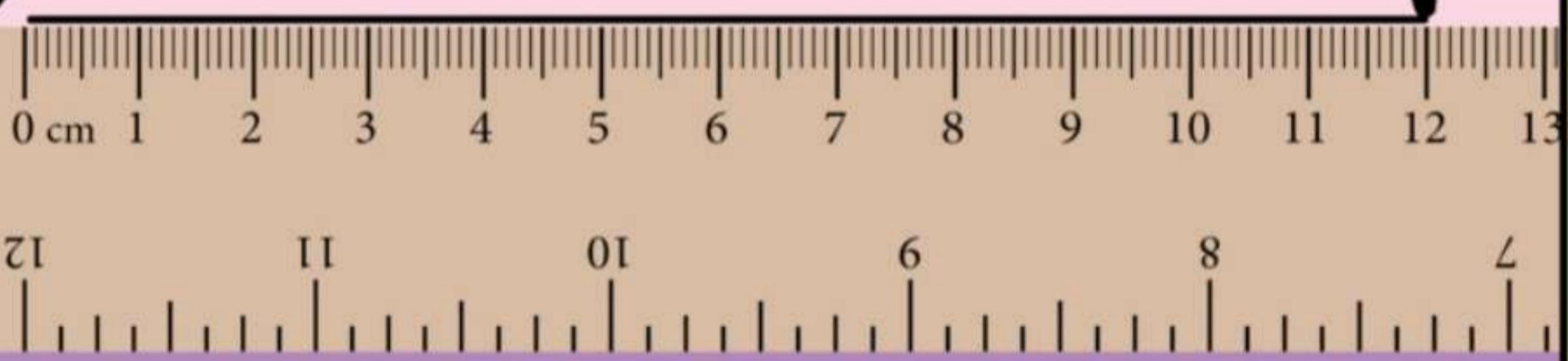
1. Use a ruler to measure the line below in inches.



Is it?



2. Draw a line that is 12 centimeters long.



We just draw a line from 0 to 12 on the cm side of the ruler.



We should stay organized...

3. Which two dots are exactly 6 cm apart?

A.

C.

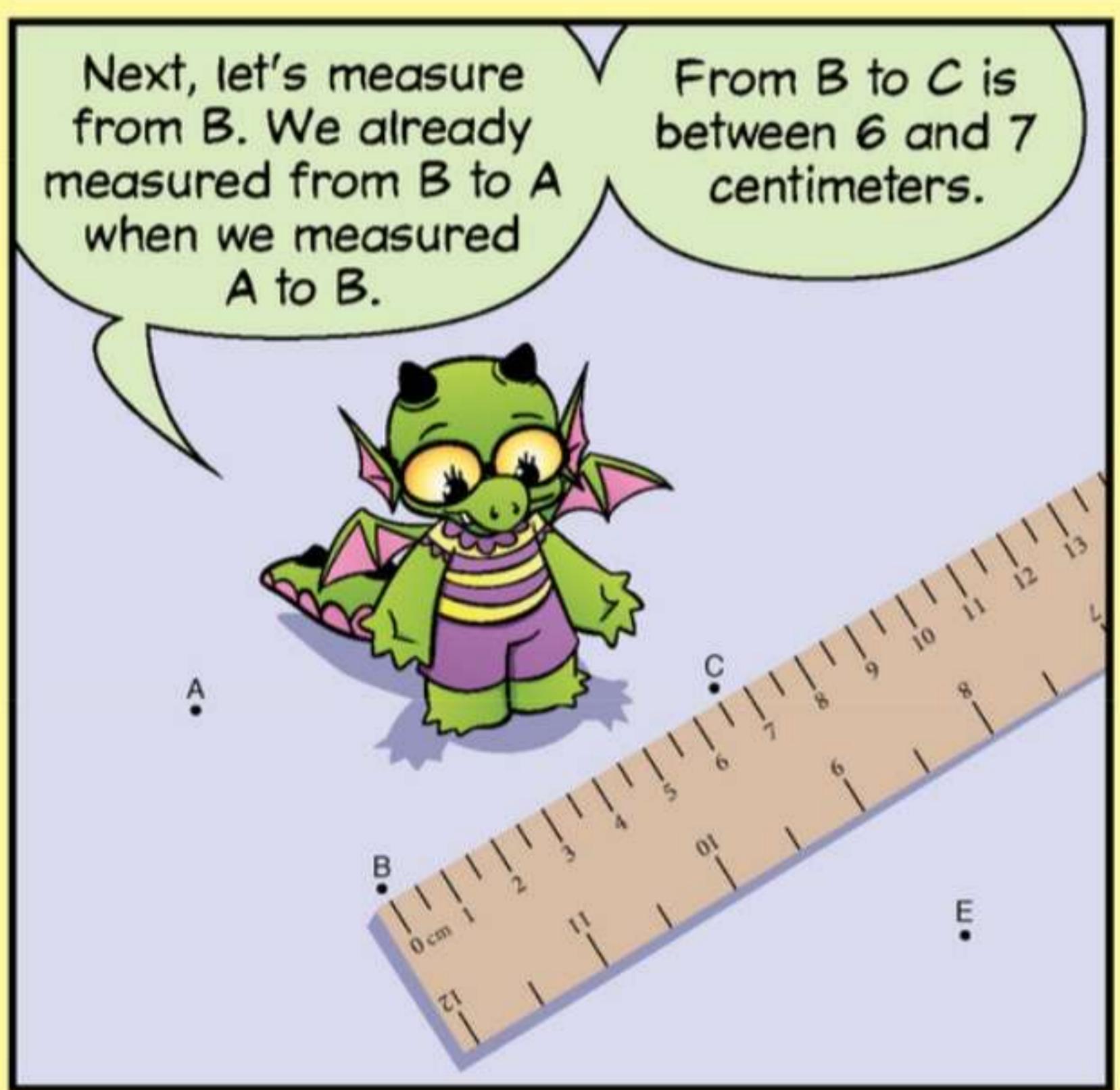
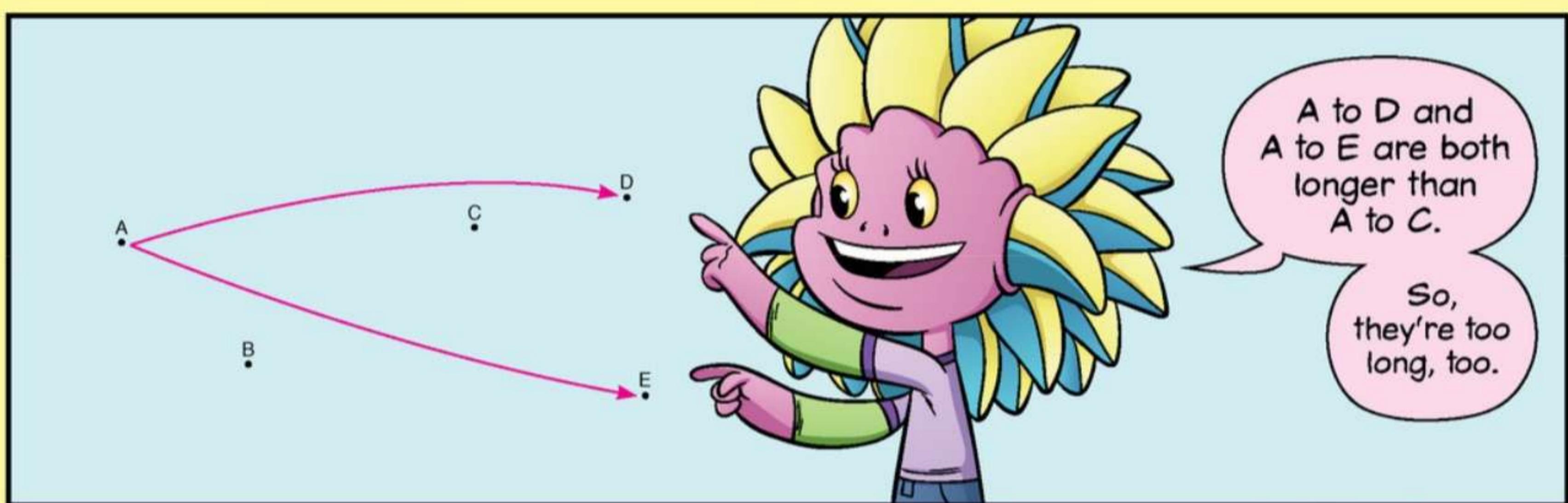
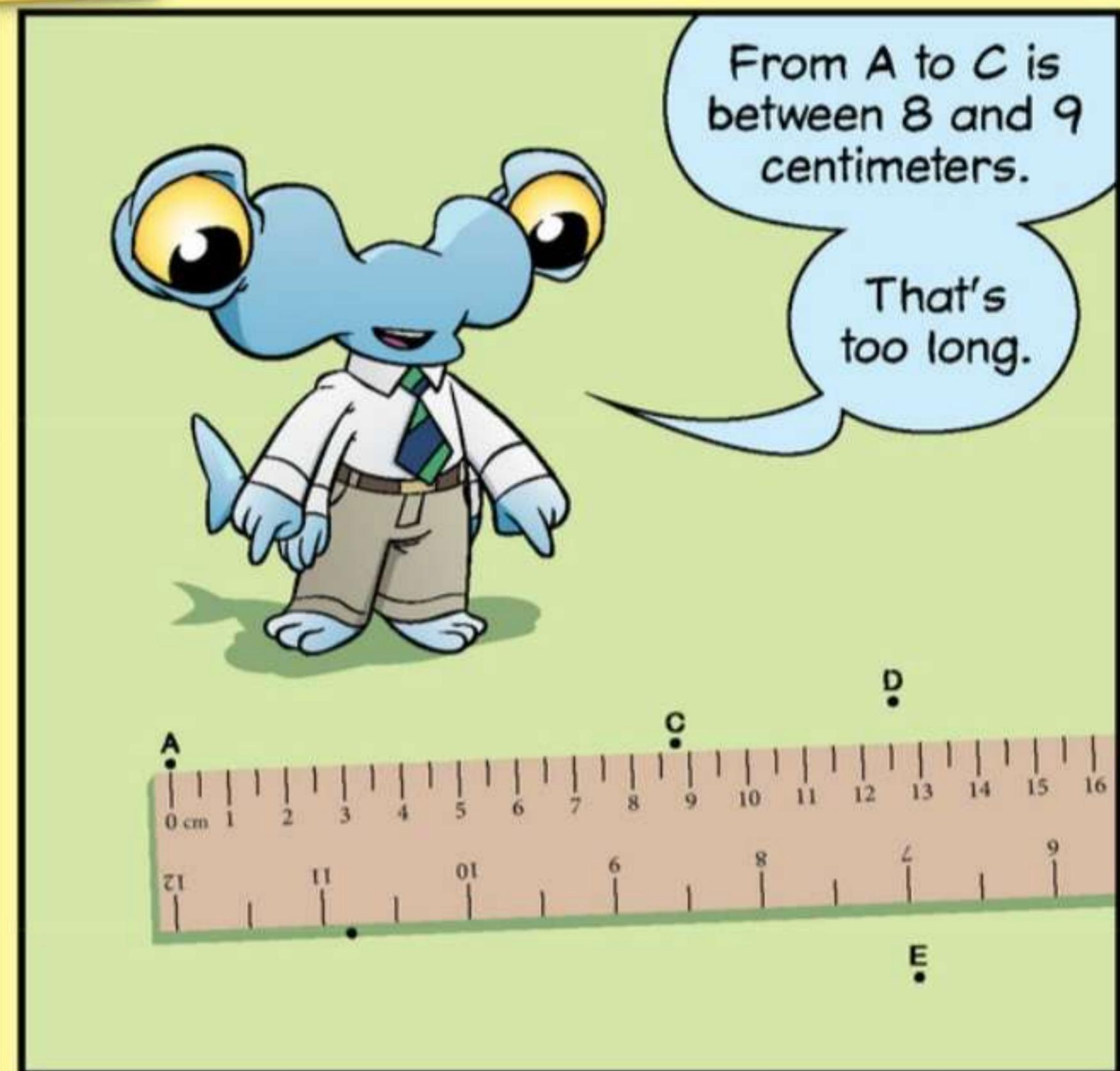
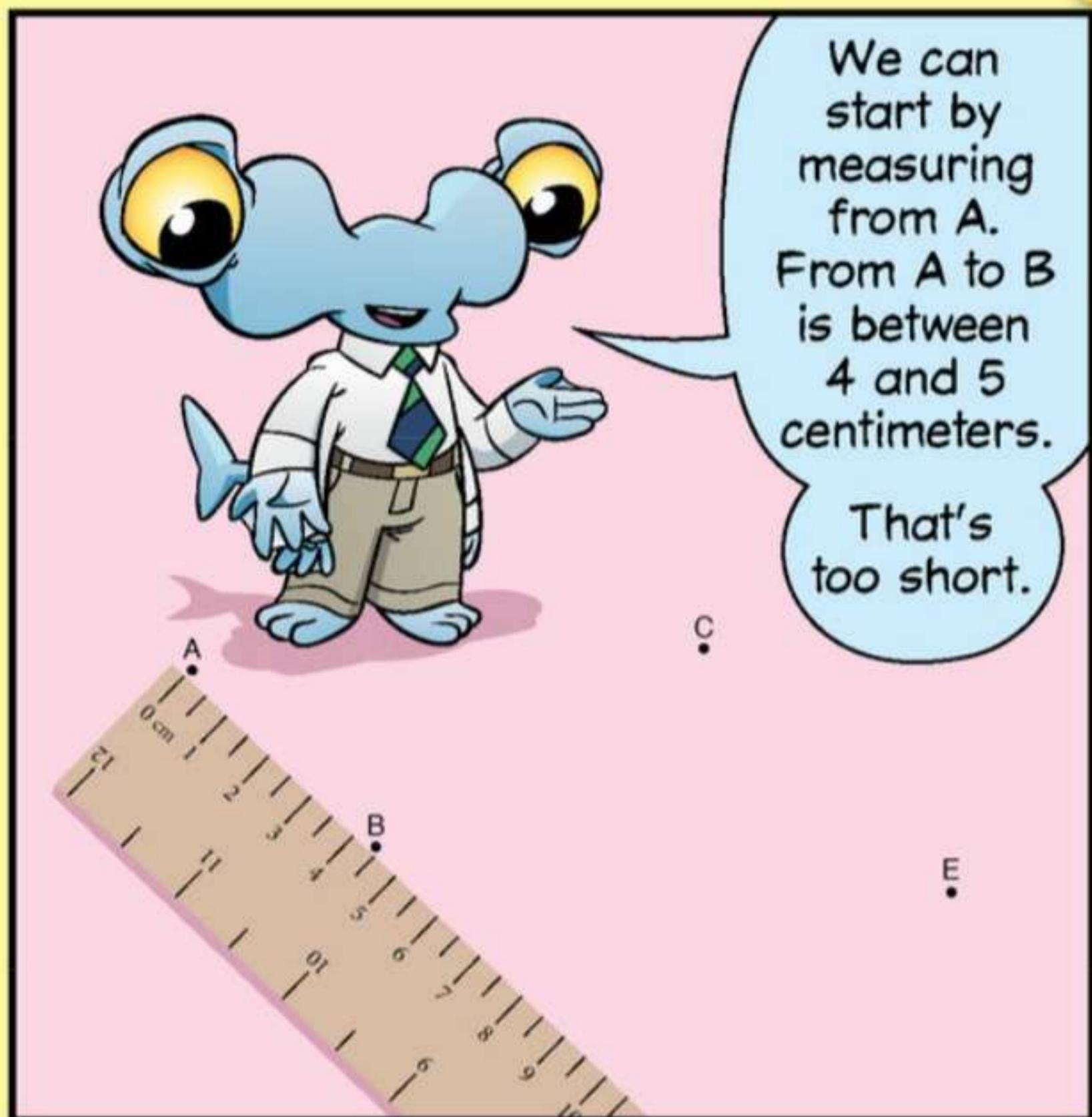
D.

