



Math Question Stems

Skill	Question Stem
Counting, Addition, & Subtraction	<ul style="list-style-type: none">• What number is 10 and four more?• How do you know there are 12 here?• Here's 6. How many more to 10? How do you know?• How can you make $7 + 6$ easier to add. Why?• What does it mean to solve $14 - 8$ as a missing addend problem. Talk me through it.• Can you solve this a different way?• How can you check your subtraction (or addition) problem? Why does that work?
Place Value	<ul style="list-style-type: none">• How many ways can you show the number ____ with base-10 blocks?• What would happen to the number(e.g., the 4) if I moved it here?• What is the difference between 25 tens and 250?• How could decomposing 3000 make it easier to subtract $3000 - 642$. How would you decompose it?• How is it possible to subtract $60 - 18$ when there are no ones to subtract from?
Multiplication	<ul style="list-style-type: none">• What does $a \times b$ mean? How else can you explain it?• How are multiplication tables built? Explain using one table as an example.• How does modeling multiplication differ from modeling addition? Why?• Why do we say that multiplication and division are inverse operation? How can that help you make division easier?• Compare 4, 9, and 3. Use multiplication language.• If the divisor doubles, what happens to the quotient? What if the divisor is cut in half?• If the multiplier is cut in half and the number being multiplied is doubled, what happens to the product? Use a model to explain.• Write a real-life problem to go with the equation.• Explain how each symbol relates to the story.
Fractions	<ul style="list-style-type: none">• What's the whole for this fraction?• What's the unit for the question/answer?• What does each fraction refer to?• Show this fraction on the number line.• How does the size of the fraction change if only the denominator is increased? Decreased? If only the numerator is increased? Decreased? Why?

	<ul style="list-style-type: none"> • Is this fraction $>$, $=$, or $<$ 1? How about $\frac{1}{2}$? How do you know? • You added the numerators but not the denominators. Why? • How did you get this denominator? • Why did you multiply the denominators? Describe what is happening when you do that. • Explain how to create equivalent fractions. • Explain the difference between array and area models for multiplication. Which is easier for you? Why? • What does it mean to multiply a fraction less than one by another fraction less than one? • Explain why you do or do not multiply the denominator when multiplying a fraction by a whole number. • When would you multiply denominators when multiplying two fractions? Why? Show what is happening to those numbers when you multiply the denominators.
Number System	<ul style="list-style-type: none"> • Explain, using a model, what happens to a number when you multiply it by 10. Why? What happens when you multiply a number by 100? Why? • When two whole numbers that do not begin with zero are compared, the longer one is always greater. Does that hold true for numbers with decimals smaller than 1? Why or why not? Use examples. • (Given worked problems) Can you reason about where the decimal point should go without counting? Can you estimate the answer? • Will your answer be closer to 6, 60, or 600? How do you know? • What happens to the number (e.g. the 4) when I move it one place to the left? One place to the right? Why?
Geometry	<ul style="list-style-type: none"> • What are the defining attributes of (name a polygon)? Does it belong to a larger category of shapes? Name other shapes in that category. • What is the difference between a _____ and a _____? • What is area? Show me where the area is for this shape. How can I calculate the area? Explain why area can be found by multiplying length times width. What units are appropriate to measure this area? Why are they called that? • What is perimeter? Show me where the perimeter is for this shape (Or for something in the room). How can I calculate the perimeter? • Prove whether or not a rectangle with a certain perimeter will always look the same. • Someone said that division is like finding the missing side of a rectangle. Explain that. • Why do we use square units when we talk about area?

	<ul style="list-style-type: none"> • What are angles and how are they measured? • When we find the volume of a figure, what are we finding? • Create a model that can be used to determine the volume of a square or right rectangular prism and explain how the model shows how to find the volume without building a concrete model. • What is the difference between an attribute and a defining attribute?
Sense-making	<ul style="list-style-type: none"> • Retell the problem in your own words. • What do you have to find out? • Can you think of similar problem we have solved? How might that help? • What have you already tried? • Where in the problem are the numbers you used? • Can you think of another strategy to try? • Where could you start? • Could you use objects or pictures to help you solve the problem? • Is this answer reasonable? Does it make sense? Why or why not?
Reasoning	<ul style="list-style-type: none"> • Can you write an equation? • What do these numbers represent? What does _____ stand for? • What is the relationship between the quantities in this problem (what is the relationship between _____ and _____)? • Does your solution answer the question? • What is the unit being used? • How do you know that?
Constructing arguments & critiquing	<ul style="list-style-type: none"> • Convince us that your solution is correct. • Did you test whether your method worked? How? • Can anybody explain it a different way? • Does _____'s solution make sense to you? Why or why not? Did you ask a question about what is unclear? • Can you explain what _____ did? • How are these solutions alike? How are these solutions different? • Tell us why you think the solution is wrong.
Modeling	<ul style="list-style-type: none"> • Show me what you mean so I can see it. • Which representation is most helpful to you (objects, diagram/picture, table, graph, equation, etc.)? What about it helped? • Can you write an equation to represent this situation? • What are the important quantities/numbers in the problem?
Strategizing	<ul style="list-style-type: none"> • What mathematical tools can you use to solve the problem? • Which tool would be most helpful for you? Would a _____ or a _____ make more sense? • Can that tool model this problem?

	<ul style="list-style-type: none"> • How could estimation help you with this problem? • Which of the tools takes less time? • Why did you decide to use _____?
Attending to precision	<ul style="list-style-type: none"> • Use precise math language and definitions in your explanation. • What does the equal sign tell you here? • Label quantities and axes so we know what they refer to. • Relate your answer to the problem's context or story. • How can you test your solution? • Were you able to follow _____'s explanation? Can you explain it now? What wasn't clear?
Looking for and using structure and repeated reasoning	<ul style="list-style-type: none"> • Can you see a pattern as you work? What is it? Can it help you? • Can you think of a rule or a property that could help us? • We said some things in mathematics are always true. Can one of those relationships or structures help here? • What does the pattern/repetition tell you? • What pattern do you see in the calculation? Can you predict the next one? The nth one? Is it true in all cases? • Can you make a conjecture about _____? Will it always be true? • Why does that always work?
Other	<ul style="list-style-type: none"> • What is the pattern of growth? • How are numbers changing? • What could a table show you? • Is there something that is the same every time? • What does that tell you?