General Task Question Bank

Problem Comprehension

Can students understand, define, formulate, or explain the problem or task?

- What is this problem about? What can you tell me about it?
- How would you describe the problem in your words?
- What information does the problem give you?
- How would you describe what you are trying to find?
- What do you notice about...?
- What do you know about this part?
- Do you need to define or set limits for the problem?
- Is there something that can be eliminated or that is missing?
- What assumptions do you have to make?
- What do the numbers used in the problem represent?
- What does ___ mean to you? (e.g., symbol, quantity, diagram)
- What is the relationship of the quantities?
- What is the relationship between ____ and ____?
- What do you know that is not stated in the problem?

Flexibility

Can students vary the approach if one approach is not working? Do they persist? Do they try something else?

- What do you think the answer might be?
- Where have you seen something like this before?
- Can you think of other problems like this one?
- Have you tried making an estimate?
- Give me another related problem.
- Is there an easier problem?
- Is there another way to (draw, explain, say...) that?
- What might be another way to think about this problem?
- Could you have used another operation or property to solve this task? Why or why not?
- Is there a more efficient strategy?

Approaches and Strategies

Do students have an organized approach to the task? How do they record? Do they use tools appropriately?

- What strategies might you use?
- What tools will you need?
- Could you try it with simpler numbers/shapes/situation? Fewer numbers?
- Would it help to create a diagram? Make a table? Draw a picture?

Communication

Can students describe or depict strategies they are using? Do they articulate their thought process? Can they display or demonstrate the problem situation?

- How could you explain what you know right now?
- Which words were most important? Why?
- Can you explain what you did so far?
- What mathematical evidence supports your solution?

• How might a tool such as a number line, picture, or manipulative help you? • Can you guess and check? • Where could you find the needed information? • What have you tried? What steps did you take? What did not work? • How did you organize the information? Do you have a record? • Did you have a system? A strategy? A design? • Have tried (tables, trees, lists, diagrams...)? • What number model could you construct to represent the problem? • What are some ways to represent the quantities? • What's an equation or expression that matches the diagram? • What formula might apply in this situation? • Where did you see one of the quantities in the task in your equation or expression?	• How can you be sure that....? How could you prove that...? Will it still work if...? What were you considering when...? • How did you test whether your approach worked? • How did you did you decide what the problem was asking you to find? • What was unknown? • Did you try a method that did not work? Why didn't it work? Would it ever work? Why or why not? • What is the same and what is different about....? • How could you demonstrate a counter-example? • What mathematical terms apply in this situation? • What symbols or mathematical notations are important in this problem? • What mathematical language...,definitions...., properties can you to explain...? • Explain how you might show that your solution answers the problem.
Relationship *Do students see relationships and recognize the central idea? Do they relate the problem to similar problems or previously learned ideas?* • What is the relationship of this to that? • What is the same? What is different? • Is there a pattern? • What patterns are you noticing? • Let's see if we can break it down. What would the parts be? • What if you moved this part? • Can you write another problem related to this one? • What might happen if I changed this part of the problem?	**Curiosity and Hypotheses** *Do students show evidence of conjecturing, thinking ahead, checking back?* • What do you predict will happen? • What was your estimate or prediction? • What do you think comes next? • What else would you like to know?

Solutions *Do students reach a result? Do they consider other possibilities?* • Is that the only possible answer? • How could you check the steps you have taken, or your answer? • Other than retracing your steps, how can you determine if your answers are appropriate? • Is there anything you have overlooked? • Is the solution reasonable considering the context? • How did you know your were finished? • How could you test your solution to see if it answers the problem?	**Self-Assessment** *Do students evaluate their own processing, actions, and progress?* • What do you need to do next? • What have you accomplished so far?
Examining Results *Can students generalize, prove their answers? Do they connect the ideas to other similar problems or to the real world?* • What made you think that was what you should do? • Is there a real-life situation this could be used? • What other problem does this seem to lead to? • Is there a general rule? • How were you sure your answer was right? • How would method work with other problems? • What questions does this raise for you? • Have you thought of all the possibilities? • Does your answer seem reasonable? Why or why not? • Explain why you chose to organize your results this way. • Will this work with other numbers? • Are there other possibilities? How can you be sure?	**Mathematical Learning** *Did students use or learn some mathematics from the task?* • What were the mathematical ideas in this task? • What was one thing you learned (or two, or more)? • What are the variables in this problem? What stays constant? • What is different about the mathematics in these two situations? • How does what you learned by doing this task/problem relate to something you already knew?

Questions to Keep in Mind While Problem Solving
(For students)

Before Solving

- First, make a guesstimate by asking; what would be a reasonable answer? How do I know that is reasonable? Do my thoughts make mathematical sense?
- What visual representations can I make to help me understand the problem better?
- Have I solved a similar problem? If so, what strategies did I use to solve that problem? If no, what connections can I make to help make this problem easier to understand?
- What are my givens?
- What do I need to find out?
- What are my constraints in the problem? How do I know?
- How is today's lesson similar to yesterday's lesson How will that help me solve the problem?
- How might I get started? Does this make sense?
- What inferences can I make about...? Explain your inference.

