EDUC501 OP13 G62 SM11 CTA Mathematics

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Lesson Plan 2 – Expressions – Day 2

­TITLE: **Vocabulary Associated with Algebraic Expressions**

CONTEXT OF LESSON/PRE-REQUISITE KNOWLEDGE:

* + This is the second lesson of the “Algebraic Expression” Unit. Students have been introduced to translating verbal expressions to algebraic expressions. They have learned terms/phrases for addition, subtraction, multiplication, division, and exponents.
* Students should know what an operation is and know the difference between an expression and equation.
* Students should be able read and comprehend basic math vocabulary, take notes, and listen attentively during direct instruction (20-30 minutes). Additionally, students should be able to work in small learning groups and remain on task with minimal redirection for up to 20 minutes.

LEARNING OBJECTIVES:

* Students will learn vocabulary associated with algebraic expression, including: **variable, term, constant, and coefficient.**
* Student will be able to identify a variable, term, constant, coefficient, and an algebraic expression or equation.
* Students will be able to translate verbal phrases into algebraic expressions and algebraic expressions into verbal phrases.
* Students will be able to write, read, and evaluate algebraic expressions in which letters stand for numbers.

RELATED 2009 VIRGINIA STANDARDS OF LEARNING:

* **SOL A.1**: *The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.*

MATERIALS NEEDED:

* Whiteboad or interactive board
* Overhead projector
* “Verbal & Algebraic Expressions” [ *Attached file: verbalalgebraicexpressionsmatchingactivity.doc])*
* “Parts of an Equation” diagram [*Attached file: partsofanequation.doc*].
* Verbal Expressions Multiple Choice Overhead Practice [Attached file – verbalexpressionmultiplechoiceoverhead.doc]
* (4) Large index card labeled A, B, C, D for each student or a dry erase board & marker
* “Translating Words into Mathematical Symbols 1.5 Exercises p. 33-4”  *[attached file: 1-5exercise.pdf & 1-5exercise-1.pdf].*
* “Verbal Expression Matching Game” (*materials:* [Attached file: verbalexpressionmatchinggame.doc]
* Scissors, & tape
* Expression Equations 1-4 Extra Practice ”  *[attached file: expressionequations1-4.doc].*
* “Naming Parts of Expressions” [Attached file: namingpartsofexpression.doc].
  + “Verbal Expressions With No Variables” [Attached file: verbalexpressionnovariable.doc]
  + “Verbal Expressions With Variables” [Attached file: verbalexpressionwithvariable.doc]

Warm-up/Review Activity: (15-20 minutes):

Activity 1: Write Your Own Expression (5-10 minutes)

* Use the previous day’s wrap-up/assessment activity for today’s warm-up. Students were assigned to write a verbal expression on one side of an index card and give the algebraic expression (the answer) on the back side. Have students to exchange their card with a partner and have the partner check their answer. Then select four or five students to share their card with the class. Have the students explain each translating word and compare it to the expression.

Activity 2: “Verbal and Algebraic Expressions Matching Activity” (10 minutes) *developed by Kirkbride*

* This activity is good to do on the first week of school. It gives students an opportunity to get to know other students. Students are expected to enact with other students, so please advise them of the work habit and behavioral expectations.
* Distribute one half sheet (A – F) to each student (worksheet: “Verbal & Algebraic Expressions” [ Attached file: verbalalgebraicexpressionsmatchingactivity.doc]) and give brief directions.
* There are six different half sheets of paper. Each student is given a sheet with a table with 3 columns: algebraic expressions, verbal expressions, and names. For each algebraic expression on their table, they have to find another student with a matching verbal expression and vice versa. When they find a match, they complete that section of the table, including writing the name of the student and letter of who they matched with. It is set up so that each student will have one and only one match with a table that is different from their own. Signal the students at intervals how much time is left on this activity to keep them on task.

