Interactive Lecture Demonstration

 Prediction Sheet**—Vectors**

**Directions:**  Write your name at the top to record your presence and participation.  For each demonstration, write your prediction on this sheet before making any observations. You may be asked to send this sheet to your instructor.

|  |  |
| --- | --- |
| A picture containing object, clock  Description automatically generated  Only after you have sketched your prediction, open the **Vector Addition** simulation: <https://phet.colorado.edu/sims/html/vector-addition/latest/vector-addition_en.html> and open **Explore 2D**. Drag the two vectors anywhere on the graph grid, adjust their lengths carefully, and then click on the **Sum--->** box to view the vector sum. Does this agree with your prediction?  Move the vectors around to show how the **Triangle Rule** results in the vector sum. Describe how this results in the correct sum. |  |

|  |  |
| --- | --- |
| A close up of a clock  Description automatically generated  Only after you have sketched your prediction, use the **Vector Addition** simulation. Recall that the vector difference **a - b** is the same as the sum of  **a + (-b).** Does the result agree with your prediction? If not, explain why.  Move the vectors around to show how the **Triangle Rule** results in the vector difference. Describe how this results in the correct difference. |  |

|  |  |
| --- | --- |
| A picture containing clock  Description automatically generated  Only after you have sketched your prediction, again use the **Vector Addition** simulation. Use the vectors **a** and **b** for the two **v** vectors and recall that  **v = v2 - v1**. Does the result agree with your prediction? If not, explain why.  Also use the simulation to verify that . |  |

|  |  |
| --- | --- |
| A picture containing object, clock  Description automatically generated  Only after you have sketched your prediction, again use the **Vector Addition** simulation. Recall that **b = a - b**. Does the result agree with your prediction? If not, explain why.  Also use the simulation to verify that **b + b = a**. |  |

|  |
| --- |
| A picture containing object, clock  Description automatically generated  Only after you have sketched your prediction, click [here](http://pages.uoregon.edu/sokoloff/VectorsDemo5.jpg) to see the result. Compare the result to your prediction and explain any differences. |

|  |
| --- |
| A screenshot of a cell phone  Description automatically generated  Only after you have sketched your prediction, click [here](http://pages.uoregon.edu/sokoloff/VectorsDemo6.jpg) to see the result. Compare the result to your prediction and explain any differences. |
| A picture containing object, clock  Description automatically generated  Only after you have sketched your prediction, click [here](http://pages.uoregon.edu/sokoloff/VectorsDemo7.jpg) to see the result. Compare the result to your prediction and explain any differences |