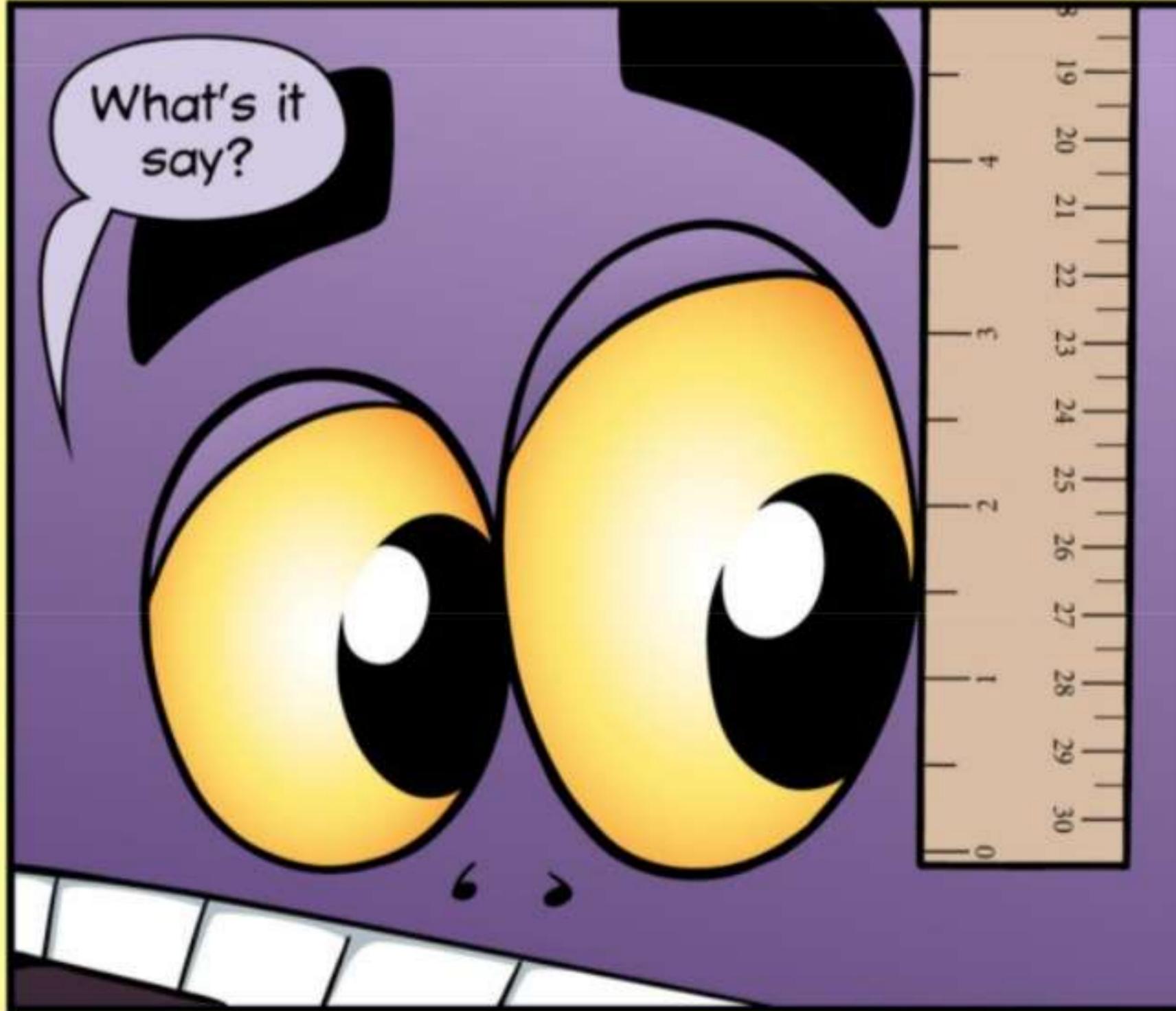
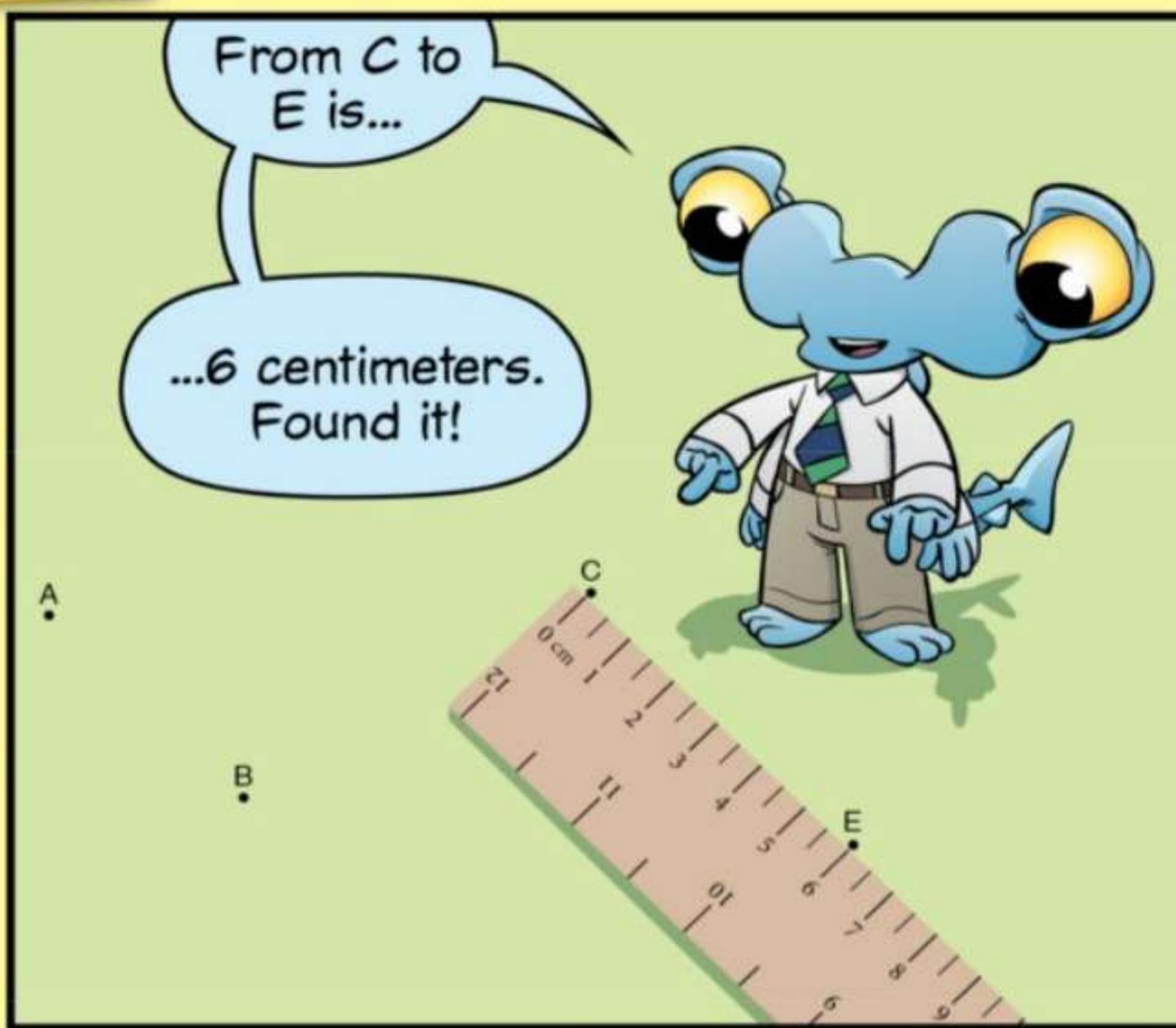
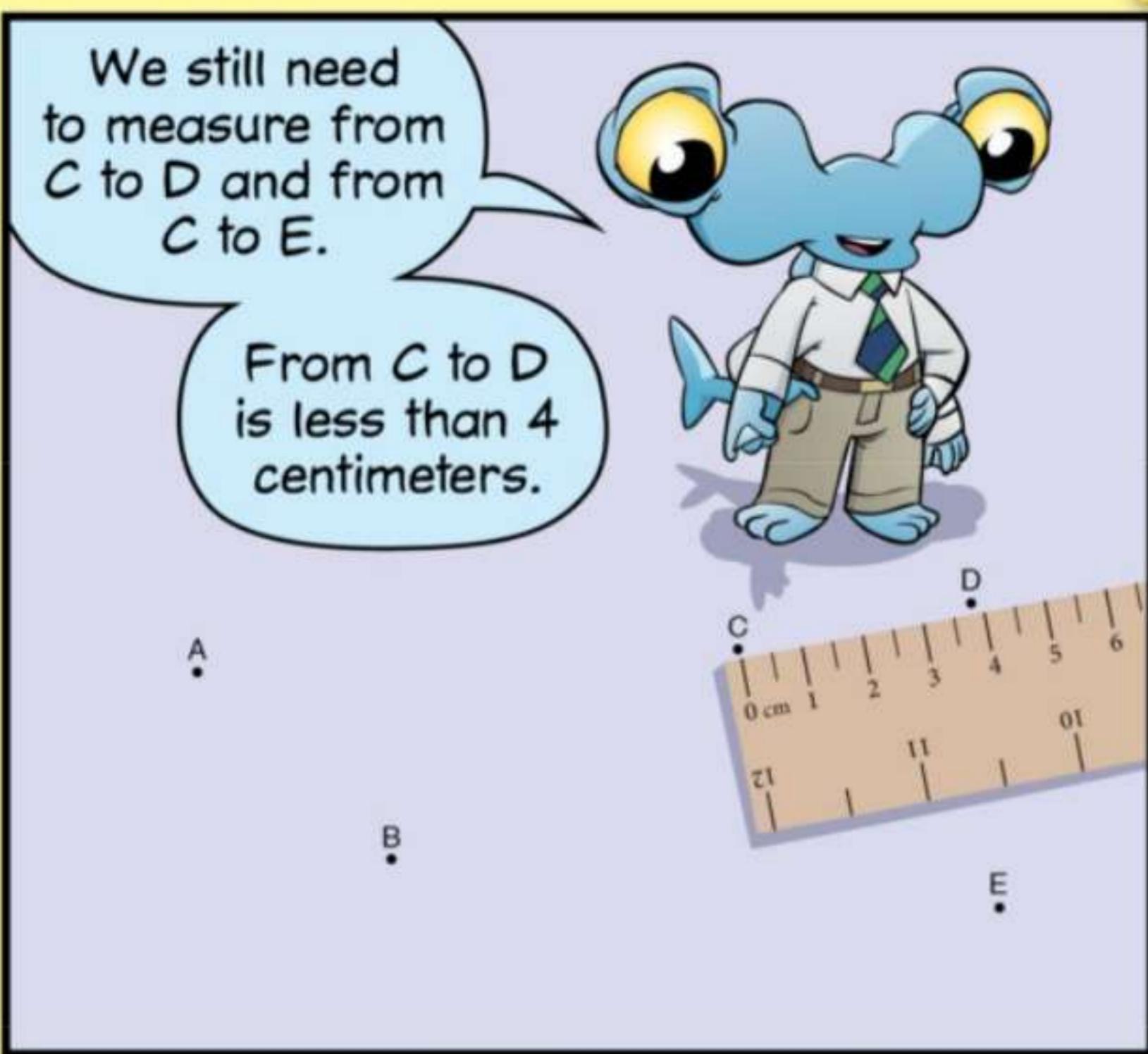
B.