Implementation: (30-40 minutes)

* Introduction:
  + Ask students to explain the differences and similarity between an expression and an equation. *(Answer: An expression is a group of terms (the terms are separated by + or – signs). An equation says that two things are equal. So that makes an equation a statement. An equation will have an equal sign “=”).* Have students provide an example.
  + Say: “The equation: x + 2 = 6, it is making a statement that what is on the left, x+2, is equal to what is on the right, 6, the letter (in this case x) just means the unknown or the variable.”
  + Say: “Let’s take a look at the other parts of an equation. We will be learning some important vocabulary words that you will use in Algebra to describe expressions. Please listen carefully and take notes.”
  + Write each of the following words on the board and ask students to read them and tell you what they think they are: variable, constant, coefficient, term, algebraic expression. Write the students’ definition or example on the board. Ask for several definitions/examples.
  + Show students the “Parts of an Equation” diagram [*Attached file: partsofanequation.doc*].
  + Read and discuss the following vocabulary word: expression, equation, variable, constant, coefficient, operation (operator), exponent (index, power, base), terms/like terms, polynomial (monomial, binomial, trinomial).
  + Go back to the students’ responses on the board and ask students if they think any of the definitions on the board are correct. If there are, have the class decide, by voting, which ones.
  + Clarify the definitions and have students take notes on their graphic organizer.
* **Algebraic Expression**—contains at least one variable, one number and one operation. An example of an algebraic expression is n + 7.
* **Variable**—a letter that is used in place of a number. Sometimes, the variable will be given a value. This value will replace the variable in order to solve the equation. Other times, the variable is not assigned a value and the student is to solve the equation to determine the value of the variable.
* **Constant**—a number that stands by itself. The 7 in our previous vocabulary term is an example of a constant.
* **Coefficient**—a number in front of and attached to a variable. For example, in the expression 8x + 3, the 8 is the coefficient.
* **Term**—each part of an expression that is separated by an operation. For instance, in our earlier example n + 7, the terms are n and 7.

\*The resource used for these definitions is: <http://alex.state.al.us/lesson_view.php?&print=friendly&id=24067>

Wrap-up/Assessment

* Activity 3 - Assessment: “Naming Parts of Expressions” [Attached file: namingpartsofexpression.doc].
  + Say: “For a quick review of what we learned today and to assess what you learned about verbal expression yesterday, I have a short worksheet for you to complete.”
  + Distribute to students “Naming Parts of Expressions” worksheet. This assignment can be used as a daily grade or a formal assessment (quiz).
* Alternative Practice/Assessment: “Translating Words into Mathematical Symbols 1.5 Exercises p. 33-4”  *[attached file: 1-5exercise.pdf & 1-5exercise-1.pdf].* This has an extended activity involving longer and word problems.

Reinforcement/Activities

* Activity 4- Verbal Expressions Multiple Choice Overhead Practice developed by Lexie, Clarksville, TN (*materials: [*Attached file – verbalexpressionmultiplechoiceoverhead.doc]*, overhead projector and 4 cards labeled A, B, C, D for each student or a dry erase board & marker. )* - 10 minutes
* This activity is great to use as a review of verbal statements. There are 18 different problems that focus on the areas that students mix up the most. For this activity, each student will need “A”, “B”, “C”, & “D” cards (make sure that the letters are big enough for you to see from around the room and I recommend that all letters are the same color, otherwise students might copy from a neighbor). You can use dry erase boards, but they are more distracting than the cards. Put one of the overheads up; give the students 5 to 10 seconds to figure out the answer, then say, “One-Two-Three-Up.” Make sure that they do not hold up their cards early. Scan the room to see how they did. If you see a lot of the same answers that are wrong, you could ask the students why they choose that answer. Sometimes it is helpful to have the students explain their thought process. You will find it interesting to see what cues students take from the problems to eliminate answers or choose an answer.  
  You can use the overheads throughout the year (they most likely will not remember all the answers). It is a great way to review and refresh their memories about the tricky words of less than, sum, difference, quotient, twice, etc.
* Activity 5 – “Verbal Expression Matching Game” (*materials:* [Attached file: verbalexpressionmatchinggame.doc] , *scissors, & tape*) - 10 – 15 minutes
* This can be a group activity. Like Dominos, the students match the sides with the algebraic expression or equation with the correct verbal expression. They can tape the matching sides together or glue the puzzle on a blank sheet of paper.

