Starter

Questions to ask:

- What are we trying to do?
- What is the problem asking?
- How does the problem begin?
- What happens in the problem?
- What are the key things we need to know?
- What type of problem is this?
- What patterns do we see?
- What is a possible plan for solving this problem?
- What math properties or formulas might I need to solve this problem?

Possible ways to answer:

- In order to _____, we need to…
- In other words…
- Let's try…
- I think we need to start with…
- This is similar to the problem _____, because…
- Something that seems important in this problem is…
- A pattern I see is _____, so we could…
- If I rephrased this problem in my own words I would say…
- Step one for setting up this problem should be…
- I think we need to use this formula because…

Challenger

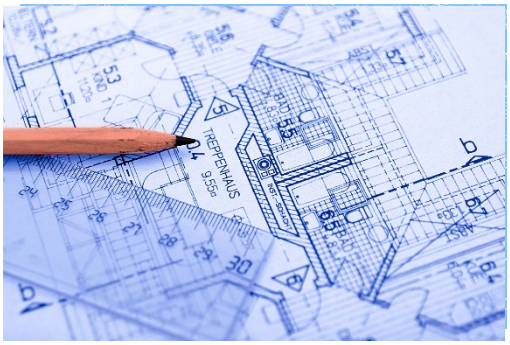
Questions to ask:

- How did you get this answer?
- Why are you doing that?
- Where did that number come from?
- Did we use the correct units?
- What else could we do?
- Can you clarify the step where you…?
- What might we change?
- Did you test whether that approach worked?
- How can we be sure that…?
- How can we prove that…?
- Is there a more efficient strategy?
- Is there a formal notation we need to use to represent this?

Possible ways to answer:

- I got this answer by…
- I am doing this because…
- My unit should be _____, because…
- I tested this solution by…
- We could change this step by…
- I plugged my answer into…
- In the table/graph I saw that…
- I'm seeing this pattern, so a more efficient approach might be…
- We can prove this by showing…
- If it works this way, it should also work…
- Since the original problem said _____, I'm using this number…

Architect



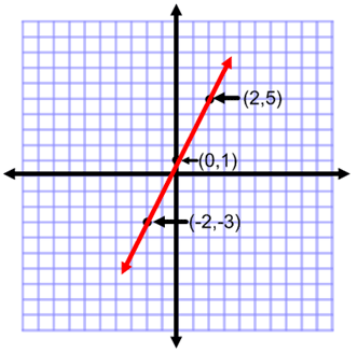
Questions to ask:

- How else can we model this?
- Can we organize this in a table?
- Can we draw or graph this information?
- Can we write an equation?
- What symbols can we use to represent…?
- How can we write what we are thinking/doing?
- Which method/model seems most useful?
- What are some other strategies we can try?
- What specific tools can we use to solve this problem?

Example 1:

Graph the line for: y = 2x +1

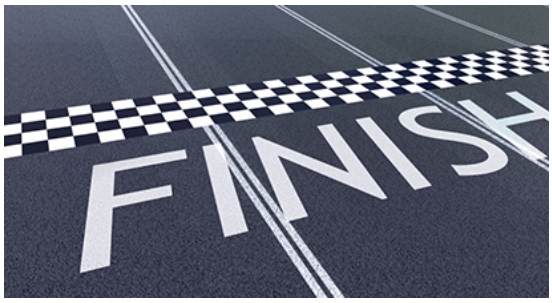
x	2x +1	y	Ordered Pairs
-2	2(-2)+1	-3	(-2,-3)
0	2(0)+1	1	(0,1)
2	2(2)+1	5	(2,5)



Possible ways to answer:

- This should be in the table with zero because…
- This should be in the table with 1 because…
- When I make a graph my x-axis should be…
- When I make a graph my y-axis should be…
- I can draw this pattern by…
- This variable means…
- This symbol means…
- This part of my equation means…
- When I plug this into my equation it will mean…
- We could move this over there to…
- I need my calculator in order to…
- I think the most efficient strategy is…
- We might need graph paper so that we can…
- Can you explain that in words again so that I can write it down?

Finisher



Questions to ask:

- How can we explain this to others?
- How can we check our solutions?
- How do we know our solution is reasonable?
- Let's read the original question, did we answer it?
- Will this same strategy work in other situations?
- What steps do we feel most confident about?
- What do we think we might need to change?
- Did we try a method that did not work? Why didn't it work?
- What is the same/different about this problem and other problems we have done?
- What similarities do we notice between our different representations?
- What is our estimate for the answer? Did we get close to that?

Possible ways to answer:

- We can explain this by…
- We checked our solutions by…
- I think these two methods relate because…
- In each representation I'm noticing that…
- We feel confident about…
- Our answer is reasonable because it is close to our estimation
- We learned that this might not work because…
- We might still need to change the part…
- When we present this, we should point out…
- I've included units related to the original problem