**Math 20-1 Chapter 2 Trigonometry Review**

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| **Key Ideas** | **Description or Example** |
| Sketching an angle  in standard position.  The measure of an angle in standard position can be between 0° to 360 °.  The symbol θ is often used to represent the measure of an angle. | The vertex of the angle is located at the origin (0,0) on a Cartesian plane.  The initial arm of the angle lies along the positive x-axis.  The terminal arm rotates in a positive direction.  The angle in standard position is measured from the positive x-axis. |
| Each angle in standard position has a corresponding reference angle.  Reference angles are positive acute angles (< 90°) measured from the terminal arm to the nearest *x*-axis.  Any angle from 90º to 360° is the reflection in the  *x*- axis and/or the *y*-axis of its reference angle. |  |
| Consider a reference right angle triangle | The three primary trigonometry ratios are |
| To calculate a ratio given an angle using your caluclator:    The mode of your calculator should be in degrees. | The ratios are given as decimal approximations. |
| Given any point P(*x*, *y*) on the Terminal Arm of an angle in standard position, the Pythagorean Theorem can be used to determine the distance the point is from the origin.  This distance can be labeled *r*.  The x- and y- coordinates of the point can be used to determine the exact values for the primary trig ratios.  The points P(*x*, *y*), P(−*x*, *y*), P(−*x*, −*y*) and P(*x*, −*y*) are points on the terminal sides of angles in standard position that have the same reference angle. These points are reflections of the point P( *x*, *y*) in the *x*-axis, *y*-axis or both axes. |  |
| The trigonometry ratios may be positive or negative in value depending on which quadrant the terminal arm is in. A point on the terminal arm would have coordinates (*x*, *y*). | “A Smart Trig Class” |
| There are two special right triangles for which you can determine the exact values of the primary trigonometric ratios.  TIP: the smallest angle is always opposite the shortest side. |  |
| Determining the measure of an angle, given the defining ratio.  Use the inverse trig ratios. |  |
| Quadrantal Angles  If the terminal arm lies on an axis, the angle is called a Quadrantal angle (it separates the quadrants).  The quadrants are labeled in a counterclockwise direction. | The Quadrantal angles for one revolution are  0º, 90º, 180º, 270º, 360º |
| Ratios of Quadrantal Angles  To determine, without the use of technology, the value of sin *θ*, cos *θ* or tan *θ*, given any point  P (*x*, *y*) on the terminal arm of angle *θ*, where *θ* = 0º, 90º, 180º, 270º or 360º use the defining ratios and consider any point on the axis.  Plot the point, determine the values of *x*, *y*, and r and calculate the ratio. |  |
| The Sine Law  An angle and its opposite side create a defining ratio that can be used to calculate the other measurements.  Notice you are given the measurements of an angle and its opposite side.  You may be asked to calculate the measure of the remaining sides or angles. | To determine side c      *c=* 37.7 |
| The Ambiguous Case of the Sine Law  Used when you are finding an Angle.  **Given: two angles and one side or**  **two sides and an angle opposite one of the given sides**  An angle and its opposite side are given to define one ratio  of the Sine Law.  Since angle B could be obtuse or acute, the ambiguous case must be considered. | There are two possible measure for angle B. |
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| The Cosine Law  Describes the relationship between the cosine of an angle and the lengths of the three sides of any triangle. |  |
| **Vocabulary** | **Definition** | |
| Angle in Standard Position  Initial Arm  Terminal Arm | When the initial arm is on the x-axis and meets the terminal arm at the origin to form an angle. | |
| Reference angle | The acute angle whose vertex is on the origin and whose arms are the terminal arm and the nearest x-axis. The reference angle is always positive and acute. | |
| Exact Value | Answers involving radical are exact.  Fractions are exact values.  Decimal approximations are not exact values | |

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| **Common Errors** | **Description** |
| Reference angle | The reference angle should always be towards the x-axis and not towards the y-axis. |
| Quadrants | In quadrant one all of the trig functions are positive, In quadrant two only the sine ratio is positive, In quadrant three the tangent ratio is positive and in the fourth quadrant cosine is positive. |
| Trig. Functions | Students often mix up when to use the sin command on the calculator or the inverse sine key. |