* Other reinforcement activities:
  + Expression Equations 1-4 Extra Practice *[Attached file: expressionequation1-4.doc]*
  + Worksheet – “Verbal Expressions With No Variables” [Attached file: verbalexpressionnovariable.doc]
  + Worksheet – “Verbal Expressions With Variables” [Attached file: verbalexpressionwithvariable.doc]

These worksheets were developed by Summerking, Kingsland, GA. They have 26 verbal expressions on one side of the worksheet and math expressions/equations on the other side which they may choice from. One worksheet doesn’t include variables and the other does, to differentiate instruction if needed.

Additional Resources:

* Visual: Basic definition of an equation and parts of an equation vocabulary words: [**http://www.mathsisfun.com/algebra/definitions.html**](http://www.mathsisfun.com/algebra/definitions.html)
* Visual: “Translating Word Problems into Equations”: provide step-by-step guidelines to writing an equation from a word problem with sample problems.

<http://www.algebralab.org/lessons/lesson.aspx?file=Algebra_OneVariableWritingEquations.xm>

* Visual: “Teaching Method for Writing Algebraic Expressions” *[Attached file: teachingmethodwritingexpressions.doc].* These notes can be used to introduce how to translate algebraic expression into verbal statements, and vice versa.
* Evaluating expression practice**:** [**http://www.aaastudy.com/equ.htm#topic1**](http://www.aaastudy.com/equ.htm#topic1)

MEETING THE NEEDS OF ALL STUDENTS: (See attached file “General Teaching Strategies/Classroom Accommodations for Students with Special Needs”: *[teaching strategiesspecialneeds.doc]* taken from “Making Modifications in the Classroom: A Collection of Checklists”)

* Be sure that you know which students have learning disabilities and what accommodations they need to be successful. Use cooperative learning strategies when appropriate and assign peer helpers to assist students, as needed. Allow frequent opportunities for movement and interaction, but provide clear and concise classroom expectations and consequences. Since this lesson includes a lot of new vocabulary words, make sure that you alert student’s attention before expressing key points. Use visual aids and hands-on activities whenever possible. The pacing of each activity should be considered based on your learners. Change task frequently and set time limits for specific tasks. Maintain students’ interest by establishing relevancy and purpose for learning by relating concepts to previous experiences and real-life situations. Frequently use age-appropriate positive and personal comments to reinforce appropriate effort and work habits. Provide consistent feedback and check assignments for progress and completion .

WHAT COULD GO WRONG WITH THIS LESSON **AND** WHAT WILL YOU DO ABOUT IT?

* It has been my experience that not enough time is spent early in the school year on introducing and exposing students to math vocabulary. Although I like to jump right in and teach a lot of computation concepts, I now realize that it is important to teach students Algebra language and encourage them to use it frequently. Limited English students and those with a learning disability may struggle remembering and understanding these vocabulary words. Frequent review and practice with expressions is imperative. Increase the complexity as students show understanding. This lesson may take more than one day to complete. Adjust activities if students are becoming inattentive. Have an assignment available (possibly reviewing a previously taught concept or a puzzle) that can be completed independently or with little instruction, if needed.

CONNECTION TO CTA:

* I would definitely consider Dan Mulligan’s T.A.P.S. (**T**otal, **Alone**, **P**airs, **Small** group) block teaching approach for this lesson, as well as many others. This approach would help to maintain students’ interest. In addition, I would also incorporate Dr. Mulligan’s “Spin the Word or Phrase” enrichment activity (CTA handout p. 19). Dr. Mulligan also made a great suggestion to have students develop a student glossary with an image to capture meaning of a word. This would be extremely useful with ESL and students with a learning disability. Dr. Mulligan spoke about differentiation of instruction and giving rehearsal time to students so that they get the opportunity to discuss their solution with his or her peer before responding aloud. I also see the importance of developing lesson that includes the 4 C’s (critical think and problem solving, communication, collaboration, and creativity and innovation). As discussed by Dr. Mulligan, I look forward to developing ways to provide unobtrusive assessment that will allow me to assess while learning continues. I may consider using “wordle.net” on this lesson since it will help students identify essential words in the definitions. Lastly, I feel that this particular lesson follow the philosophy of R.J. Marzano, as mentioned by Dr. Mulligan, by building essential background knowledge.

