

**MCV 4U Learning Goals and Success Criteria**  
**Chapter 7: Applications of Vectors**

Learning Goals	
I will be able to represent vectors in $\mathbb{R}^2$ and $\mathbb{R}^3$ algebraically and geometrically and recognize their applications. (GA1)	
I will be able to perform operations on vectors in $\mathbb{R}^2$ and $\mathbb{R}^3$ , and use the properties of these operations to solve problems. (GA2)	
Success Criteria	
I can:	
<ul style="list-style-type: none"> <li>• Recognize a vector as a quantity with both magnitude and direction and identify real life applications of vectors. (GA1)</li> <li>• Perform the dot product on vectors in <math>\mathbb{R}^2</math> and <math>\mathbb{R}^3</math> and describe its applications and solve problems involving these applications. (GA2)</li> <li>• Determine some properties of the dot product and the cross product (prove them!). (GA2)</li> <li>• Perform the cross product on two vectors in Cartesian form in <math>\mathbb{R}^3</math>, determine the magnitude and describe applications of the cross product to solve problems. (GA2)</li> </ul>	
Test Information:	
Your test is Tuesday, April 28 <sup>th</sup> . You will have an hour and forty-five minutes to write it and have it back to me as a single PDF file. Late submissions will be penalized. You will write during your class period. (Period 2 – 9:45 to 11:30; Period 4 – 12:50 to 2:35) If have a conflict we will make alternate arrangements AHEAD OF TIME. If you have a technical issue during the test, communicate with me immediately so that we can figure it out. Please log in to Microsoft Teams for attendance and to get instructions before you start. If you are able to stay logged in, that makes it significantly easier to contact me if issues arise. I don't always see Edsby messages but will get notifications in Teams.	
There is a more detailed test outline below. These are the types of questions you can expect. To prepare well for this test, you should (in this order):	
<ul style="list-style-type: none"> <li>• Review your notes and the video lessons and makes study notes. We learned new vocabulary, so be sure that you actually understand it!</li> <li>• Review/redo your quiz and go through the examples in the notes and be sure that you can do them yourself.</li> <li>• Complete questions in the suggested review that you think you need to do. <b>The text book should be your last stop, not your first!</b></li> </ul>	
Questions to Expect	<ul style="list-style-type: none"> <li>• Explain something about resultant/equilibrant forces (7.1)</li> <li>• Calculate the resultant force (velocity, tension, etc) by creating both a position and a vector diagram.</li> <li>• Resolve a force into components and find each component force.</li> </ul>
	<ul style="list-style-type: none"> <li>• Calculate the dot product for geometric vectors.</li> <li>• Calculate the dot product for algebraic vectors.</li> <li>• Determine the angle between two vectors using the dot product.</li> <li>• Simplify an expression by applying the properties of the dot product.</li> <li>• Use properties of the dot product to solve for an unknown parameter (values of m on the quiz).</li> <li>• Determine direction cosines for a given vector.</li> <li>• Short answer question about scalar and vector projections.</li> <li>• Calculate the cross product for two vectors and use the dot product to check your answer.</li> <li>• Verify a property of the cross product.</li> <li>• Calculate the area of a parallelogram using the cross product.</li> <li>• Short answer about the dot and cross products.</li> </ul>
Text book Questions:	The review is long. I have selected some questions that might be relevant, but focus on notes, your quiz, homework, etc. The Chapter Test is actually a little more useful than the review. p. 418 #1 – 5, 7, 9, 14, 16 – 18, 20, 22 – 24, 31ab, 33, 34 p. 422 #1 – 4, 7, 8a