

# CRITICAL AND CREATIVE THINKING STEM QUESTIONS

## Analyzing

- \*How could you break down...?
- \*What are the parts of...?
- What qualities/characteristics...?

## Applying

- \*How is \_\_ an example of...?
- \*What practical applications...?
- \*What examples...?
- \*How could you use...?
- \*How does this apply to...?
- \*In your life, how would you apply...?

## Augmenting/Elaborating

- \*What ideas might you add to...?
- \*What more can you say about...?
- \*How could you improve...?

## Categorizing/Classifying/

## Organizing

- \*How might you classify...?
- \*What category does \_\_ belong to? Why?
- \*What else could you add to this category?
- \*How else could you organize...?

## Comparing/Contrasting

- \*How would you compare...?
- \*What similarities...?
- \*What are the differences between...?
- \*How is \_\_ like \_\_?
- \*How is \_\_ different from \_\_?

## Connecting/Associating

- \*What do you already know about...?
- \*What connections can you make between...?
- \*What things do you think of when you think of...?

## Decision Making

- \*What are the pluses and minuses of choosing...?
- \*What would be a better decision...? Why?

## Defining

- \*How would you define...?
- \*In your own words, what is...?

## Describing/Summarizing

- \*How could you summarize...?
- \*If you were a reporter, how would you describe...?

## Determining Cause/Effect

- \*What are the causes of...?
- \*How does \_\_ effect \_\_?
- \*If you changed \_\_, what might happen?

## Eliminating

- \*What part of \_\_ might you eliminate?
- \*How could you get rid of \_\_?

## Evaluating/Assessing

- \*What is your opinion about...?
- \*Why did you like or dislike...?
- \*How would you rate/grade...? Why?
- \*Would you prefer/rather...? Why?
- \*Do you agree or disagree with...? Why?
- \*What are the positive and negative aspects of...?
- \*What are the advantages and disadvantages of...?
- \*Is it better or worse...? Why?
- \*By what criteria would you assess...?

## Explaining

- \*How could you explain why...?
- \*What reasons might explain...?
- \*What are some alternative explanations for...?

## Experimenting

- \*What experiment could you do to...?
- \*How could you test...?

## Generalizing

- \*What general rule can...?
- \*What principle could you apply...?
- \*What is common to all...?

## Interpreting

- \*What does \_\_ mean to you?
- \*What is the significance of...?
- \*What role...?
- \*What is the moral of...?

## Inventing

- \*What could you invent to...?
- \*What machine could...?

## Investigating

- \*How could you find out more about...?
- \*If you wanted to know about...?

## Making Analogies/ Similes/Metaphors

- \*How is \_\_ like \_\_?
- \*What similarities do \_\_ and \_\_ share?
- \*What analogy/simile/metaphor can you invent for...?

## Observing

- \*What did you notice about...?
- \*What observations did you make about...?
- \*What changes...?

## Patterning

- \*What patterns can you find...?
- \*How would you plan to...?
- \*If you were going to guess...?

## CRITICAL AND CREATIVE THINKING STEM QUESTIONS

### **Predicting/ Hypothesizing**

- \*What would you predict...?
- \*What is your theory about...?

\*What are some possible explanations...? Why?

### **Prioritizing**

- \*What is more important...?
- \*How might you prioritize...?
- \*In what order would you rank...?

### **Problem Solving**

- \*How would you approach the problem?
- \*What are some possible ways to solve...?

### **Questioning**

- \*What questions do you have about...?
- \*If you could ask a question of...?

### **Reducing/Simplifying**

- \*In a word/sentence, how would you describe...?
- \*How can you simplify...?

### **Reflecting/ Metacognition**

- \*What were you thinking when...?
- \*How has your thinking changed on...?
- \*How could you describe what you thought about...?

### **Relating**

- \*How is \_\_ related to\_\_?
- \*what is the relationship between...?
- \*How does \_\_ depend on \_\_?

### **Reversing/inversing**

- \*What is the opposite/antonym of...?

### **Role- Taking/Empathizing**

- \*If you were (someone/something else)...?
- \*How doe s\_\_ look like to \_\_?
- \*What would it feel like to be...?

### **Sequencing**

- \*How could you sequence...?
- \*What steps are involved in...?

### **Substituting**

- \*What else could you use for/instead of...?
- \*What is a synonym for...?
- \*What is another way you could...?

### **Symbolizing**

- \*How could you express it with a drawing/symbol/song/movement/poem?

### **Synthesizing**

- \*How could you combine/put together...?
- \*What could you make using?

**“THE IMPORTANT THING IS  
TO NEVER STOP  
QUESTIONING!”**

**-ALBERT EINSTEIN**

### **CLASS QUESTIONS:**

**STUDENTS GENERATE QUESTIONS THAT ADDRESS A WIDE RANGE OF THINKING SKILLS. TEACHER COLLECTS THE QUESTIONS. TEACHER CAN ASK THE CLASS THE QUESTIONS OR MAY BE USED IN JOURNAL WRITING.**



### **WRITING AND DISCUSSING:**

**HAVE PAIRS OR TEAMS DISCUSS QUESTIONS BEFORE THEY WRITE. OR HAVE STUDENTS WRITE THEIR ANSWERS AND SHARE THEIR IDEAS WITH THEIR GROUP.**