During Solving

- Is what I am doing so far making sense with my original estimate? Why? Why not? If not, what will I do differently, and why?

After Solving

- Does my answer make sense?
- Are my strategy and answer reasonable?
- Does my answer align with my original estimate? If so, how? If not, what do I need to do differently? Why?
- How do I know I am right?
- Is there another way I could have solved this problem? How? Why did I choose the method I did?
- What questions might I still have about...?

Questions to Encourage Deep Thinking

As a Bridge to the Learning

- Using the text structure, what do you think we will be learning about today? What makes you say that?
- What do you remember about [title of today's lesson]?
- What is this similar to? What makes you say that?
- If you had to guess, what do you thinking the answer will be, approximately? How do you know? Does this sound reasonable? If not, what will you do about that?
- What are your givens in the problem? What do you need to find out? How do you know that?
- How is [today's lesson] the same as yesterday's lesson? How is it different?
- How might you picture that? Explain.
- Why do you think that?
- What patterns do you notice? Explain.
- What do you predict will be the most important information in this passage? Why?

During the Learning

- How are you solving the problem? Why?
- How did you know to try that strategy?
- What could you do differently?
- Does what you are doing so far make sense? How do you know? If what you are doing so far doesn't make sense, what will you do next? Why?
- At what point did you get off track? What will you do about it?
- Does this part of the answer make sense so far? How do you know? If not, what will you do next? Why?
- Does what you are doing so far align with your estimate? Why? Why not?
- Why did you choose that strategy? Explain?
- What other strategies do you know that you can use? How do you, now that will also work?
- How is your procedure different than [name of another student] strategy?
- How do you know [name of another student] is right? Explain
- Do you notice anything that could trip you up in the problem solving? What is it? What are you going to do about it? Why?
- What patterns do you notice? Explain.
- Can you show me a part of the text where you have a question? What were you wondering when you read this part?
- Can you show me a part where you were confused? What was confusing about it?

As Part of the Debrief

- How does your answer relate to your guesstimate?
- Is your answer a reasonable one? Why? Why not? If not, what is your plan now?
- Can you show me a part where you were confused? What was confusing about it?
- Does this answer make sense? Why do you think that?
- How do you know you are right?
- What strategy will not work in this instance? How do you know?

Teaching Numeracy: 9 Critical Habits to Ignite Mathematical Thinking
Margie Pearse, K.M. Walton
Corwin Publishing, 2011

- At what point did you get off track? What did you do about it?
- What could you have done differently?
- Will this work all the time? Some of the time? Never? How do you know this?
- Will this process work for every number? Why? Why not?
- What is another example that might work? How do you know that? What is a counterexample? How do you know that?
- What else would work? What wouldn't work?
- Were all of the groups' solutions the same? How were they different? Why do you think there was a difference between your groups' answers?
- From todays' lesson, what might you be learning about tomorrow? What makes you say that?
- How is this used in real life? Explain.
- Looking at all of your work, how would you state the problem?
- What can you infer from...? How did you make that inference?
- How might you explain that to a little child?
- How did you work together to solve this problem?
- How did your thinking change? Explain.
- What do you now understand that you didn't understand yesterday?
- How do you know you know?
- How do you know you don't know?
- What do you see that is new to you? Provide clear and vivid examples.
- How is this similar to...? How is it different?
- What strategy would you prefer? Why?
- How would you describe the most important idea you learned today in one sentence?
- What was the main point of the lesson? What makes you say that?
- What are some new questions you generated from what you did in class today?
- What is something you would like me to know about your problem solving today?

Math Talk Questions

How do you know...?

What is another way to look at this problem?

What made you decide to solve like that?

Why did you do it that way?

What are you thinking now?

What is the difference between...?

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Math Talk Stems

I agree with _____ because...

I disagree with _____ because...

That is a good answer because...

I got different results because...

My strategy is like yours because...

What I heard you say was...

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I agree with _____ because...

I disagree with _____ because...

That is a good answer because...

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Math Talk Cards

Print and cut the cards.

Punch a hole and fasten with a ring clip.

Created by Brittany Beaumont of Peachy Teaching

(http://www.peachy-teaching.com)

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

My strategy was...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

What would happen if...

I agree/disagree with you because...

I agree/disagree with you because...

I agree/disagree with you because...

I agree/disagree with you because...

I agree/disagree with you because...

I agree/disagree with you because...

I agree/disagree with you because...

I agree/disagree with you because...

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I agree/disagree with you because...

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I know a different way...

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I know a different way...

I know a different way...

I know a different way...

I know a different way...

I know a different way...

I know a different way...

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

How did you...?

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I know my answer is correct because...

I hear you say that...

I hear you say that...

I hear you say that...

I hear you say that...

I hear you say that...

I hear you say that...

I hear you say that...

I hear you say that...

I hear you say that...

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Your strategy reminds me of...	Your strategy reminds me of...	Your strategy reminds me of...
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