E.

...so we don't have to measure anything more than once.

Try it.



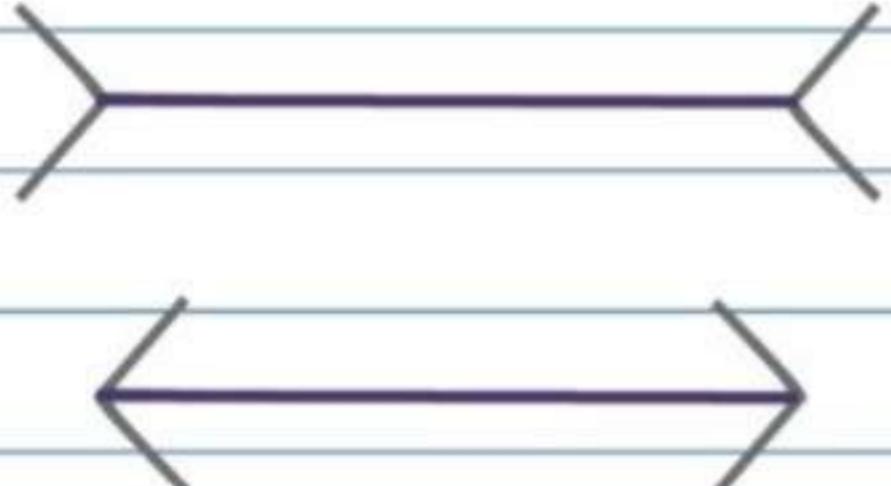




# Which is Longer?

By GrOgg!

Compare the purple lines below.



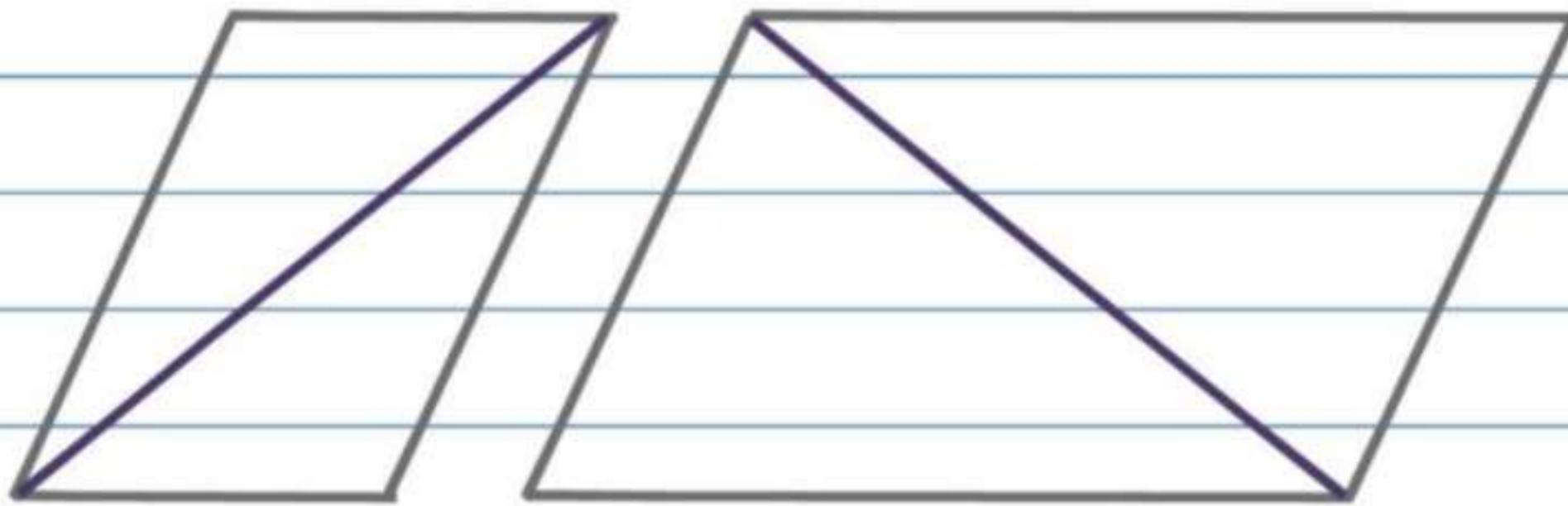
Which is Longer?

1. The top line, Or  
the bottom line?

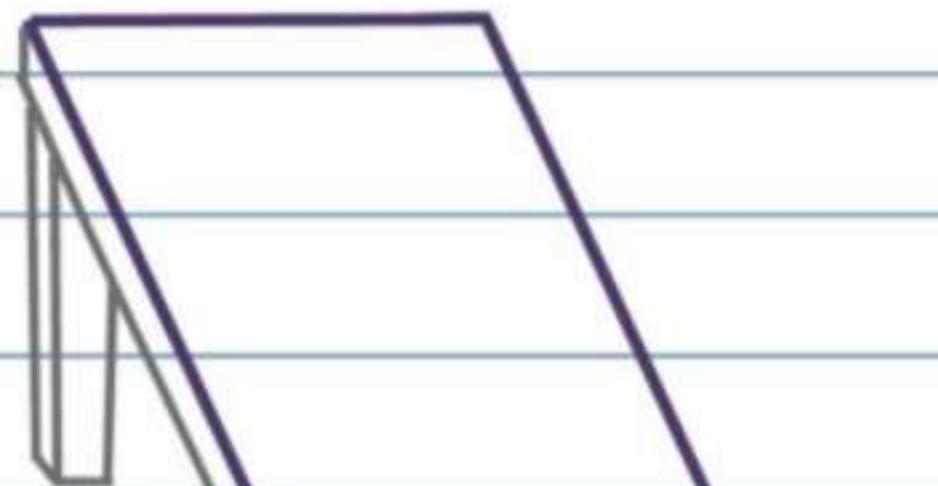
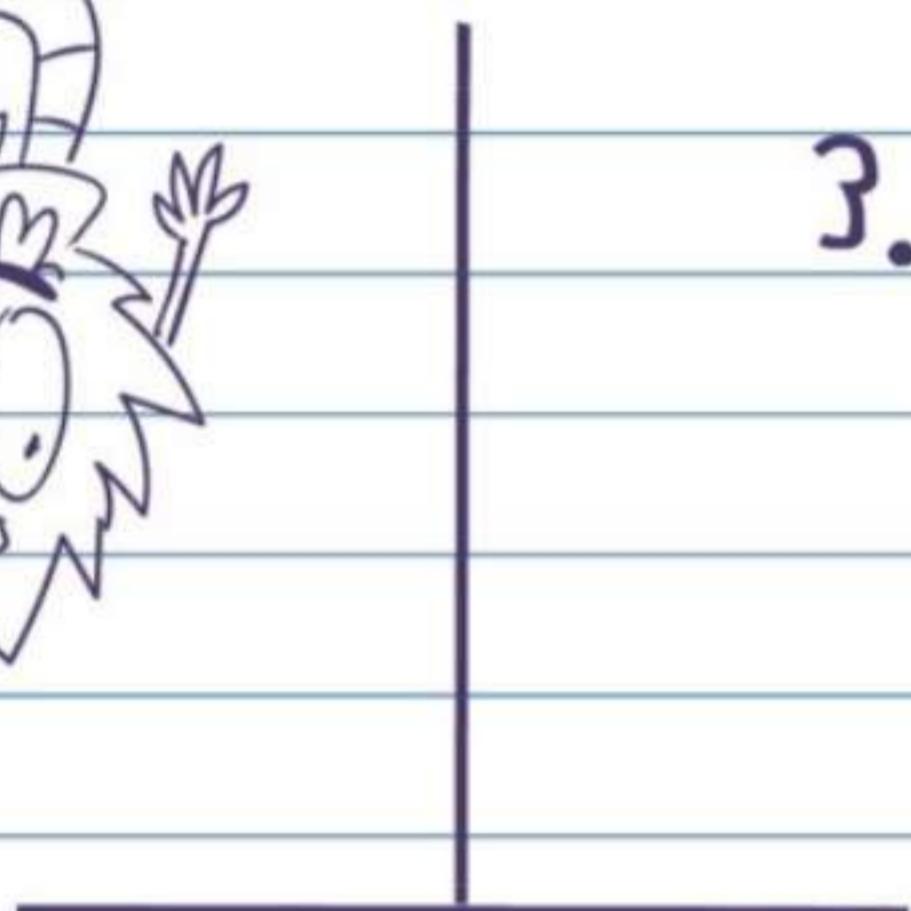
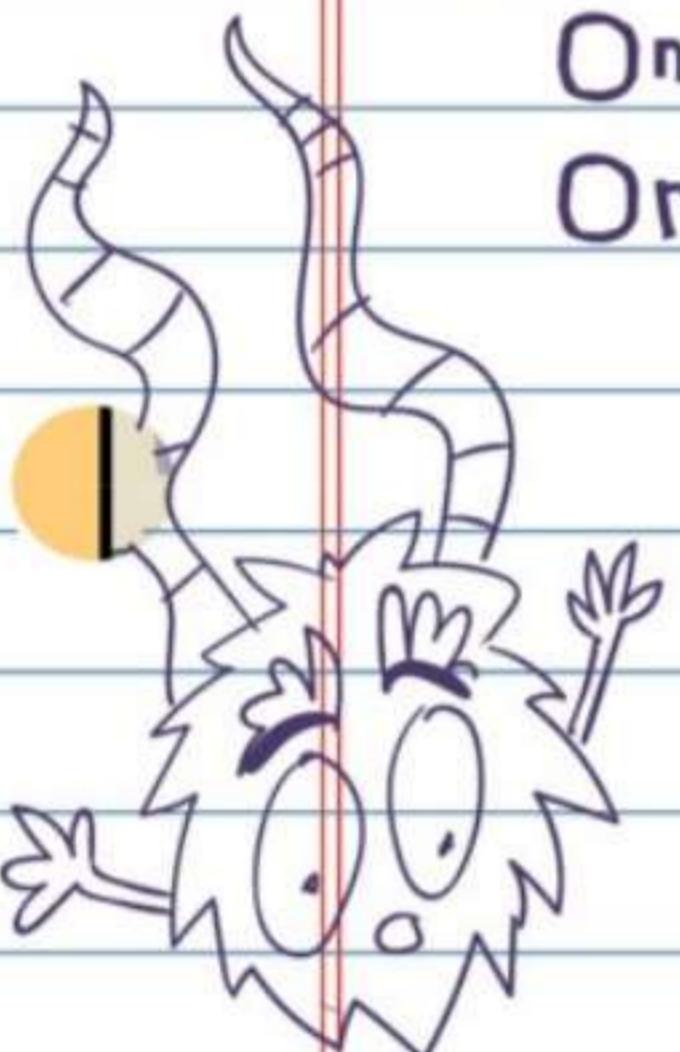
NO WAY!