*Equations - Worksheet Page 1-4*

**Team Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time: \_\_\_\_ Score/Points: \_\_\_**

**DIRECTIONS:** *Translate each of the following into an equation.*

1. Three less than “x” is equal to 13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. The product of 9 and “m” is 45. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. A number divided by 6 is 18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. A number plus 17 is 25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Seven times a number is 28. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. A number divided by 7 is 9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. A number minus 12 is 20. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. The quotient of “y” and 3 is 25. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. One-fifth of “r” is 15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. Six less than 2 times “y” is 34. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Five more than “n” is equal to 9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. A number increased by 3 is 19. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13. The difference of “p” and 7 is 30. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Fifteen multiplied by “k” is 75. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. The sum of 3y and 5 is 47. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Match the vocabulary to the correct definition. Write the answer in the blank on the left side of that paper.

|  |  |  |
| --- | --- | --- |
| \_\_\_\_\_ | 1. Algebraic Expression | 1. Each part of an expression separated by an operation |
| \_\_\_\_\_ | 1. Coefficient | 1. A number that stands by itself |
| \_\_\_\_\_ | 1. Constant | 1. A number that does not stand by itself. It is attached to the variable. |
| \_\_\_\_\_ | 1. Term | 1. A letter that stands for a particular numerical value |
| \_\_\_\_\_ | 1. Variable | 1. A number sentence without an equal sign, has at least one two terms and one operation |

Identify each part of the algebraic expression as the coefficient, constant, or variable.

1. 4x - 12

4 is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

x is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12 is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. a + 3b

a is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3 is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. 6y

6 is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

y is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Resource: <http://www.mathsisfun.com/algebra/definitions.html>

## Parts of an Equation

Here we have an equation that says 4x-7 equals 5, and all its parts:

|  |  |
| --- | --- |
| http://www.mathsisfun.com/algebra/images/variable-constant.gif | A **Variable** is a symbol for a number we don't know yet. It is usually a letter like x or y.  A number on its own is called a **Constant**.  A **Coefficient** is a number used to multiply a variable (4x means 4 times x, so 4 is a coefficient)  An **Operator** is a symbol (such as +, ×, etc) that represents an operation (ie you want to do something with the values). |
|  |  |
| http://www.mathsisfun.com/algebra/images/expression-term.gif | A **Term** is either a single number or a variable, or numbers and variables multiplied together.  An **Expression** is a group of terms (the terms are separated by + or - signs) |

So, now we can say things like "that expression has only two terms", or "the second term is a constant", or even "are you sure the coefficient is really 4?"

**Exponents**

|  |  |
| --- | --- |
| 8 to the Power 2 | The[exponent](http://www.mathsisfun.com/exponent.html) (such as the 2 in x2) says **how many times** to use the value in a multiplication.  Examples:  **82 = 8 × 8 = 64**  **y3 = y × y × y**  **y2z = y × y × z** |

Exponents make it easier to write and use many multiplications

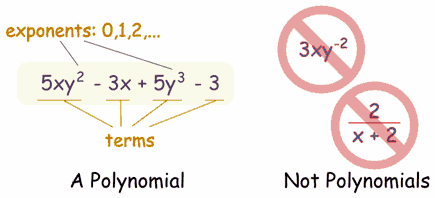
Example: **y4z2** is easier than **y × y × y × y × z × z**, or even **yyyyzz**

**Polynomial**

Example of a Polynomial: **3x2 + x - 2**

A [polynomial](http://www.mathsisfun.com/algebra/polynomials.html) can have **constants**, **variables** and the **exponents 0,1,2,3,...**

And they can be combined using addition, subtraction and multiplication, ... **but not division!**



**Monomial, Binomial, Trinomial**

There are special names for polynomials with 1, 2 or 3 terms:

monomial, binomial, trinomial

**Like Terms**

[Like Terms](http://www.mathsisfun.com/algebra/like-terms.html) are **terms** whose variables (and their [exponents](http://www.mathsisfun.com/exponent.html) such as the 2 in x2) are the same.

