

MCV 4U Learning Goals and Success Criteria
Chapter 6: Introduction to Vectors

Learning Goals	
<p>I will be able to represent vectors in \mathbb{R}^2 and \mathbb{R}^3 algebraically and geometrically and recognize their applications. (GA1)</p> <p>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)</p>	
Success Criteria	
<p>I can:</p> <ul style="list-style-type: none"> • Recognize a vector as a quantity with both magnitude and direction and identify real life applications of vectors. (GA1) • Represent a vector in \mathbb{R}^2 geometrically and algebraically and recognize equal vectors as those with equal magnitude and direction, regardless of position. (GA1) • Use trigonometric relationships to determine the Cartesian representation of a vector in \mathbb{R}^2. (GA1) • Recognize that points and vectors in \mathbb{R}^3 can both be represented by Cartesian coordinates and find the magnitude of a vector using those coordinates. (GA1) • Perform addition, subtraction, and scalar multiplication on vectors in \mathbb{R}^2 and \mathbb{R}^3 given geometric or algebraic representations, and solve problems using these operations. (GA2) • Determine some properties of these operations on vectors (commutative, associative, etc.). (GA2) 	
Test Information:	
<p>Your test is Wednesday, September 19th. You can come in early to start your test if you think that time may be an issue. I will open the door by 7:45 and you can start at 7:55. Staying in to period 2 is not an option, so plan ahead! You should not NEED extra time, but you are welcome to take it if it will make you feel less stressed!</p> <p>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):</p> <ul style="list-style-type: none"> • Review your notes and makes study notes. We learned new vocabulary, so be sure that you actually understand it! • Review/redo your quiz and go through the examples in the notes and be sure that you can do them yourself. • Complete questions in the suggested review that you think you need to do. The text book should be your last stop, not your first! 	
Questions to Expect	<ul style="list-style-type: none"> • Explain the difference between a vector and a scalar quantity, and identify real life quantities as vector or scalar. • Given a diagram, identify equivalent and opposite pairs of vectors and explain your thinking. • Short answer question about the triangle law and the parallelogram law for vector addition. • Calculate the magnitude and direction of a given geometric vector using trigonometry (see quiz!) • Use diagrams to show that $k(a + b) = ka + kb$. Explain your thought process. • Write vectors in terms of other vectors (see #9 and 10 on p. 307)
	<ul style="list-style-type: none"> • Plot a point and a position vector in \mathbb{R}^3. • Use give coordinates for A and B to find the coordinates for position vector AB, then express it in terms of the standard basis vectors and find its magnitude and direction. • Given a set of vectors (x, y, z), determine the resultant vector of a combination of those vectors (distributive property and addition/subtraction). • Determine if three vectors are coplanar and explain your reasoning. • Write a given vector as a linear combination of two other given vectors. • A question very similar to #15 on p. 341.
Text book Questions:	<p>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> <p>p. 344 #2 – 4, 6, 8, 9, 11, 14 – 16, 18, 19, 23; p. 348 #1, 2, 4 – 7</p>