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| **Grade Level** 9th Accelerated Algebra I/Geom A | | **Teacher/Room**: LPAYNE 181 Week of: AUG 17-AUG 21, 2015 | | | |
| **Unit Vocabulary: SEE ATTACHED** | | | | | |
| **Instructional Strategies Used: :** direct instruction, independent study, interactive instruction, partners | | | | | |
| **Day 1** | **Day 2** | | **Day 3** | **Day 4** | **Day 5** |
| **GSE/GPS Standard(s)**:  MGSE9–12.A.APR.1 Add, subtract, and multiply polynomials; understand that polynomials form a system analogous to the integers in that they are closed under these operations.*(Focus on polynomial expressions that simplify to forms that are linear or quadratic in a positive integer power of x.)*  MGSE9–12.A.SSE.1a Interpret parts of an expression, such as terms, factors, and coefficients, in context.  MGSE9–12.A.SSE.1b Given situations which utilize formulas or expressions with multiple terms and/or factors, interpret the meaning (in context) of individual terms or factors.  MGSE9–12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems:  a. Identify, use, and record appropriate units of measure within context, within data displays, and on graphs;  b. Convert units and rates using dimensional analysis (English–to–English and Metric–to–Metric without conversion factor provided and between English and Metric with conversion factor);  c. Use units within multi–step problems and formulas; interpret units of input and resulting units of output.  **MPS: 2,7** | **GSE/GPS Standard(s)**:  MGSE9–12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems:  a. Identify, use, and record appropriate units of measure within context, within data displays, and on graphs;  b. Convert units and rates using dimensional analysis (English–to–English and Metric–to–Metric without conversion factor provided and between English and Metric with conversion factor);  c. Use units within multi–step problems and formulas; interpret units of input and resulting units of output.  MGSE9–12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling. Given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation.  MGSE9–12.N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. *For example, money situations are generally reported to the nearest cent (hundredth). Also, an answers’ precision is limited to the precision of the data given*  MPS:1,2,6*.* | | **GSE/GPS Standard(s)**:  MGSE9–12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems:  a. Identify, use, and record appropriate units of measure within context, within data displays, and on graphs;  b. Convert units and rates using dimensional analysis (English–to–English and Metric–to–Metric without conversion factor provided and between English and Metric with conversion factor);  c. Use units within multi–step problems and formulas; interpret units of input and resulting units of output.  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| **EQ Question:**   1. How do I choose and interpret units of measure in context? 2. How do I interpret parts of an expression in terms of context? 3. How are polynomial operations related to operations in the real number system? 4. How can polynomials be used to express realistic situations? 5. How do I justify simplification of radicals using visual representations? 6. Why is the sum or product of rational numbers rational? 7. Why is the sum of a rational number and irrational number irrational? 8. Why is the product of a nonzero rational number and an irrational number irrational? | **EQ Question:**   1. How do I choose and interpret units of measure in context? 2. How do I interpret parts of an expression in terms of context? 3. How are polynomial operations related to operations in the real number system? 4. How can polynomials be used to express realistic situations? 5. How do I justify simplification of radicals using visual representations? 6. Why is the sum or product of rational numbers rational? 7. Why is the sum of a rational number and irrational number irrational? 8. Why is the product of a nonzero rational number and an irrational number irrational? | | **EQ Question:**   1. How do I choose and interpret units of measure in context? 2. How do I interpret parts of an expression in terms of context? 3. How are polynomial operations related to operations in the real number system? 