2. The purple line  
On the left  
Or the right?

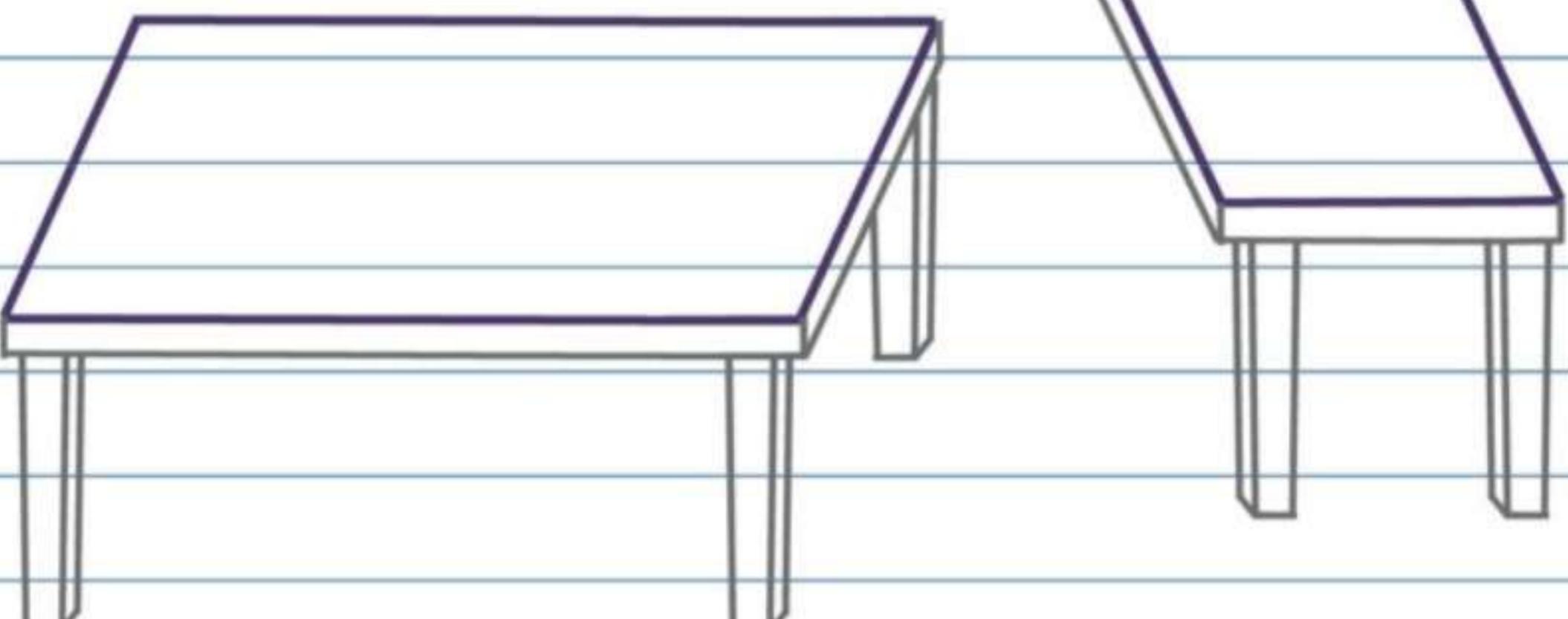


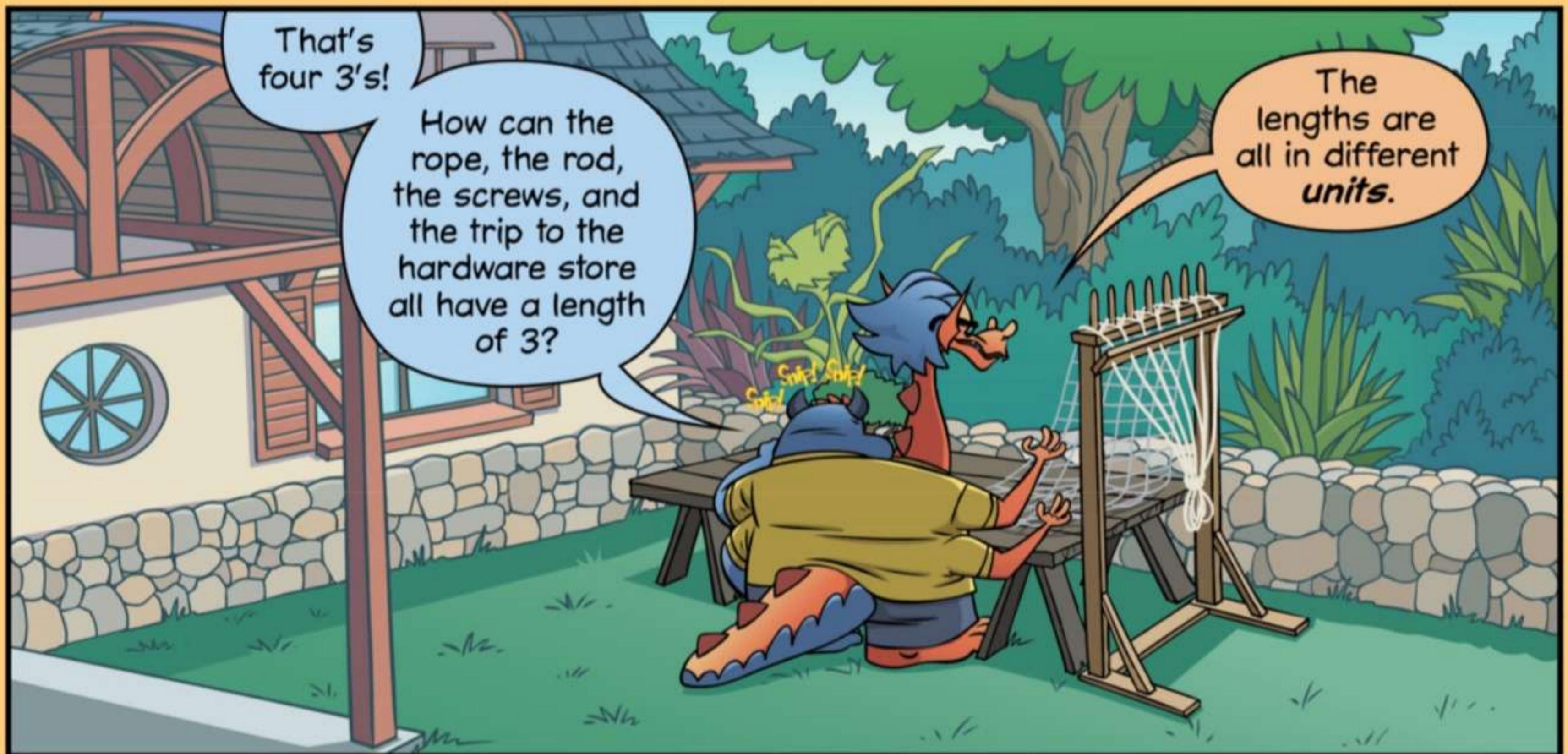
3. The vertical (up/down) line,  
Or the horizontal (flat) line?

