

# Lesson 19: FRQ Practice

45 minutes

## Overview

**How will I use what I know about classes and objects to answer a Free Response Question?**

Students are introduced to AP CSA Free Response Questions (FRQs) and practice decomposition and problem-solving skills to develop solutions to a mock FRQ. Students use annotation strategies to identify the key components of the problem and validate their solutions using Scoring Guidelines.

## Agenda

**Warm Up (5 minutes)**

**Introduction to FRQs**

**Activity (30 minutes)**

**FRQ Planning**

**Around the World**

**Wrap Up (10 minutes)**

**Closing the Loop**

**Assessment (Optional)**

## Objectives

Students will be able to:

- Implement a class using inheritance based on a given set of specifications
- Implement methods with parameters based on a given set of specifications
- Trace and validate the code of peers

## Preparation

- Print the SpiralPainter FRQ Stations resource
- Cut out the manipulatives in the SpiralPainter FRQ Stations resource
- Create stations around the classroom as indicated on the SpiralPainter FRQ Stations resource
- (Optional) Gather a blue, orange, and pink colored pencil or marker for each student
- Check the **Teacher's Lounge** for verified teachers on the CSA Forum to find additional strategies or resources shared by fellow teachers

## Links

**Heads Up!** Please make a copy of any documents you plan to share with students.

For the students

- **SpiralPainter FRQ** - Handout

# Teaching Guide

## Warm Up (5 minutes)


### Introduction to FRQs

 **Discuss:** *Describe one new thing you have learned about Java through this course.*

**Discussion Goal:** Students share concepts and skills they have learned in this unit.

### *Remarks*

We will learn about Free Response Questions, FRQs. We will practice an FRQ at the end of each unit to apply the programming skills you learn and solve problems similar to the FRQs on the AP CSA Exam.

 **Do This:** Click through the animated slide to explain the structure of an FRQ.

#### Teaching Tip

Upcoming units discuss the structure of the AP CSA Exam and FRQs in detail. If students ask questions about the AP CSA Exam, remind them that it is a long way off! Practicing several FRQs as a class better equips students to discuss the AP CSA Exam.




## Activity (30 minutes)


### FRQ Planning (10 minutes)

**Group:** Place students in pairs.

 **Distribute:** Give each student a copy of the SpiralPainter FRQ handout.

**Do This:** Explain the steps for the activity.

-  Planning
-  Around the World
-  Reflection

 **Do This:** Direct students to the first page of the SpiralPainter FRQ handout. Have students annotate the question at the bottom of the page based on the annotation guide.

 **Discuss:** Click through the animated slide to display the prompts.

- *Which parts of the problem did you highlight pink or underline?*
- *Can someone help explain these words or concepts?*

**Discussion Goal:** Students share words and concepts they didn't understand and discuss their meanings.

 **Discuss:** Click through the animated slide to display the prompts.

- *Which parts of the problem did you highlight blue or star?*
- *Which parts did you highlight orange or box?*
- *How do you expect you will use these pieces of information while coding?*

**Discussion Goal:** Students identify components of the problem that will help develop the solution.

## Around the World (20 minutes)

 **Do This:** Direct students to complete the Around the World activity with their partners.

### Teaching Tip

If there are fewer than six pairs, students may need to move on to complete an additional section before finding a group for a signature.

If students are stuck on a station, suggest:

- Writing comments for each "Do this" item.
- Returning to the manipulatives and tracing through their pseudocode again.

Differentiation Suggestions:

- Tell pairs who need more time to obtain two signatures instead of three. Have these students focus on completing the constructor and one of the methods.
- Encourage those who finish early to serve as reviewers.

### Remarks

Great work, everyone! Let's take a look at one potential solution to this problem. You might have a different approach, and that's ok! There are often multiple ways to achieve the same goal.

 **Do This:** Click through the animated slide to discuss a potential solution.

## Wrap Up (10 minutes)

### Closing the Loop

 **Discuss:** Click through the animated slide to display the prompts.

- *What is your first impression of an FRQ?*
- *What knowledge and skills did you use that you learned in this unit?*
- *What were you confident about? What would you like to practice?*

**Discussion Goal:** Students share their first impressions of an FRQ and connect the concepts they learned in the unit to those assessed. Students share what they were confident about and any areas they need additional practice.

## Assessment (Optional)

**SpiralPainter FRQ:** The SpiralPainter FRQ handout can be used as an optional formative assessment.



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