4. How can polynomials be used to express realistic situations? 5. How do I justify simplification of radicals using visual representations? 6. Why is the sum or product of rational numbers rational? 7. Why is the sum of a rational number and irrational number irrational? 8. Why is the product of a nonzero rational number and an irrational number irrational? | **EQ Question:**   1. How do I choose and interpret units of measure in context? 2. How do I interpret parts of an expression in terms of context? 3. How are polynomial operations related to operations in the real number system? 4. How can polynomials be used to express realistic situations? 5. How do I justify simplification of radicals using visual representations? 6. Why is the sum or product of rational numbers rational? 7. Why is the sum of a rational number and irrational number irrational? 8. Why is the product of a nonzero rational number and an irrational number irrational? | **EQ Question:**   1. How do I choose and interpret units of measure in context? 2. How do I interpret parts of an expression in terms of context? 3. How are polynomial operations related to operations in the real number system? 4. How can polynomials be used to express realistic situations? 5. How do I justify simplification of radicals using visual representations? 6. Why is the sum or product of rational numbers rational? 7. Why is the sum of a rational number and irrational number irrational? 8. Why is the product of a nonzero rational number and an irrational number irrational? |
| **Mini Lesson:** Solving equations  **Activating Strategies:**   1. **polynomial patterns** 2. **Modeling**   **Lesson: 1.** adding, subtract,and multiply polynomials . 2. Applying Geometric Representations of Polynomials  **Resource/Materials:**  Solving equation worksheet  Task polynomial patterns, Modeling ,  Paper, ruler, tiles, blocks,  Worksheets with polynomials. | **Mini Lesson:** Solving equations  **Activating Strategies:**   1. **Yogurt packaging**   Lesson:  1.Use unit analysis to answer questions.  2. Students will use percent increase and decrease.  3. Students will turn amounts (grams and fl. oz.) to unit rates (grams per fl. oz.)  **Resource/Materials:**  Task, rulers, calculators, paper, color pencils, | | **Mini Lesson:** solving equations  **Activating Strategies:**   1. **Corn and oats** 2. **Leaky Faucet**   Lesson:   1. Proportions 2. Unit conversions 3. Public land survey   **Resource/Materials:**  Corn and oats task  Color pencils, paper, graph paper | **Mini Lesson:** solving equations  **Activating Strategies:**   1. Visualizing Square roots   **Resource/Materials:**  Timing device (for first estimate; Act 2 provides exact amounts)  • Conversion factors for quantities mentioned in the problems posed after the video *(Act 2 will supply needed information but students could investigate independently before getting the information)*  • The facts about the dripping water in the video and the sink capacity, etc. *NOTE: the needed facts may vary based on the questions posed by students.* | **Mini Lesson:** solving equations  **Activating Strategies:**  Complete task from Monday-Thursday.  Lesson:  Solving equation test #1  **Resource/Materials:**  TEST, TASK, |
| **Differentiation:**  *Content/Process/Product:*  *Grouping Strategy: how students answered warm up question* | **Differentiation:**  *Content/Process/Product:*  *Grouping Strategy:* | | **Differentiation:**  *Content/Process/Product:*  *Grouping Strategy:* | **Differentiation:**  *Content/Process/Product:*  *Grouping Strategy:*  *Assessment* | **Differentiation:**  *Content/Process/Product:*  *Grouping Strategy:*  *Assessment* |
| **Assessment :**  *Formative:*  *Performance Based: GSE task* | **Assessment:**  *Formative:*  *Performance Based****: GSE task*** | | **Assessment:**  *Formative:*  *Performance Based: GSE task* | **Assessment:**  *Formative:*  *Performance Based: GSE task* | **Assessment:**  *:*  *Post-Test:*  *Summative:*  *Performance Based: Task* |
| **Homework: Review of operations with polynomial** | **Homework: Review of unit conversions** | | **Homework: practice with proportions and unit conversions.** | **Homework: practice with unit conversion and solving equations using unit conversions.** | **Homework: none** |