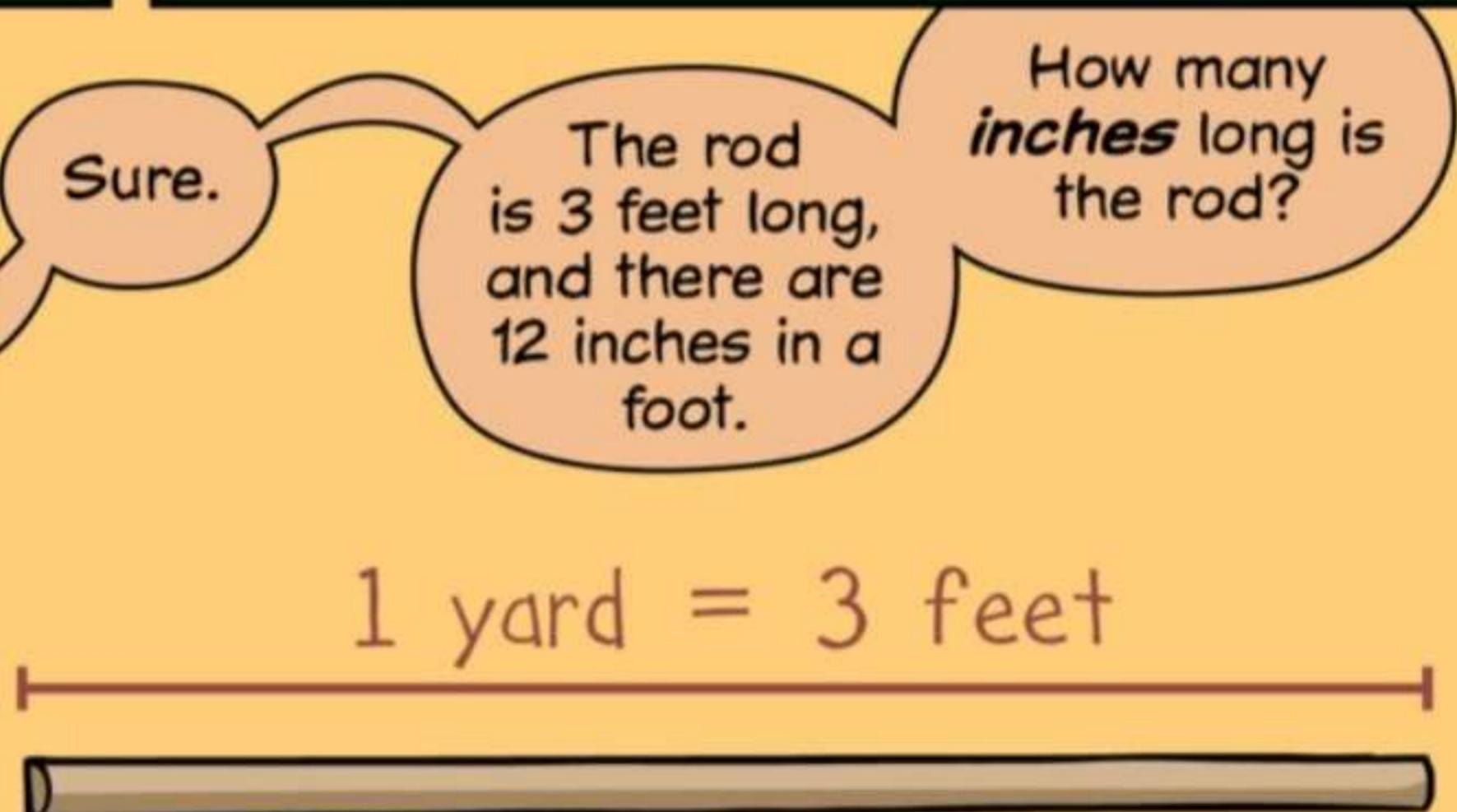
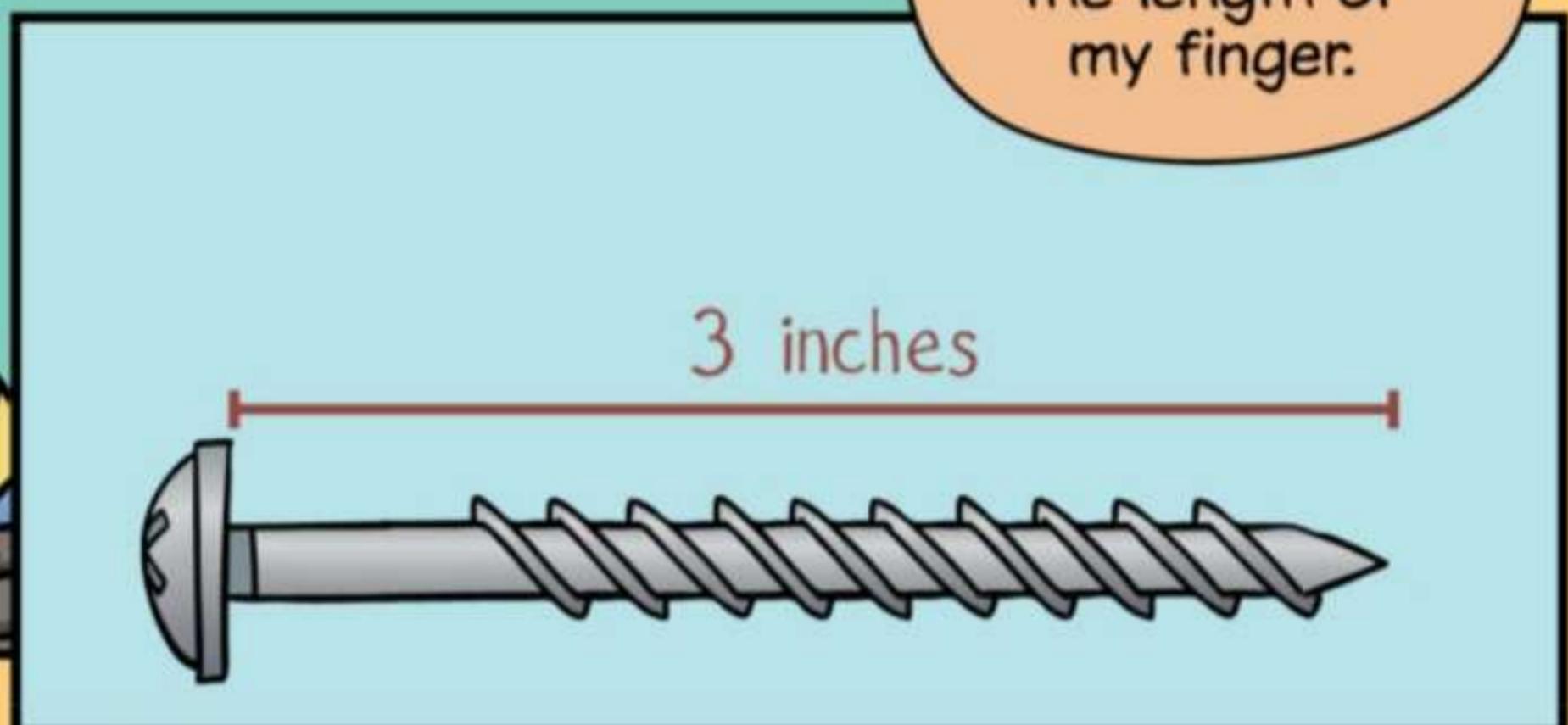


4. Are these tabletops the  
same size and shape?

Measure and  
be AMAZED!



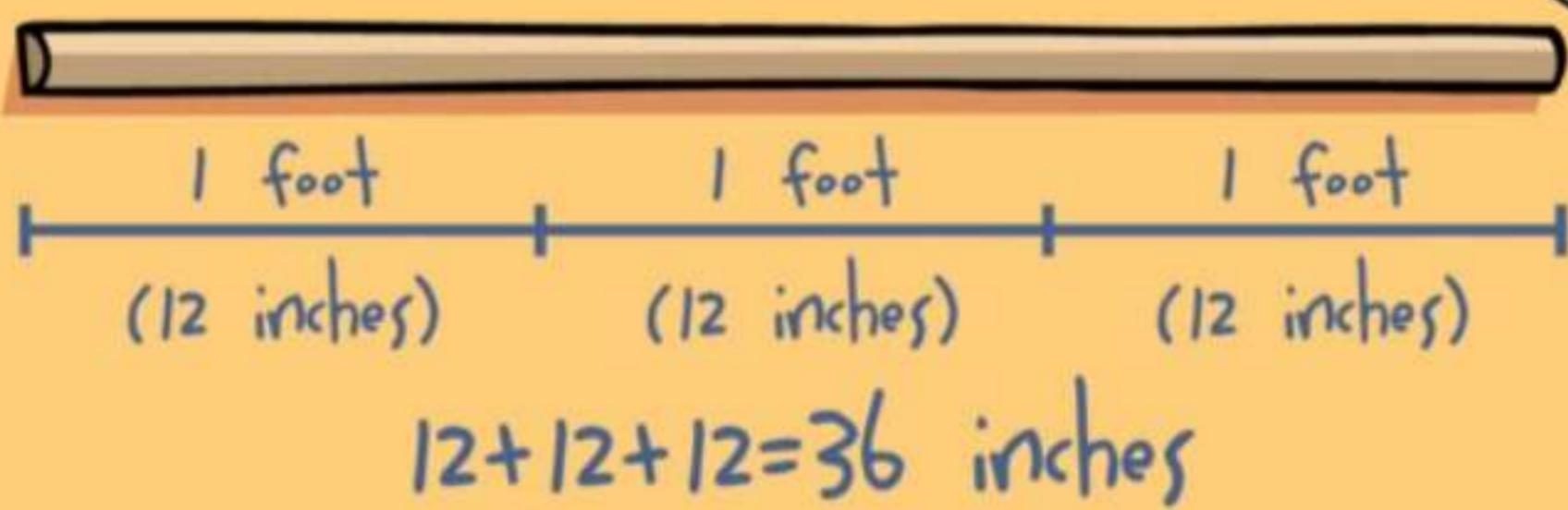




How many inches?

Since 1 foot is 12 inches, 3 feet is  $12+12+12=36$  inches.

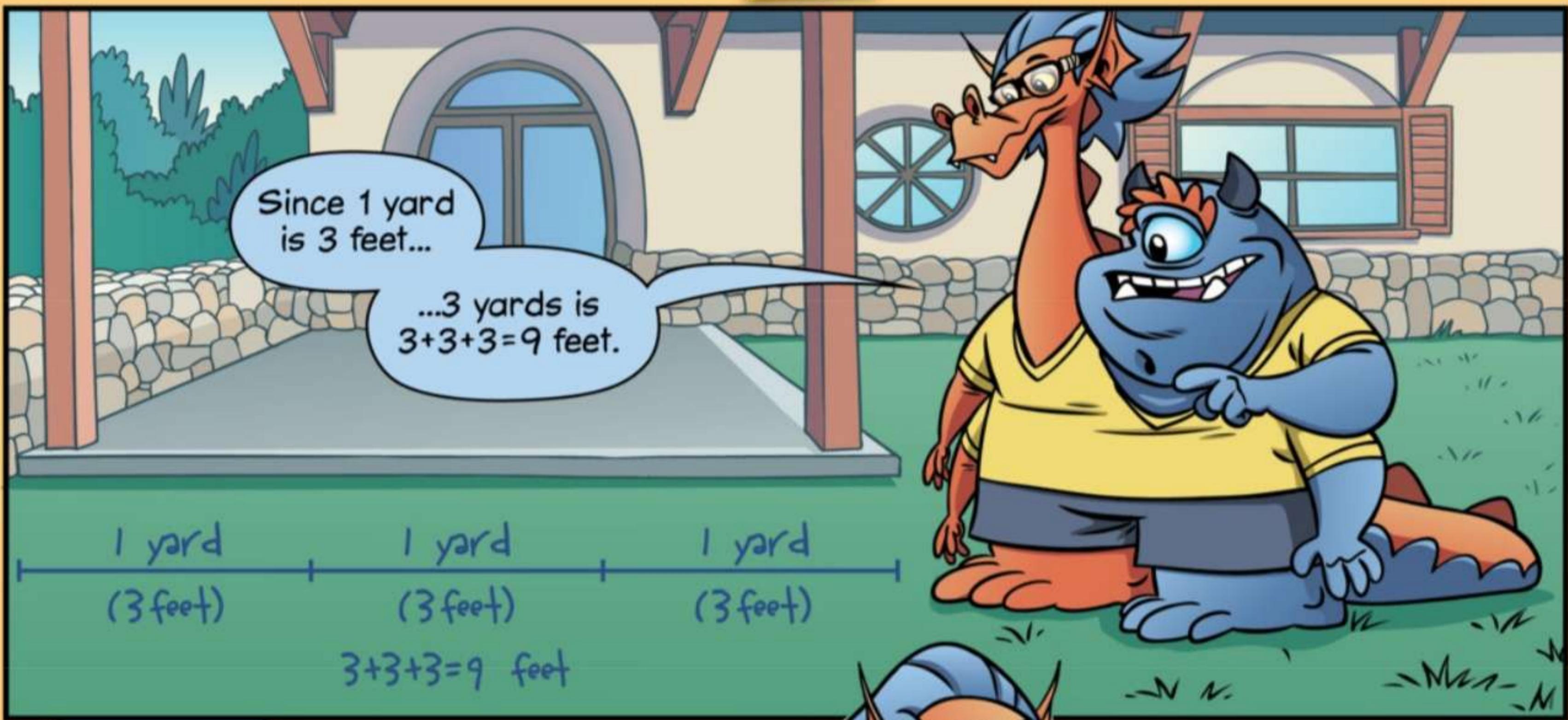
So, this rod is 36 inches long.



That's right.  
1 yard, 3 feet, and  
36 inches are all ways  
to give the length of  
this rod.