In other words, terms that are "like" each other. (Note: the **coefficients** can be different)

**Example:**

|  |  |  |
| --- | --- | --- |
| (1/3)xy2 | -2xy2 | 6xy2 |

Are all **like terms** because the variables are all **xy2**

**teaching method for Writing algebraic verbal expressions** Developed by Lexie, Clarksville, TN  
**Write each expression algebraically.**

*When teaching these examples, it is a good idea to start teaching them methods on how to underline, circle, and write above the problems. One thing that I do is whenever they see the words sum or difference, they will start the parenthesis, find the word “and” and write a + or -, and then find the end where the closing parenthesis goes. That way they know exactly where the parentheses go. When they see a basic word that is an operation, I usually will have them put the sign over the word.*

1. 24 less than three times a number. *3x – 24*



* *Once they see the word less than, I have them stick – 24 at the end of the line.*
* *Place a times sign over the word “times”*
* *Finish writing the “three times a number” in front of the – 24.*

2. 5 times the sum (of a number and 2.) *5( x + 2)*



* *Start by placing a times sign over the word “times”*
* *They should see the word sum, so ask, “what do you have to have with the word sum?” They should answer plus and a parentheses. So, I start open the parenthesis after the word sum.*
* *Next they need to look for the word “and”, place a + over the word*
* *After the plus sign, they will learn to close the parenthesis after the number or phrase.*



3. The quotient of a number squared and 5. *x2 ÷ 5 or*

* *They should recognize that the word quotient is an “and” word, so they will place a ÷ over the word “and”*
* *They should see the word “a number” and know to write a variable*
* *They should put a small 2 above squared*



4. Twice a number minus the number cubed. *2x – x3*

* *First, they should see the word “twice”, and write a 2 •*
* *Next, they should put a – over the word minus*
* *They should see the word “a number” and know to write a variable*
* *Finally they should put a small 3 above the word cubed*

Teaching Strategies/classroom accommodations for student with learning and/or behavior problem.

**Source:** <http://alex.state.al.us/lesson_view.php?id=24067> **Alabama Learning Exchange**

Each area below is a direct link to general teaching strategies/classroom accommodations for students with identified learning and/or behavior problems such as: reading or math performance below grade level; test or classroom assignments/quizzes at a failing level; failure to complete assignments independently; difficulty with short-term memory, abstract concepts, staying on task, or following directions; poor peer interaction or temper tantrums, and other learning or behavior problems. *Be sure to check the student's IEP for specific accommodations.*

**Assisting the Reluctant Starter**

* Give a personal cue to begin work
* Give work in smaller units
* Provide immediate reinforcers and feedback
* Make sure the appropriate books and materials are open to the correct pages
* Introduce the assignment in sequential steps
* Check for student understanding of instructions
* Check on progress often in the first few minutes of work
* Provide time suggestions for each task
* Provide a checklist for long detailed tasks
* Other

**Presentation of Material**

* Break assignments into segments of shorter tasks
* Use concrete examples of concepts before teaching the abstract
* Relate information to the student's experiential base
* Reduce the number of concepts presented at one time
* Provide an overview of the lesson before beginning
* Monitor the student's comprehension of language used during instruction
* Schedule frequent, short conferences with the student to check for comprehension
* Provide consistent review of any lesson before introducing new information
* Allow student to obtain and report information utilizing: cassette recorders, dictation, typewriters/computers, interviews, calculators, and fact sheets
* Highlight important concepts to be learned in text material
* Monitor the rate at which material is presented
* Give additional presentations by varying the methods using repetition, simpler explanations, more examples, and modeling
* Require verbal responses to indicate comprehension
* Give frequent reminders of homework assignments
* Provide clear, concise directions, and concrete examples for homework assignments
* Assign tasks at an appropriate reading level
* Allow for the oral administration of tests
* Check assignment sheet for accuracy
* Other

