**Essential Learnings Dialogue**

**What Do We Expect Students to Learn?**

**Grade Level(s):**
11,

**Course:** Honors Pre Calculus

**Term (i.e. Tri. 1 / Qtr. 1):** Tri 3

**Team Members:** Sherrie Blundell, Kathy Hansen

*Use the district curriculum framework/map, state/national standards, (and MCA test specs if applicable) to guide your team’s discussions. As a team, reach consensus on the 5-8 essential learnings for your course for the upcoming term. (Note: frameworks and standards are on I-196).*

<table>
<thead>
<tr>
<th>Essential Learnings</th>
<th>Example</th>
<th>State (or national) Standard / Benchmark #</th>
<th>When Taught During Term?</th>
</tr>
</thead>
</table>
| **• What should ALL students know and/or be able to do by the end of the term?**
  *Refer to bullet points below.* | **• What does ‘proficient’ look like?**
  **• Provide one good example of a problem, question, or prompt that relates directly to the EL** | | |
| Determine probabilities using permutations, combinations, and the binomial theorem.
  Find the probability of one event and/or a second event occurring.
  Find the probability of mutually exclusive events | What is the probability of guessing on a true/false test and getting at least 5 of the 10 questions right?
  If you roll a single six sided die, what is the probability of getting either a 4 or a 5?
  Find the probability of having 4 boys in a row. | | March/April |
| Understand and be able to use recursive and explicit formulas for arithmetic and geometric sequences and series | Find the number of seats in a stadium section if the first row has 27 seats and each successive row has 2 more seats if the top row has 59 seats. | | March/April |
| Be able to prove theorems about positive integers using mathematical induction | Prove that the sum of the first n odd integers is n^2 | | March/April |
| Use parametric equations to find a graph of a modeling equation and simulate the motion of a projectile | A baseball is hit from 3 ft above the ground with an initial speed of 150 ft/sec at an angle of 18°. Will the ball clear a 20 ft wall that is 400 ft away? | | March/April |
| Recognize equations for and be able to graph conic sections (parabola, ellipse, hyperbola) | Find the center, vertices and foci of the hyperbola with the equation: 
(x+2)^2/9 - (y-5)^2/49 = 1 | | April |
| Decompose a fraction and use reduced row echelon form to solve the system | Find the partial fraction decomposition of (-x^2+2x+4)/(x^3-4x^2+4x) | | |
Be able to use the properties of limits and evaluate limits

Find the limit as x approaches infinity of (x+sinx)/x

May

<table>
<thead>
<tr>
<th>Be able to use the properties of limits and evaluate limits</th>
<th>Find the limit as x approaches infinity of (x+sinx)/x</th>
<th>May</th>
</tr>
</thead>
</table>

Calculate instantaneous velocities and derivatives using limits

A ball is dropped from a height of 125 meters. What is the velocity of the ball 1 second after it is dropped? How fast is the ball traveling just before it hits the ground?

May

<table>
<thead>
<tr>
<th>Calculate instantaneous velocities and derivatives using limits</th>
<th>A ball is dropped from a height of 125 meters. What is the velocity of the ball 1 second after it is dropped? How fast is the ball traveling just before it hits the ground?</th>
<th>May</th>
</tr>
</thead>
</table>

- Are each of your essential learnings directly aligned to district curriculum frameworks and/or state/national standards?
- Are your essential learnings measurable?
- Is your list of essential learnings written in student friendly language? Would they be clearly understood if posted in your classroom or posted on your class website?
- Endurance? – Are students expected to retain the skills/knowledge long after the test is completed?
- Leverage? – Is the skill/knowledge applicable to other academic disciplines?
- Readiness for next level of learning? – Is the skill/knowledge preparing the student for success in the next course or grade?