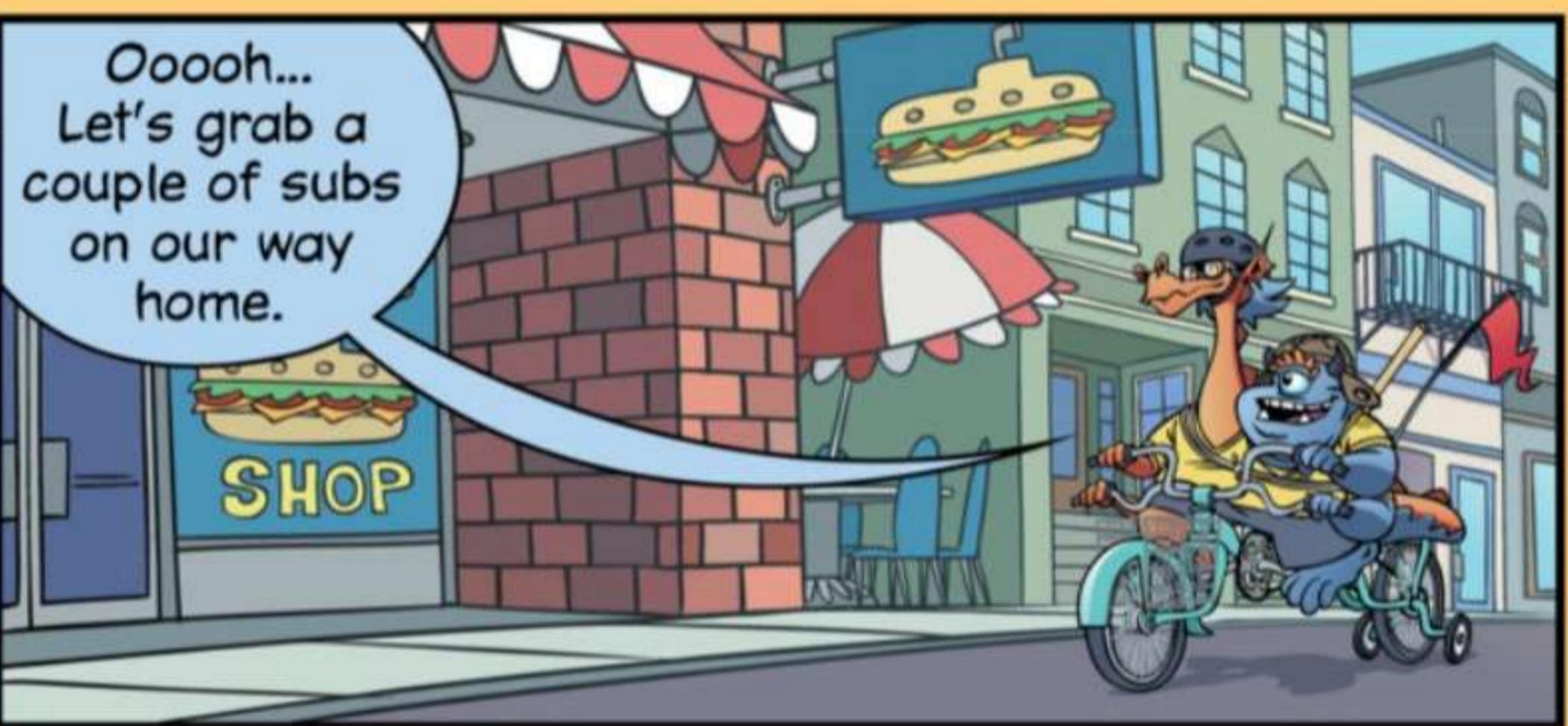
$$1 \text{ yard} = 3 \text{ feet} = 36 \text{ inches}$$

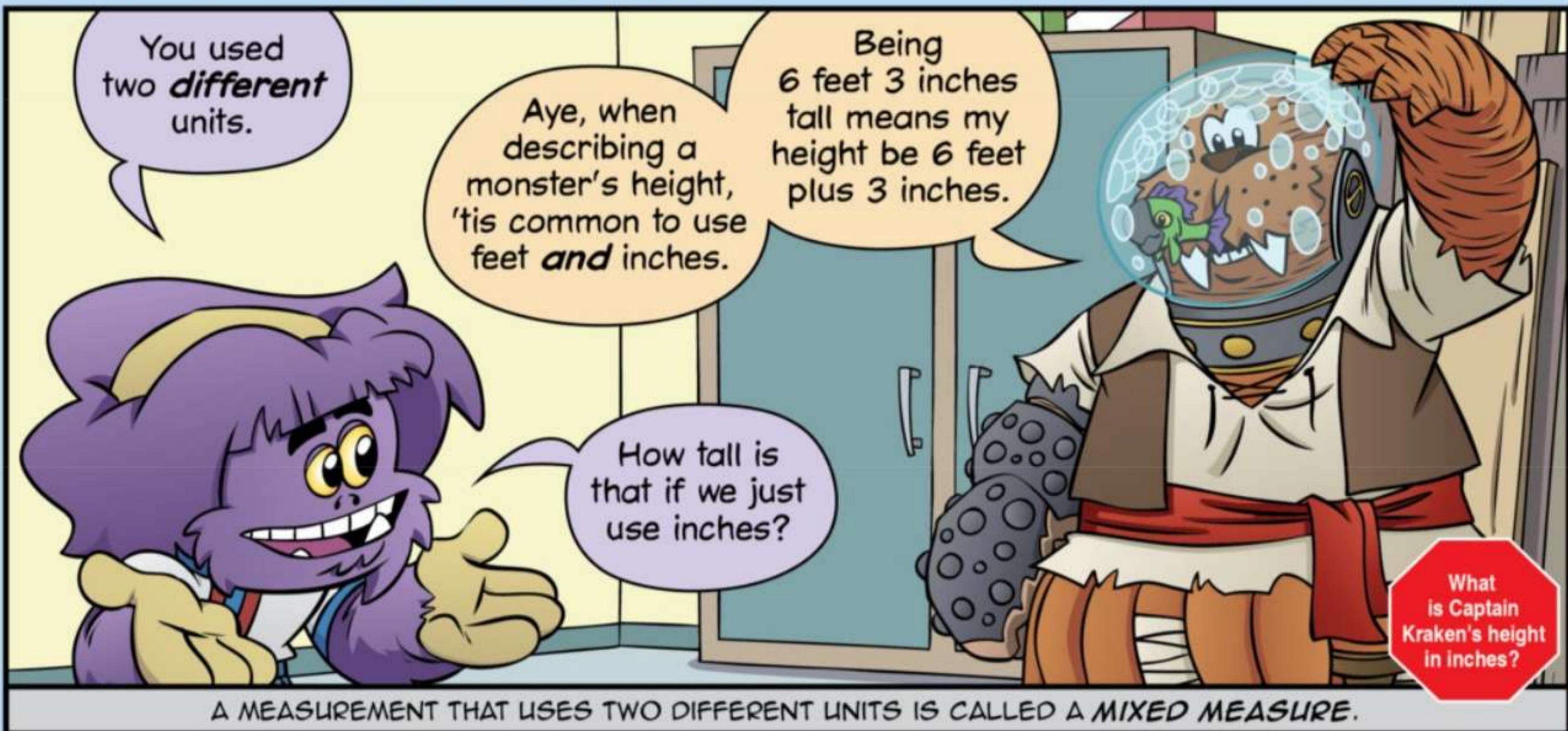




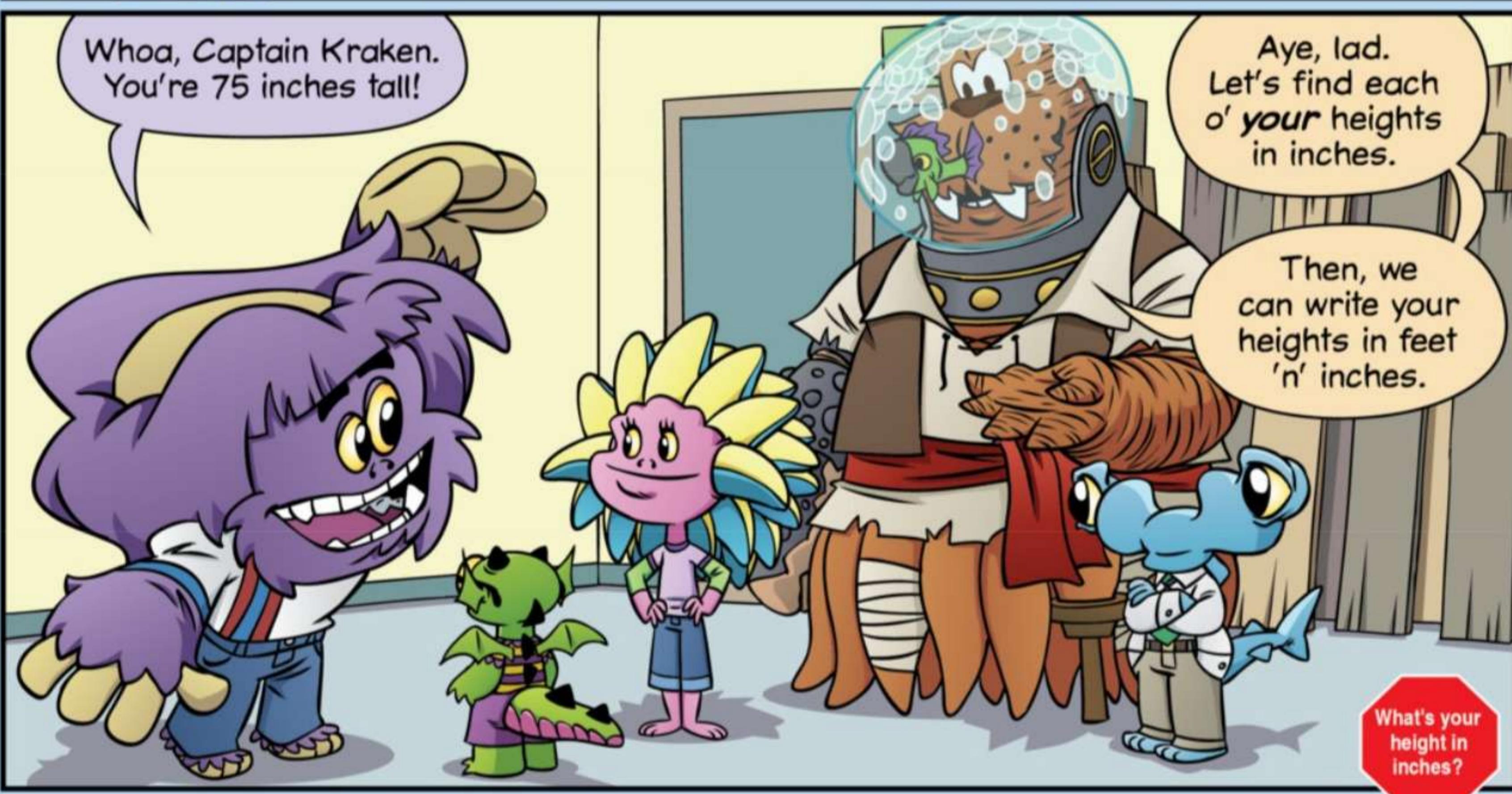
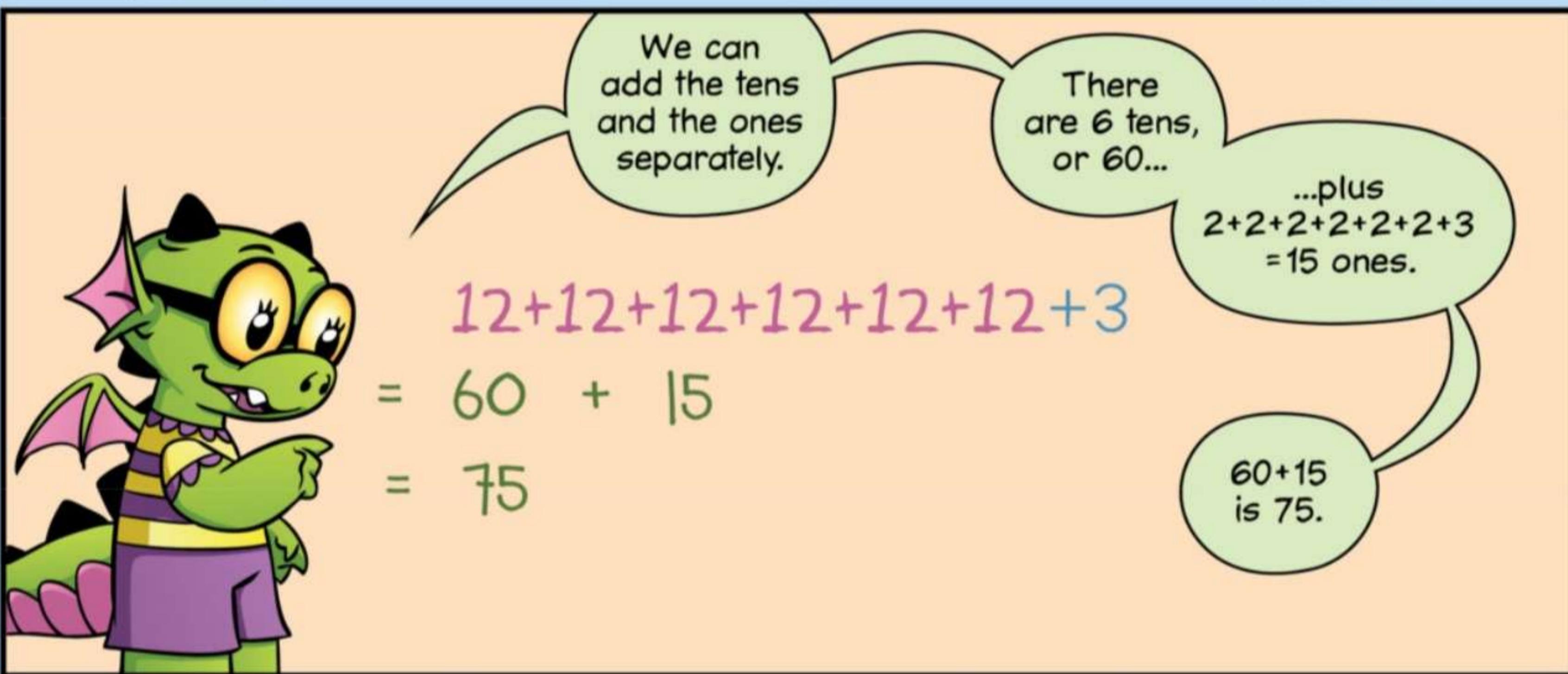
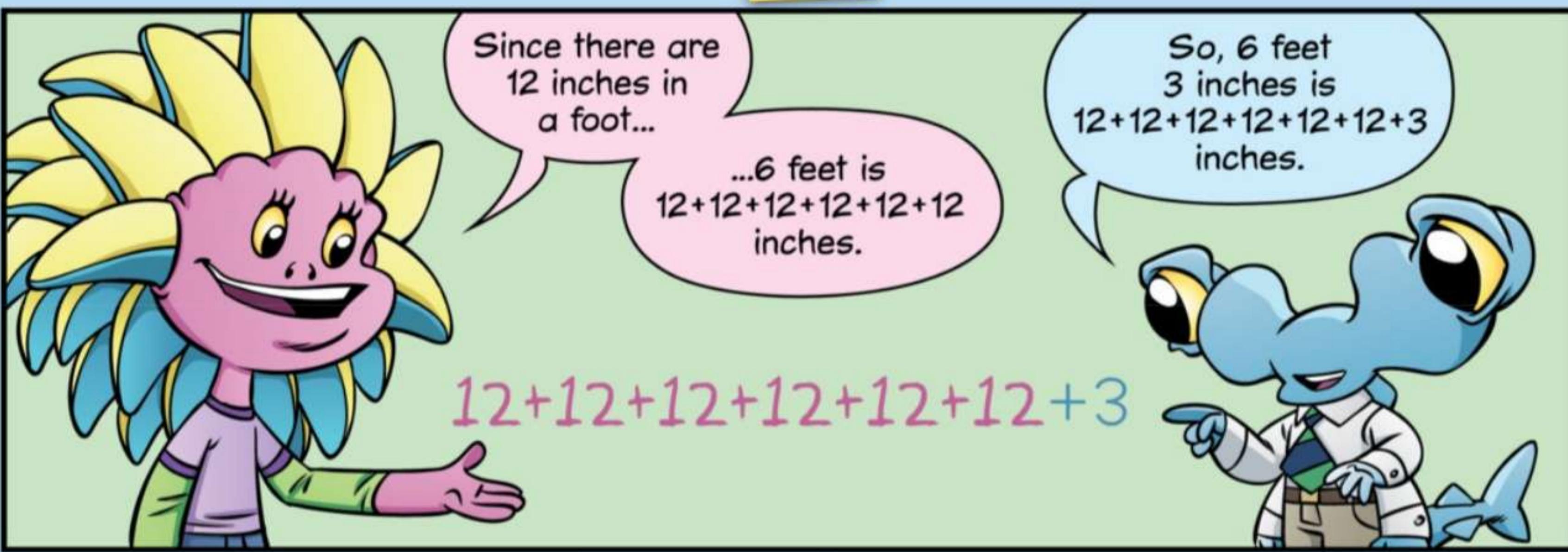
1,760 IS READ, "ONE THOUSAND, SEVEN HUNDRED SIXTY." THIS IS A BIG NUMBER THAT YOU DO NOT NEED TO REMEMBER. WE'LL LEARN MORE ABOUT BIG NUMBERS IN CHAPTER 10 OF BEAST ACADEMY 2D.







