Instead of That, Say This

One way to help students with their understanding of mathematics vocabulary is to emphasize formal mathematics language in the classroom. What follows are some examples of how informal or incorrect language (Instead of that…) can be replaced with formal mathematics language (Say this…).

Formal mathematics language is important because this is the type of language that students read in texts and on standardized assessments. If students only experience informal mathematics language, it will be difficult for students to fully participate in mathematics and demonstrate their mathematics competency.

Each of these examples come from an article named *Supporting Clear and Concise Mathematics Language: Instead of That, Say This* (Hughes, Powell, & Stevens, 2016). The article can be accessed here:
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Here are examples related to counting and cardinality.

Instead of...	Say...
1 is the first number Problem: 1 is not the first number. The number line extends infinitely in both directions. Referring to 1 as "the first number" causes confusion over understanding zero, negative integers, and rational numbers.	***Let's start counting with 1*** or ***0*** Solution: This accurately represents a conceptual understanding of counting and number sense. Numbers do not start at a particular place, but rather you choose to begin counting at 0, 1, or another integer.
And the last one is 10 Problem: This suggests that 10 is the final or highest number. As many children struggle with teen numbers, it is necessary to give opportunities to count beyond 10.	***...8, 9, 10. We'll stop counting there, but we could count more*** Solution: Providing an indication that 10 is a temporary stopping point helps children understand there are numbers beyond 10.
...7, 8, 9, and 10 Problem: The use of "and" suggests that 10 is the final or highest number.	***...7, 8, 9, 10...*** Solution: In mathematics, only use "and" when referring to the decimal point.

Hughes, Powell, & Stevens (2016)

Here are examples related to number and operations.

Instead of...	Say...
What number is in the tens place? Problem: This does not help the child understand place value. A number refers to the entire amount. For example, 243 is a number. The 4 in the tens place value is not a number, but rather a digit.	***What digit is in the tens place?*** ***What is the value of the digit 4 in the tens place?*** Solution: This reinforces the conceptual understanding of place value and emphasizes that 4 is part of 243 with a value of 40.
Five hundred and twenty-nine Problem: The word "and" only should be used to represent the decimal point (e.g., 325 is "3 and twenty-five hundredths") or fractions (e.g., 3¼ is "3 and one-fourth").	***Five-hundred twenty-nine*** Solution: This is mathematically correct.
Makes up or ***break apart*** Problem: These informal terms are procedural and not the terms used in textbooks or on high-stakes assessments.	***Compose*** and ***decompose*** Solution: Use the formal terms to describe composing or decomposing a number (e.g., "24 is composed of 2 tens and 4 ones").
The alligator eats the bigger number Problem: Children do not learn how to read math expressions from left to right or understand the meaning of the greater-than (>) and less-than (<) symbols.	***Less than*** or ***greater than*** Solution: Children learn how to read and write the inequality symbols and read equations correctly from left to right. Children also learn that < and > are two distinct symbols and not one symbol that switches back and forth.
Bigger number and ***smaller number*** Problem: This is not mathematical language and it does not transfer to positive and negative integers.	***Number that is greater*** and ***number that is less*** Solution: These terms are mathematically accurate and reflect the language in mathematics standards.
Equals Problem: This term often is used to indicate that children write an answer.	***the same as*** Solution: This reinforces the equal sign as a symbol that indicates the quantities on both sides need to be the same.
When adding, your answer is always bigger. ***When subtracting, your answer is always smaller.*** Problem: This is not always true. When working with 0, rational numbers, or negative numbers, adding will not always produce a greater number and subtracting will not always produce a number that is less.	Ask children to predict and reason Solution: Do not say rules that expire in subsequent grade levels because it leads to an erroneous understanding of addition and subtraction.
Carry or ***borrow*** Problem: This terminology is procedural.	***Regroup*** or ***trade*** or ***exchange*** Solution: This reinforces the conceptual understanding of grouping ones into tens, tens into hundreds, and so on, or ungrouping hundreds into tens, tens into ones, and so on.