Resources and Reflective Notes:

Tuesday differentiation:

YOGURT PACKAGING – *Possible Extensions*

The extensions below represent potential ways in which mathematics and/or CTE teachers can build on the task above. All of the extensions are optional and can be used in the classroom, as homework assignments, and/or as long-term interdisciplinary projects.

1. Construct a yogurt container for the original tub of yogurt (3/4 cup of yogurt) using paper and including the label (conversions required: ounces to cubic unit of measurement). Specify the empty space volume (air content).
2. Create a marketing and/or advertising plan for your yogurt that uses information about the “competitors’” yogurts to formulate your plan (i.e., fat content). The plan should include a budget and potential sales projections.
3. You want to sell your yogurt abroad. Since other countries use the metric system, calculate the container sizes (in milliliters), using the conversion of 1 fluid ounce = 29.57353 milliliters, for both the original and the new smaller tub. Also determine the number of fat grams per milliliter for each.

UNIT 1 VOCABULARY

**Algebra:** The branch of mathematics that deals with relationships between numbers, utilizing letters and other symbols to represent specific sets of numbers, or to describe a pattern of relationships between numbers.

2. **Binomial Expression:** An algebraic expression with two unlike terms.

3. **Capacity:** The greatest volume that a container can hold.

4. **Circumference:** The distance around a circle.

5. **Coefficient:** A number multiplied by a variable.

6. **Constant Term:** A quantity that does not change its value.

7. **Expression:** A mathematical phrase involving at least one variable and sometimes numbers and operation symbols.

8. **Factor:** When two or more integers are multiplied, each integer is a factor of the product. "To factor" means to write the number or term as a product of its factors.

9. **Integer:** The set of numbers ...,–3,–2,–1,0,1,2,3,…

10. **Irrational Number:** A number whose decimal form is nonterminating and nonrepeating. Irrational numbers cannot be written in the form a/b, where a and b are integers (b cannot be zero). So all numbers that are not rational are irrational.

11. **Monomial Expression:** An algebraic expression with one term.

12. **Perimeter**: The sum of the lengths of the sides of a polygon.

13. **Polynomial function:** A ***polynomial function*** is defined as a function,

*f(x)= ao xn + a1 xn-1 + a2 xn-2 + … + an-2 x2 + an-1 x1 + an ,* where the coefficients are real numbers.

14. **Pythagorean Theorem:** It is a theorem that states a relationship that exists in any right triangle. If the lengths of the legs in the right triangle are *a* and *b* and the length of the hypotenuse is *c*, we can write the theorem as the following equation: *a* 2 + *b* 2 = *c* 2

15. **Radical:** The symbol,√𝑎𝑏, which is read "the bth root of a," is called a radical.

16. **Radicand:** The number underneath the root symbol. So, in√𝑎𝑏, the *a* is called the radicand.

**Rational Number:** A number expressible in the form *a*/*b* or – *a*/*b* for some fraction *a*/*b*. The rational numbers include the integers.

18. **Standard Form of a Polynomial**: To express a polynomial by putting the terms in descending exponent order.

19.**Term:** A number, a variable, or a product of numbers and variables.

20.**Trinomial**: An algebraic expression with three unlike terms.

21. **Variable:** A letter or symbol used to represent a number.

22. **Volume:** The amount of space occupied by an object.

23.**Whole numbers:** The numbers 0, 1, 2, 3, ….

**The properties of operations**. Here *a*, *b* and *c* stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.

*Associative property of addition* (*a + b*) *+ c = a +* (*b + c*)

*Commutative property of addition a + b = b + a*

*Additive identity property of 0 a +* 0 *=* 0 + *a* = *a*

*Existence of additive inverses* For every *a* there exists –*a* so that *a* + (–*a*) = (–*a*) + *a* = 0.

*Associative property of multiplication* (*a* × *b*) × *c = a* × (*b* × *c*)

*Commutative property of multiplication a* × *b = b* × *a*

*Distributive property of multiplication over addition a* × (*b* + *c*) *= a* × *b* + *a* × *c*

Definitions and activities for these and other terms can be found on the Intermath website http://intermath.coe.uga.edu/dictnary/homepg.asp