Welcome fellow Recovering Traditionalists to Episode 110. Today I'm sharing some of the Responses About The Use of AND in Math.

Welcome to Build Math Minds the podcast, where fidelity to your students is greater than fidelity to your textbook. I'm your host, Christina Tondevold, the recovering traditionalist and BuildMathMinds.com Founder, where my mission is to change the way we teach elementary math to our kiddos. Are you ready to start building math minds and not just creating calculators? Let's get started.

So last week, on episode #109, I shared that I was Wondering About The Use of the word AND in Math.

For example, how do you say the number 45?

Do you say "*forty-five*" or *"forty AND five*"?

I love this Build Math Minds community because you guys showed up with some interesting information on this topic that I didn't know or didn't think about, so I thought it would be great to share the responses I got. I'm not going to comment too much on them because I want you to use this to make up your own mind.

First was a series of responses from people who live outside of the United States. For those of us who have only grown up in the U.S., I thought it would be interesting for you to hear this as well. I got similar responses to this one but I wanted to share this from Linda:

Raised in the UK, we always use "and" for one hundred and nine- we even include it when writing the numbers. On moving to the US 23 years ago I was told it didn't belong and slowly I have trained myself to use it less. I never knew it was only to be used to show the decimal. I studied math in the UK so have always had a special "interest " in math but thought this was just an "Americanism" of the English language all these years.

Next was an email I got from Joan Cotter, who is the creator of RightStart Math. If you haven't heard of RightStart I will link it up in the show notes over at buildmathminds.com/110. She has a forthcoming book and she sent me a quote from that book. She gave me permission to share it here and she also mentioned that this debate is not new. Apparently, people in 1946 complained about radio announcers including the *ands* in their broadcasts. Here is what Joan Cotter wrote:

"Sometimes people hold to the tradition that the word *and* should be limited to numbers with a decimal point and spoken only where the decimal point is located. Thus, 3.002 would be pronounced as three and two thousandths. Today most people would say 3.002 as three point zero zero two. In reality the latter

pronunciation makes the number easier to visualize and keep track of the number of zeros. However, it is good to use the precise name when children are first learning the meaning of decimals.

On the other hand, you will often hear a number such as 503 spoken as five hundred and three. When spoken without the *and*, the number five hundred three could sound like two numbers: 500 and 3. The *and* leaves no question that it is one number.

Also, consider that many Indo-European languages include *and* as part of their numbers. Children learning English as a second language should not be burdened with removing *ands*. So, let's welcome *and* back into the mathematical community."

Then this email from Helen was interesting as well:

In NSW, Australia, (and I assume all of Australia) we ALWAYS say "one hundred AND nine" but we also don't usually refer to decimals in fraction form.

So for 12.65 we say *"twelve point six five."* We would rarely say *"twelve and sixty five hundredths"* unless we were specifically converting the decimal into fraction form.

So, 109.34 would be said as "one hundred AND nine point three four".

For decimals that convert easily into fractions e.g. 0.25 (1/4), 0.5 (1/2) and 0.75 (3/4)
we might say it as a fraction.
For example
10.25: *"ten point two five"* or *"ten and a quarter"*;
14.5: *"fourteen point five"* or *"fourteen and a half"*

Students in Australia don't think of the "and" as meaning where to put the decimal.

That made me wonder if our use of fractions in the U.S. does play a part in this 'and' debate. In a follow-up email in our communication Helen sent me, she confirmed my thoughts when she mentions that maybe our measurement system is the root cause of us feeling like we need to use the *and* to denote the decimal (or fractional) part of a number because those who use metric don't use fractions often if at all:

I am wondering whether in the US you refer to decimals as fractions because you use imperial measurement. We are metric in Australia and do not use fractions as much in daily life as you seem to do in the US.

I remember when visiting my sister in the US, I was amazed at the amount of fractions I saw e.g.

On the highway: 1/4 mile to the next exit (Our signs are in metres - 600m to next exit. Longer distances are in whole km so no fractions or decimals)
Petrol: $3.69 9/10 (We pay per litre so $1.45 per litre - no parts of a cent)
Tools: wrenches 3/16" (We still use imperial but I think it is slowly changing to mm)
Building: Wood measurement seems to use lots of fractions. (We use mm so no fractions or even decimals are used but people will still say things like "6 by 4").

And this last line of her email is the one I want to end on:

I think it is fascinating how maths is so different around the world. I always assumed that it was a universal language but each country seems to take a slightly different approach.

So, three things I've learned from my first 'wondering' podcast episode:

1) *And* can be used wherever you feel like it. We should not limit ourselves or our students to the idea that 'and' should only be used where there is a decimal point.
2) Our understanding of math and how we think about it is determined by the experiences we have had...let's ensure our students get a wide and deep understanding.
3) Being a part of this big Build Math Minds community is awesome! I love that we can learn from each other and that I can learn so quickly.

Now I'm curious, do you have some wonderings that you are curious about? Is there something that has 'always been done' or is a rule that you just aren't sure is the best? Send me an email or leave me a comment on my social media accounts about your wonderings and I'll feature some of these new 'wonderings' in future episodes. You can find me at The Recovering Traditionalist on Facebook and on Twitter and Instagram my handle is @BuildMathMinds.

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