Conceptual Activities

Use these interactive open education and/or Desmos resources to build conceptual understanding of mathematical ideas. (*Note*: Activity links will be monitored and repaired or replaced as necessary.)

Unit 1

- Illustrative Mathematics. "The Titanic 3."

  http://www.walch.com/ca/10005

  This task poses an open-ended question that forces students to think about how they can answer it. Students will analyze data given in the two-way table to find meaningful probabilities and increase their understanding of conditional probability and independence.

- Illustrative Mathematics. "Should We Send Out a Certificate?"

  http://www.walch.com/ca/10006

  This task allows students to practice calculating normal distributions and further encourages them to draw conclusions from their results based on the properties of normal distributions. Students will communicate their findings in a narrative form within the context of the problem rather that reporting a simple computed number.

Unit 2A

- Desmos. "Constructing Polynomials."

  http://www.walch.com/ca/01054

  In this activity, students will consider properties of polynomial functions such as end behavior, leading terms, and properties of roots. They will explore connections between those properties and the factored forms of the equations of the polynomials.

- Desmos. "Polygraph: Polynomial Functions."

  http://www.walch.com/ca/01055

  This activity is designed to spark vocabulary-rich conversations about polynomial functions. Key vocabulary terms that may appear in student questions include *degree*, *roots*, *end behavior*, *limit*, *quadrant*, *axis*, *increasing*, *decreasing*, *maximum*, *minimum*, *extrema*, *concave up*, and *concave down*.

- Desmos. "Polynomial Equation Challenges."

  http://www.walch.com/ca/01056

  In this activity, students will create polynomial equations (of degree 2, 3, and 4) to match given zeros and points. Students will explore how the factored form of the equations relates to the zeros and the order of those zeros.

Unit 2B

- Desmos. "Marbleslides: Rationals."

  http://www.walch.com/ca/01057

  In this activity, students will transform rational functions to send marbles through stars.

- Desmos. "Polygraph: Rational Functions."

  http://www.walch.com/ca/01058

  This activity is designed to spark vocabulary-rich conversations about rational functions. Key vocabulary terms that may appear in student questions include *asymptote*, *vertical*, *horizontal*, *quadrant*, *axis*, *increasing*, *decreasing*, *discontinuity*, and *hole*.

Unit 3

- Desmos. "Burning Daylight."

  http://www.walch.com/ca/01059

  In this activity, students use sinusoids to model daylight data for two U.S. cities. They predict which city has more total daylight during a given year, and then use their model to calculate an answer to that question.

- Desmos. "Graphing the Sine Function Using Amplitude, Period, and Vertical Translation."

  http://www.walch.com/ca/01060

  Students will build a visual understanding of amplitude, period, and phase shift in this introduction to trigonometric graphing. They will use this understanding to find models for given graphs of the sine function.

- Desmos. "Marbleslides: Periodics."

  http://www.walch.com/ca/01061

  In this activity, students will transform periodic functions to send marbles through stars.

- Desmos. "Polygraph: Sinusoids."

  http://www.walch.com/ca/01062

  This activity is designed to spark vocabulary-rich conversations about sinusoids. Key vocabulary terms that may appear in student questions include *amplitude*, *periods*, *maximum*, *minimum*, and *shift*.

- Desmos. "Polygraph: Sinusoids with Vertical Transformations."

  http://www.walch.com/ca/01063

  This activity is designed to spark vocabulary-rich conversations about vertical transformations of sinusoids. Key vocabulary terms that may appear in student questions include *translation*, *dilation*, *amplitude*, *midline*, and *sinusoidal axis*.

- Desmos. "Trigonometric Graphing: Introduction to Amplitude and Vertical Shift."

  http://www.walch.com/ca/01064

  In this activity, students will informally explore range, midline, and amplitude of trigonometric functions. They'll use what they learn about the relationships to write equations of sine and cosine graphs.

Unit 4A

- Desmos. "Polygraph: Exponential & Logarithmic Functions."

  http://www.walch.com/ca/01045

  This activity is designed to spark vocabulary-rich conversations about exponential and logarithmic functions. Key vocabulary terms that may appear in student questions include *exponential*, *asymptote*, *logarithmic*, and *quadrant*.

Unit 4B

- Desmos. "Card Sort: Exponentials."

  http://www.walch.com/ca/01044

  In this activity, students practice what they've learned about exponential functions by matching equations to properties of the graphs the functions will produce. Students will then use their knowledge of transforming exponential functions to pair equations with graphs.

- Desmos. "Polygraph: Exponential Functions."

  http://www.walch.com/ca/01046

  This activity is designed to spark vocabulary-rich conversations about exponential functions. Key vocabulary terms that may appear in student questions include *increasing*, *decreasing*, *asymptote*, *quadrant*, and *axis*.

- Desmos. "Polygraph: Parent Functions."

  http://www.walch.com/ca/01051

  This activity is designed to spark vocabulary-rich conversations about graphs of parent functions. Key vocabulary terms that may appear in student questions include *increasing*, *decreasing*, *linear*, *quadratic*, *cubic*, *absolute value*, *exponential*, *logarithmic*, *rational*, *radical*, *axis*, *intercept*, and *coordinate*.

- Desmos. "Polygraph: Twelve Functions."

  http://www.walch.com/ca/01053

  This activity is designed to spark vocabulary-rich conversations about various functions. Key vocabulary terms that may appear in student questions include *linear*, *quadratic*, *exponential*, *cubic*, *absolute value*, *rational*, *radical*, *sinusoid*, and *step*.

- Desmos. "Writing Rules: Linear, Quadratic, and Exponential."

  http://www.walch.com/ca/01047

  In this activity, students have an opportunity to deepen their understanding of linear, quadratic, and exponential functions by making connections between their tables, graphs, and equations.