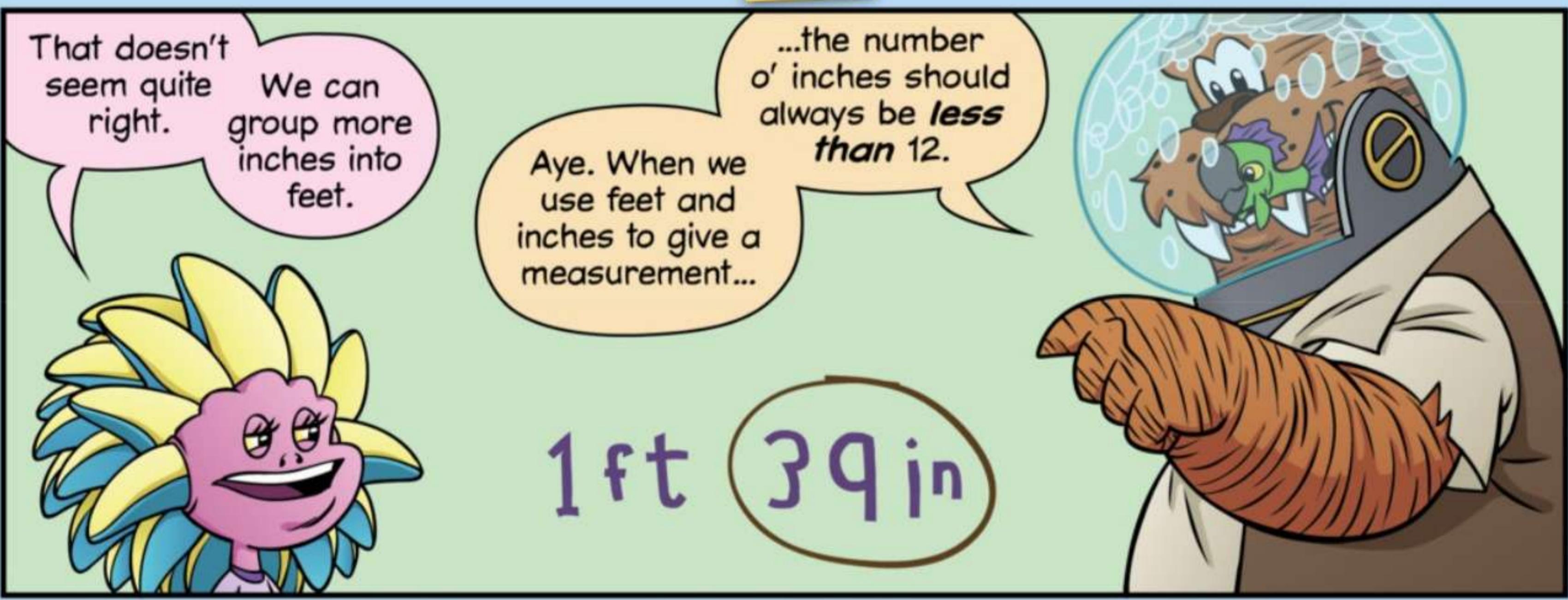
A MEASUREMENT THAT USES TWO DIFFERENT UNITS IS CALLED A **MIXED MEASURE**.



