



## Lesson 1.2: Your First VR World

<https://codehs.com/course/2182/lesson/1.2>

<b>Description</b>	In this lesson, students will learn about the <code>&lt;a-sphere&gt;</code> tag and how to set its color, position, and radius. Students will learn how to make planes and use them to create a ground for the VR worlds.
<b>Objective</b>	Students will be able to : <ul style="list-style-type: none"><li>• Create a sphere in a VR world</li><li>• Create a plane in a VR world</li><li>• Change basic properties of spheres and planes</li></ul>
<b>Activities</b>	<a href="#">1.2.1 Video: Modifying a Sphere</a> <a href="#">1.2.2 Quiz: Sphere Quiz</a> <a href="#">1.2.3 Example: Example: Sphere</a> <a href="#">1.2.4 Exercise: Transform Your Sphere</a> <a href="#">1.2.5 Video: Your First A-Frame World</a> <a href="#">1.2.6 Quiz: Your First A-Frame World</a> <a href="#">1.2.7 Example: Example: Planes</a> <a href="#">1.2.8 Exercise: Create the Floor</a> <a href="#">1.2.9 Exercise: Create a Wall</a> <a href="#">1.2.10 Exercise: Snowflakes</a> <a href="#">1.2.11 Exercise: Ring a Ring o' Roses</a> <a href="#">1.2.12 Challenge: Make a Scene</a> <a href="#">1.2.13 Badge: Learning VR Badge</a>
<b>Prior Knowledge</b>	<ul style="list-style-type: none"><li>• Students should be familiar with the definition of virtual reality</li><li>• Students should have a basic understanding of Cartesian planes and Cartesian coordinates</li></ul>
<b>Planning Notes</b>	<ul style="list-style-type: none"><li>• Review the slides and activities for the lesson before the start of class</li><li>• There is a handout that accompanies this lesson. While this can be done as a homework assignment, it may be best to review in class before going to deep in the lesson.</li><li>• This is a longer lesson and may need to be split up over multiple class sessions. There are two videos, so you may consider combining the first video and example with the previous lesson.</li></ul>

- This lesson concludes with an open-ended exercise. You may want to consider adding or subtracting requirements from the exercise based on time.
- *Note: This lesson was written on A-Frame version 0.9.2. A-Frame is a fast developing language and the current version may be newer. It is not necessary to switch to a newer version, however, you should be aware that student may find a reference to code that does not work on this version.*

## Standards Addressed

## Teaching and Learning Strategies

### Lesson Opener:

- Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins]

### Activities:

- Watch the first lesson video and complete the corresponding quiz. This quiz is a quick check for understanding [11-13 mins]
- Explore the *Sphere* example. [5-10 mins]
  - Encourage students to change parameters.
  - Remind students that the object may not be in their initial field of view and they may need to turn to see it.
- Complete the *Transform Your Sphere* exercise. [2 mins]
  - Have students look back to the example if needed.
- Consider completing the handout at this point and saving the remaining part of the lesson for another day.
- Watch the second lesson video and complete the corresponding quiz. This quiz is a quick check for understanding [10-12 mins]
- Explore the *Planes* example. [5-10 mins]
  - Encourage students to change parameters to move the planes around.
  - Remind students that the object may not be in their initial field of view and they may need to turn to see it.
- Complete the *Create the Floor* exercise. [3 mins]
  - Have students look back to the Planes example if needed.
- Complete the *Create a wall* exercise. [3 mins]
  - Have students look back to the Planes example if needed.
- Complete the *Snowflakes* exercise. [3 mins]
  - Have students look at the first sphere as reference.
- Complete the *Ring a Ring o'Roses* exercise. [3 mins]
  - Have students look at the other objects for reference.
- Complete the *Make a Scene* challenge. [3 mins]
  - This activity can be made harder if time allows. Just ask students to use more objects.
  - Since this is a challenge, there is no autograde for this activity.

### Lesson Closer:

	<ul style="list-style-type: none"> <li>• Have students reflect and discuss their responses to the end of class discussion questions. [5 mins]</li> </ul>
<b>Discussion Questions</b>	<p>Beginning of Class:</p> <ul style="list-style-type: none"> <li>• What do you think you'll be able to do in a VR world? <ul style="list-style-type: none"> <li>◦ <i>Answers will vary. After seeing examples in the last lesson, they should believe that they can create and animate scenes.</i></li> </ul> </li> <li>• How challenging do you think creating a VR world will be? Why? <ul style="list-style-type: none"> <li>◦ <i>Answers will vary, but reinforce with students that creating some of the basics is very simple.</i></li> </ul> </li> <li>• What are some of the different elements we saw in the examples from last lesson? <ul style="list-style-type: none"> <li>◦ <i>We saw basic objects such as spheres, pyramids, and boxes, as well as more complete animations and 360 images.</i></li> </ul> </li> </ul> <p>End of Class:</p> <ul style="list-style-type: none"> <li>• What was the most challenging part of using A-Frame? Why? <ul style="list-style-type: none"> <li>◦ <i>Answers will vary</i></li> </ul> </li> <li>• What attributes are important to set when creating spheres and planes? <ul style="list-style-type: none"> <li>◦ <i>Answer may vary, but in general position, size, and color are important for all attributes. For a plane, rotation is also important.</i></li> </ul> </li> <li>• Can you speculate as to what would happen if we leave an attribute off? What if we misspell an attribute? <ul style="list-style-type: none"> <li>◦ <i>Misspelling an attribute is the same as leaving it off. When that happens a default value is used for the attribute.</i></li> </ul> </li> </ul>
<b>Resources/Handouts</b>	<p><a href="#">Coordinate Plane (student)</a></p> <p><a href="#">Coordinate Plane (teacher)</a></p>

## Vocabulary

Term	Definition	
<b>Modification: Advanced</b>	<b>Modification: Special Education</b>	<b>Modification: English Language Learners</b>