*Reference: Interventions for Prereferral taken from "Making Modifications in the Classroom: A Collection of Checklists," Arlington County Public Schools, Arlington, Virginia.*

**Time Demands**

* Increase time allowed for completion of tests or assignments
* Reduce the amount of work or length of tests
* Prioritize assignments and/or steps to completing assignments for the student
* Space short work periods with breaks or change of tasks
* Consistently follow a specific routine
* Alternate quiet and active tasks
* Set time limits for specific task completion
* Other

**Attention**

* Establish relevancy and purpose for learning by relating to previous experiences
* Shape approximations of desired behavior by providing direct reinforcement such as praise or immediate feedback for correct answers
* Seat student close to teacher
* Make a positive, personal comment every time the student shows any evidence of interest
* Make frequent check for assignment progress/completion
* Give advance warning of when a transition is going to take place
* Use physical proximity and touch to help student focus
* Other

**Environment**

* Use study carrels
* Seat student in an area free of distraction
* Use preferential seating
* Allow the student to select his/her seating
* Help keep student's work area free of unnecessary materials
* Use checklists to help the student get organized
* Frequently check the organization of the student's notebook
* Monitor the student's use of his/her assignment sheet
* Check the assignment sheet for accuracy
* Provide opportunities for movement
* Other

**Materials**

* Allow for spelling errors
* Allow student to use either cursive or manuscript
* Set realistic and mutually agreed upon expectations for neatness
* Let student type, record, or give answers orally instead of writing
* Avoid pressures of speed and accuracy
* Provide copies of notes
* Reduce the amount of copying from text and board
* Keep written assignments and work area free from extraneous and/or irrelevant distracters
* Review visual task with student and make sure student has a clear understanding of all parts of the assignment

*Reference: Interventions for Prereferral taken from "Making Modifications in the Classroom: A Collection of Checklists," Arlington County Public Schools, Arlington, Virginia.*

**Materials (continued)**

* Avoid cluttered worksheets by using techniques such as blocking (blocking assignments into smaller segments); cutting (cut worksheets into sections); and highlighting, color coding, or underlining
* Give written directions to supplement verbal directions
* Keep statements simple and avoid the use of metaphors, idioms, and puns
* Familiarize student with any new vocabulary before beginning the lesson
* Alert student's attention before expressing key points
* Use visual aids such as charts and graphs
* Use manipulative, hands-on activities whenever possible
* Cue student by calling his/her name before asking questions
* Always demonstrate how new material relates to previously learned information
* Contract with student and use rewards for completing of contract
* Check the student's notebook to ensure the use of dividers, assignment sheets, and calendars
* Provide a due date on written assignments
* Provide a specific place for turning in completed assignments
* Other

**Using Groups and Peers**

* Use cooperative learning strategies when appropriate
* Assign a peer helper to check understanding of directions
* Assign a peer helper to read important directions and essential information
* Assign a peer tutor to record material dictated by the student
* Other

**Dealing with Inappropriate Behavior**

* Provide clear and concise classroom expectations and consequences
* Consistently enforce rules
* Avoid the use of confrontational techniques
* Provide student with alternatives
* Designate a "cooling off" location within the classroom
* Assign activities which require some movement
* Use praise generously
* Avoid power struggles
* Ignore attention-getting behavior for a short time
* Avoid criticizing the student
* Communicate frequently with parents
* Monitor levels of tolerance and be mindful of signs of frustration
* Speak privately, without the audience of peers, to student about inappropriate behavior
* Establish Behavioral Contract
* Other

*Reference: Interventions for Prereferral taken from "Making Modifications in the Classroom: A Collection of Checklists," Arlington County Public Schools, Arlington, Virginia.*