Hughes, Powell, & Stevens (2016)

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Here are examples related to geometry.

Instead of...	Say...
Box or ***ball*** Problem: With early descriptions of shapes, children use terms that relate to real-life objects. This is permissible, but formal language also should be reinforced.	***Square/rectangle*** or ***circle*** Solution: Use the formal language of shapes to confirm informal language.
Square (for any rectangular shape) Problem: A square has 4 equal, straight sides, and 4 right angles. A square is a rectangle, but a rectangle is not necessarily a square.	***Rectangle*** Solution: This helps children distinguish between square and rectangle terminology.
Corner Problem: This general vocabulary term is not mathematically accurate.	***Angle*** Solution: Reinforce that an angle is the space between two intersecting lines.
Side or ***angle*** (to describe 3-D shapes) Problem: A 2-D shape uses straight sides, and the sides meet to form angles. This is not true for 3-D shapes.	***Edge, face,*** or ***vertex/vertices*** Solution: This reinforces conceptual understanding that 2-D and 3-D figures are different.
Point (for 3-D figures) Problem: This general vocabulary term is not mathematically accurate.	***Vertex*** Solution: This is the endpoint where two or more line segments or rays meet.
Same *(e.g.,* ***"These are the same shape."****)* Problem: Too vague of a description.	***Similar*** Solution: Shapes are similar when the only difference is in size.
Same *(e.g.,* ***"These shapes are the same."****)* Problem: Too vague of a description.	***Congruent*** Solution: This term should be used to describe similar shapes that are the same size.
Same *(e.g.,* ***"These halves are the same."****)* Problem: Does not convey conceptual meaning.	***Symmetrical*** Solution: This term should be used to describe a reflection of a shape.
Flips, slides, and ***turns*** Problem: These terms help children remember the action of a transformation, but this vocabulary is not used on assessments.	***Reflections, translation,*** and ***rotations*** Solution: These are the correct mathematical terms.
Stretch or ***shrink*** Problem: These terms help children remember the action of a transformation, but this vocabulary is not used on assessments.	***Dilation*** Solution: This is the proper mathematical term.

Hughes, Powell, & Stevens (2016)

Here are examples related to measurement.

Instead of...	Say...
Long hand and ***short hand*** Problem: These terms describe the length of clock hands but not the properties of the hands.	***Minute hand*** and ***hour hand*** Solution: These terms help students understand hours and minutes.
Less versus ***fewer*** Problem: The difference is based on grammatical rules.	***Less*** or ***fewer*** Solution: Use "less" when it is something that cannot be counted or is singular; use "less" when referring to specific numbers with measurement. Use "fewer" with objects that can be counted one-by-one.
Bigger or ***larger*** Problem: These are general vocabulary terms and are not mathematically accurate.	***Greater*** Solution: Greater refers to quantity.
Long Problem: "It is 2 cm long" becomes problematic when students describe the sides of 2-D figures.	***Length*** Solution: "The length of the side is 2 cm."
Using ***weight*** and ***mass*** interchangeably Problem: Not mathematically accurate.	***Weight*** or ***mass*** Solution: "Mass" refers to the amount of matter in an object, whereas "weight" is the pull of gravity on an object.
Using ***capacity*** and ***volume*** interchangeably Problem: Not mathematically accurate.	***Capacity*** or ***volume*** Solution: "Volume" refers to the space of an object. "Capacity" refers to liquid measurement.
Using ***chart*** and ***graph*** interchangeably Problem: Not accurate.	***Chart*** or ***graph*** Solution: A graph represents exact numerical data. A chart presents data in an interpretable manner.
Using ***picture*** and ***pictograph*** interchangeably Problem: Not accurate.	***Picture*** or ***pictograph*** Solution: A pictograph is a graph with pictures to represent 1 (or multiple items).
Using ***then*** and ***than*** interchangeably Problem: Not grammatically correct.	***Then*** or ***than*** Solution: For comparison, use "than."

Hughes, Powell, & Stevens (2016)