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Description automatically generated with medium confidenceScience and Mathematics Vocabulary Builder

**Tip Sheet**



**What to do:** Use this tip sheet to remind you of ways you can help students become comfortable and familiar with words related to math and science. You can customize this tool to match your students’ ages and needs. Consider asking their school-day math and science teachers to send you a list of vocabulary terms students need to know. Also, you can use this tool during activity observations to “catch” staff and students using the processes, questions, and vocabulary terms listed below.

**Why it matters:** All students can benefit from explicit instruction and repeated exposure to the language of mathematics and science. It’s especially helpful for English learners. Often, they can pick up on conversational English on the playground, but they may have limited opportunities to learn and use academic language.

# Talking Science

**Tip:** Use science-related vocabulary and questions in all activities, not just during science activities or homework time.

| **Scientific Process** | **Guiding Questions** | **Related Vocabulary** | **Activity** | **Staff use** | | **Student use** | | **Notes** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Y** | **N** | **Y** | **N** |
| **Questioning and hypothesizing**  Forming questions and coming up with possible explanations or answers (hypotheses). | * Why is that? * How does it work? or How does it happen? * What might happen if…? * What might you see? | Curious  Hypothesis  Inquire  Inquiry  Question  Theory  Wonder | **Example:** Take a walk in the woods or in a park to explore plant life. |  |  |  |  |  |
| **Observation**  Using the senses to gather information. | * What do you see, hear, smell, or taste? How does it feel when you touch it? * What’s going on? How do you know? * Does this seem like anything else you know about? | Describe  Experiment  Observation  Observe  Senses  **Tip:** Include observation tools like microscopes and telescopes.  **Tip:** Include terms related to the metric and U.S. customary measurement systems as appropriate. | **Example:** Notice and talk about different plants and seeds. |  |  |  |  |  |
| **Classification**  Ordering and grouping data based on observations. | * Which are the same, similar or different? * How are they similar or different? | Characteristics  Classification  Classify  Differ  Different  Features  Group  Same  Similar  Sort | **Example:** Collect samples of different seeds and leaves. Group them by characteristics (e.g., size, shape, color, texture, where they were found). |  |  |  |  |  |
| **Recording and communicating**  Explaining and presenting to others. | * How do you describe this? What did you do? How did that happen? * What were you looking for? | Explain  Justify  Justification  Reason  Reasoning  Report | **Example:** Ask students to explain what they found, where, and why they grouped the seeds and leaves the way they did. |  |  |  |  |  |
| **Using data (e.g., numbers and measurement) to represent and explain.** | * How many? * How often? How much? * How long did it take? * When? * How big? What shapes? * How many different…? | Area  Calculate  Circumference  Count  Data  Diameter  Length  Quantity  Represent  Width | **Example:** How many types of seeds and leaves? How many of each? Which are the most common? |  |  |  |  |  |
| **Form conclusions, question further, predict, and revise hypotheses.** | * What did you find out? * What do you wonder about? What else do you want to know? * Is there another explanation? * What do you think will happen if… | Conclude  Conclusion  Explain  Explanation  Findings  Predict  Prediction  Revise  Revision | **Example:** Which seeds grow into which plants and leaves? Who eats these seeds and leaves? Do people eat seeds and leaves? What makes a seed or leaf edible or not? For whom? |  |  |  |  |  |

# Talking Mathematics

**Tip:** Use math-related vocabulary and questions in all activities, not just during math activities or homework time.

| **During…** | **Ask and talk about…** | **Related Vocabulary** | **Staff use** | | **Student use** | | **Notes** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Y** | **N** | **Y** | **N** |
| Snack time | * How many will you need? * How many more? About how many? Estimate. Approximately how much? * How many extra are there? * Count these out by twos. * What percentage is sugar? | Add/Addition  Approximate/Approximately  Divide  Estimate  Less than/More than  Minus/Take away  Multiply/Times  Percent/Percentage  Plus  Subtract/Subtraction |  |  |  |  |  |
| Forming teams, playing games, music, art | * Divide into groups of two (or five, or three) * Count off by twos, or odds and evens, or A’s and B’s * How many points? How many more? What’s the total? * What’s the rhythm? Tap it out. * What proportion of which color? What’s the pattern? | Divide  Odd, even  Pattern  Proportion  Represent  Shapes  Total |  |  |  |  |  |
| Dismissal, schedules, events | * What time will that happen? Later or earlier? Before or after? In how long (minutes, hours, days, weeks)? | Location and position words  Measurement words  Time vocabulary |  |  |  |  |  |
| General conversation, family, pets, friends, making plans | * Is he or she bigger or smaller? Older or younger? Taller or shorter? * How much will that cost? Do you have enough? Is that more or less? * How many pairs do you have? * Can you make a list? Can you put the items in order? How do you rank them? Same or different? Straight or curved? Equal or unequal? * How else can you say that? | Add/Addition  Compare/Comparison  Distance  Divide/Division  Fraction  Half  Measure/Measurement  Minus  Order/Organize  Plus  Prioritize  Rank  Subtract/Subtraction  Sum/Total  Whole/Part/Piece |  |  |  |  |  |
| Going places, finding things, cleaning up, neighborhood | * Is that closer or farther? * Near or far? How far? * How long does it take? * Right or left? * Above, below, next to, between? * Where is it? How do you get there? | Directions/Compass terms  Distance (measurements)  Location and position terms  Maps and mapping terms  Relationship words |  |  |  |  |  |
| Describing things, looking at things, ranking things | * What shape is that? What size? Bigger or smaller? * Which are the same; different? How are they the same or different? * Is that two-dimensional or three-dimensional? | Angle  Circle  Corner  Cube  Curved/Straight  Equal/Unequal  Ordinal/Cardinal  Point  Pyramid  Rectangle  Round  Square  Triangle  **Tip:** Include measurement tools like rulers, protractors, and T-squares. |  |  |  |  |  |

*Mathematics is the door and key to the sciences.*

— Roger Bacon

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This resource was developed in 2024, and revised in 2025, by the Nita M. Lowey 21st Century Community Learning Centers (21stCCLC) National Technical Assistance Center (NTAC), funded under a grant from the U.S. Department of Education (Department) and administered by Synergy Enterprises, Inc. under Cooperative Agreement No. 287E230009 with the Department’s Office of Elementary and Secondary Education. Opinions expressed herein do not necessarily reflect the position or policy of the Department, nor does mention of trade names, commercial products, or organizations imply endorsement by the Department or the federal government. This resource is in the public domain and is available at [21stcclcntac.org](http://www.21stcclcntac.org). Authorization to reproduce it in whole or in part is granted.