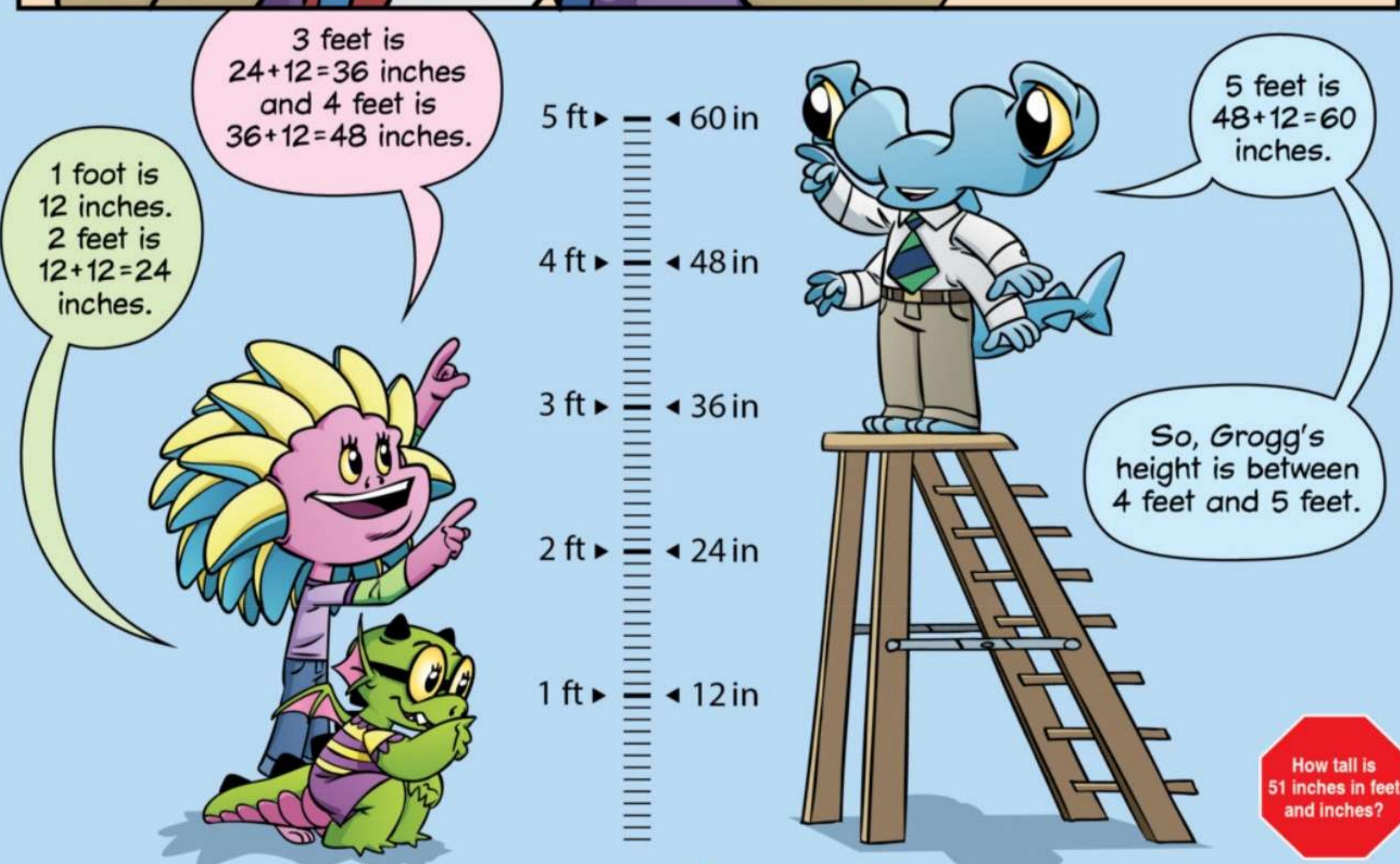


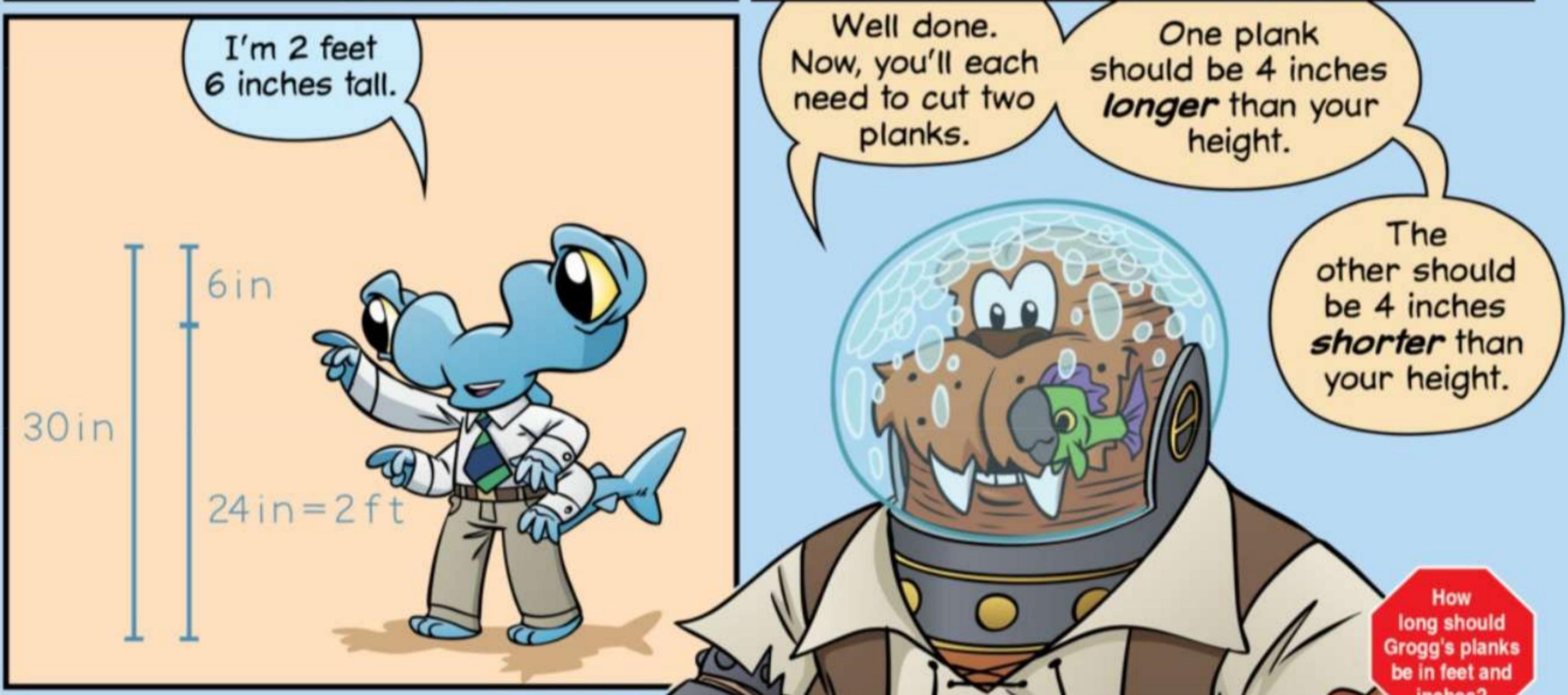
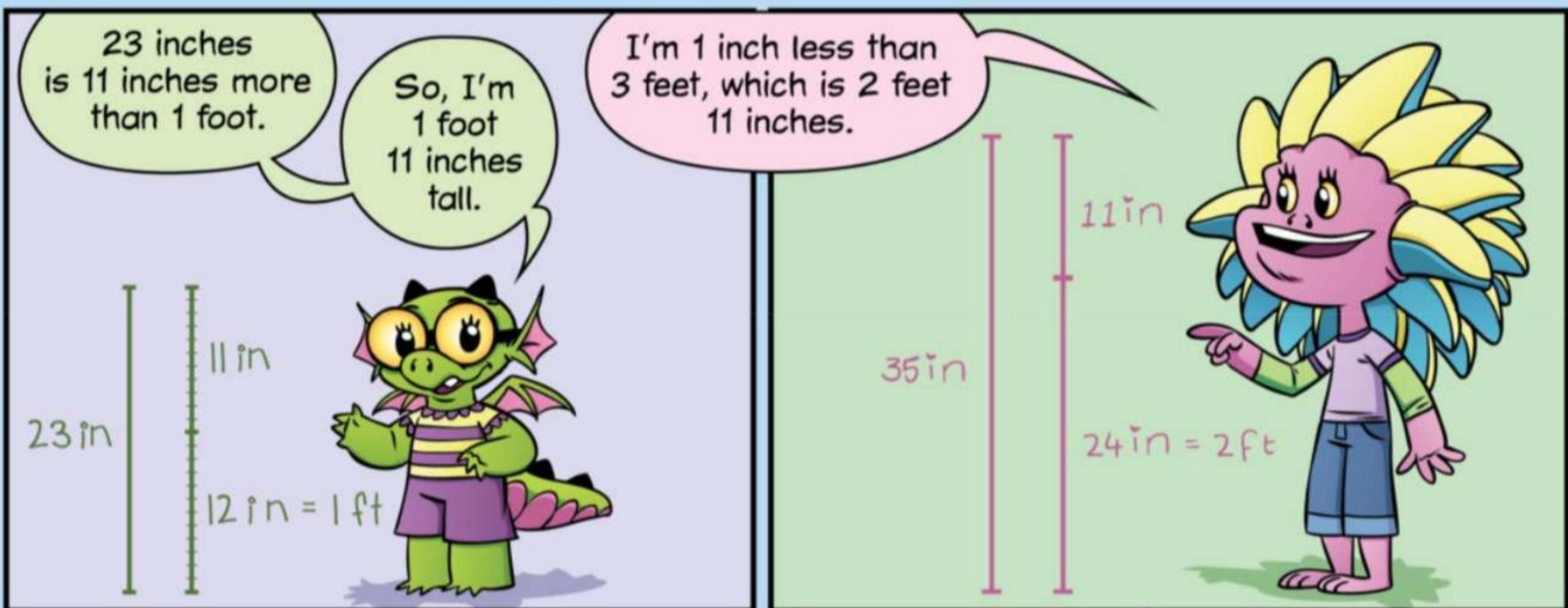
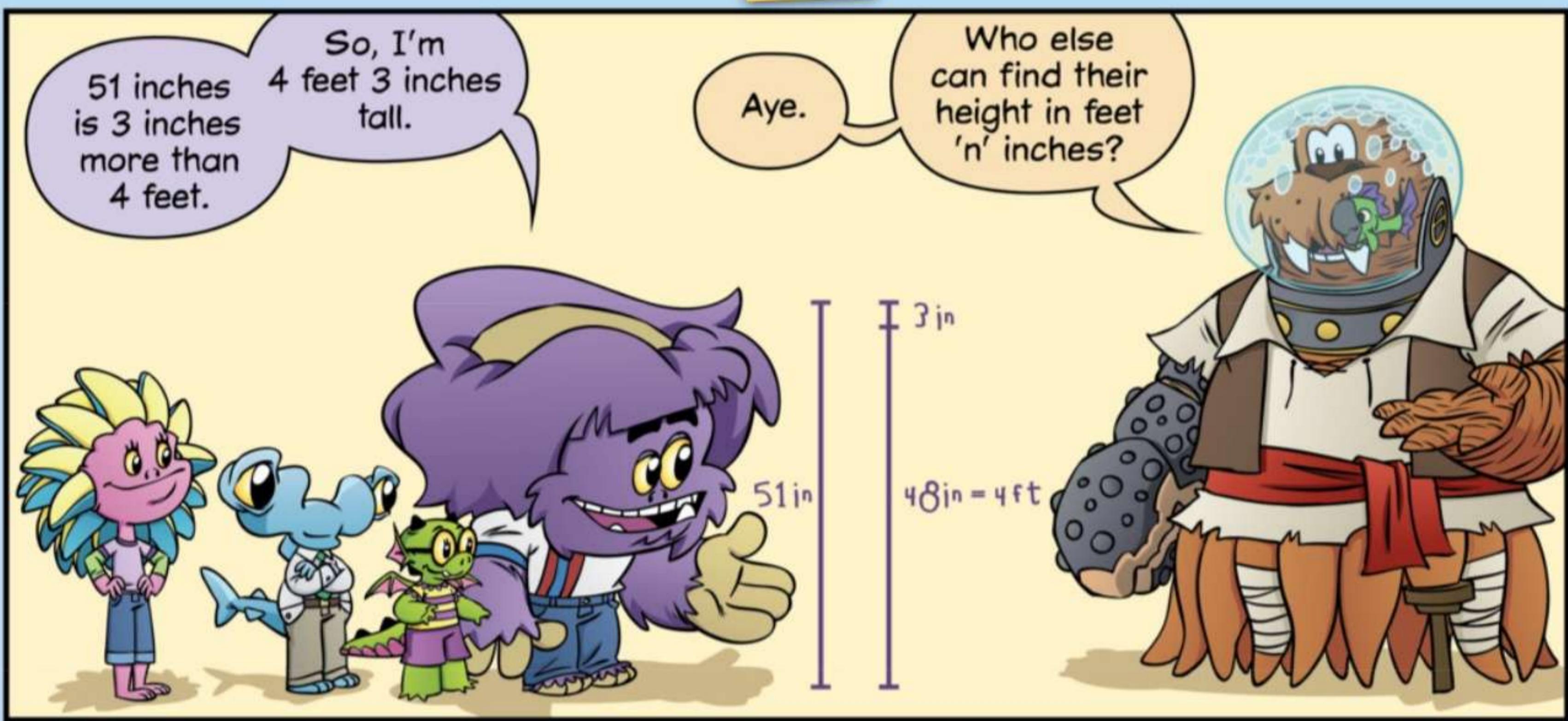
"FT" IS SHORT FOR FOOT OR FEET.

Is there a better way to write Grogg's height?



1 ft 39 in





To add 4 inches to 4 feet 3 inches, we can just add the inches.

4 inches more than 4 feet 3 inches is 4 feet 7 inches.

$$\begin{array}{r} 4 \text{ ft } 3 \text{ in} \\ + \quad 4 \text{ in} \\ \hline 4 \text{ ft } 7 \text{ in} \end{array}$$



WITH MIXED MEASURES, WE CAN STACK THE ADDITION OR SUBTRACTION SO THAT THE MATCHING UNITS LINE UP.

Subtracting 4 inches from 4 feet 3 inches is harder.

I can't take 4 inches from 3 inches.

$$\begin{array}{r} 4 \text{ ft } 3 \text{ in} \\ - \quad 4 \text{ in} \\ \hline \end{array}$$

We could break 1 foot into 12 inches.

4 feet 3 inches is the same as 3 feet...

...and  $3+12=15$  inches.

Now, we can subtract.

$$\begin{array}{r} 3 \text{ ft } 15 \text{ in} \\ \cancel{4 \text{ ft } 3 \text{ in}} \\ - \quad 4 \text{ in} \\ \hline \end{array}$$

Subtracting 4 inches from 3 feet 15 inches is...  
...3 feet and  $15-4=11$  inches.

Aye, Grogg's planks be 4 feet 7 inches long...

Next, find Lizzie's plank lengths.

...'n'  
3 feet 11 inches long.



$$\begin{array}{r} 3 \text{ ft } 15 \text{ in} \\ \cancel{4 \text{ ft } 3 \text{ in}} \\ - \quad 4 \text{ in} \\ \hline 3 \text{ ft } 11 \text{ in} \end{array}$$



4 inches more than  
1 foot 11 inches  
is 1 foot and  
 $11+4=15$  inches.

But, that's  
over 2 feet.

$$\begin{array}{r} 1 \text{ ft } 11 \text{ in} \\ + \quad 4 \text{ in} \\ \hline 1 \text{ ft } 15 \text{ in} \end{array}$$

You can regroup  
12 inches to make  
another foot.

That  
gives us  
2 feet and  
 $15-12=3$   
inches.

So, your long  
plank should be  
2 feet 3 inches  
long.

$$\begin{array}{r} 1 \text{ ft } 11 \text{ in} \\ + \quad 4 \text{ in} \\ \hline \cancel{1 \text{ ft } 15 \text{ in}} \\ 2 \text{ ft } 3 \text{ in} \end{array}$$



And my short  
plank should be  
4 inches less than  
1 foot 11 inches.

That's  
1 foot 7 inches.

$$\begin{array}{r} 1 \text{ ft } 11 \text{ in} \\ - \quad 4 \text{ in} \\ \hline 1 \text{ ft } 7 \text{ in} \end{array}$$



Since I am 1 foot  
taller than Lizzie,  
my planks should  
be 1 foot longer  
than hers.

So, my planks are  
3 feet 3 inches and  
2 feet 7 inches.

And mine are  
2 feet 10 inches...

...and  
2 feet 2 inches.

$$\begin{array}{r} 2 \text{ ft } 6 \text{ in} \\ + \quad 4 \text{ in} \\ \hline 2 \text{ ft } 10 \text{ in} \end{array}$$



$$\begin{array}{r} 2 \text{ ft } 6 \text{ in} \\ - \quad 4 \text{ in} \\ \hline 2 \text{ ft } 2 \text{ in} \end{array}$$



Well done, little buccaneers!

Now, cut your planks 'n' I'll help you put together your chairs.