**Algebra I – Verbal and Algebraic Expressions: sheet A**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| Algebraic Expression | Verbal Expression | Name/Letter |
|  |  |  |
|  | 5 more than twice x |  |
|  |  |  |
|  | The difference of 17 and 5 times a number |  |
|  |  |  |

**Algebra I – Verbal and Algebraic Expressions: sheet C**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| Algebraic Expression | Verbal Expression | Name/Letter |
|  |  |  |
|  | 3 decreased by the product of 5 and x |  |
|  |  |  |
|  | The sum of x to the 5th power and 3 times y |  |
|  |  |  |

**Algebra I – Verbal and Algebraic Expressions: sheet E**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| Algebraic Expression | Verbal Expression | Name/Letter |
|  |  |  |
|  | 2 less than x to the fifth power |  |
|  |  |  |
|  | The product of 5 and x |  |
|  |  |  |

**Algebra I – Verbal and Algebraic Expressions: sheet B**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| Algebraic Expression | Verbal Expression | Name/Letter |
|  | 5 less than x |  |
|  |  |  |
|  | The sum of x and twice y |  |
|  |  |  |
|  | The product of 5 and x squared |  |

**Algebra I – Verbal and Algebraic Expressions: sheet D**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| Algebraic Expression | Verbal Expression | Name/Letter |
|  | 5 increased by 3 times a number |  |
|  |  |  |
|  | The difference of 3 times x squared and y |  |
|  |  |  |
|  | The sum of a number and 5 |  |

**Algebra I – Verbal and Algebraic Expressions: sheet F**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PERIOD:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |  |
| --- | --- | --- |
| Algebraic Expression | Verbal Expression | Name/Letter |
|  | the product of 5 and the third power of x |  |
|  |  |  |
|  | The difference of 5 times x cubed and 2 |  |
|  |  |  |
|  | 5 squared |  |

Six less than twice a number.

1. 6 – 2x
2. 6 – x2
3. 2x – 6
4. x2 – 6

Three times the sum of a number and 5.

1. 3(x + 5)
2. 3x + 5
3. 3(x – 5)
4. 3x – 5

Five less than half of a number.

1. 5 – ½ x
2. ½(5 – x)
3. ½(x – 5)
4. ½ x – 5

Four times the difference of a number squared and six.

1. 4(2x – 6)
2. 4(x2 – 6)
3. 4(2x + 6)
4. 4(x2 + 6)

Eight less than four times a number.

1. 4x – 8
2. 8 – 4x
3. 4(x – 8)
4. 4(8 – x)

Twice the sum of a number and seven.

1. 2(x + 7)
2. 2x + 7
3. 2(x – 7)
4. 2x – 7

Ten less than five times a number cubed.

1. 5x2 – 10
2. 5x3 – 10
3. 10 – 5x2
4. 10 – 5x3

Three times the difference of a number squared and 15.

1. 3x2 – 15
2. 3(2x – 15)
3. 3(x2 – 15)
4. 3(15 – x2)

Sixteen less than the quotient of twice a number and five.



A. B.



C. D.

A number squared increased by twice the sum of another number cubed and six.



A.



B.



C.



D.

The sum of a four times a number and six divided by the number squared.



A. B.



C. D.

Two-thirds of a number decreased by twelve.

A.



B.



C.



D.The square of a number decreased by six.

1. 6 – 2x
2. 6 – x2
3. 2x – 6
4. x2 – 6

Twice the sum of a number and five.

1. 2(x + 5)
2. 2x + 5
3. 2(x – 5)
4. 2x – 5

Five less than three-fourths of a number.

1. 5 – ¾ x
2. ¾ (5 – x)
3. ¾ (x – 5)
4. ¾ x – 5

Four less than the difference of a number squared and six.

1. 4 – (2x – 6)
2. 4 – (x2 – 6)
3. (2x – 6) – 4
4. (x2 – 6) – 4

Ten less than a number cubed.

1. 10 – x3
2. x3 – 10
3. 10 – 3x
4. 3x – 10

The sum of twice a number and 7

1. 2(x + 7)
2. 2x + 7
3. 2(x – 7)
4. 2x – 7

