M8E: Unit 6.1 Vocabulary and Like Terms

* 1. VOCABULARY

Label with the words: variable, coefficient, term:

Algebraic expression:

Equation:

Examples:

|  |  |
| --- | --- |
| Algebra  | meaning |
| x + 4 = 7  |   |
| x – 9 = 12  |   |
| 2x = 8  |   |
| -5x = 15  |   |
| 3x + 4 = 16  |   |

|  |  |
| --- | --- |
| Algebra  | Meaning |
| 3x = 12  |    |
|   |  6 more than a number  |
|  X + 8 = 15 |    |
|   | 4 times a number is -24  |
|   | 4 less than a number is 9  |

* 1. Remember from elementary school:

-same with Algebra:

Ex: 6x + 7x =

Ex: 6x + 7x + x =

Ex: 6x + 7x + 4y =

Ex: 6x + 7x + 4y – 6y =

-do: handout

ENGLISH TO ALGEBRA

|  |  |
| --- | --- |
| ENGLISH STATEMENT  | ALGEBRAIC EXPRESSION and ARITHMETIC MEANING |
| Twice a number  |   |
| Double a number  |   |
| More than  |   |
| Sum of  |   |
| Increased by  |   |
| Less than  |   |
| Difference between  |   |
| Is  |   |
| Of  |   |
| Product   |   |
| Quotient  |   |
| 5 more than a number  |   |
| A number is increase by 5  |   |
| 5 less than a number  |   |
| Difference between a number and 5  |   |
| Product of number and 5  |   |
| Quotient of a number and 5  |   |
| 3 more than a double a number  |   |
| 1 less than double a number  |   |
|   | 3x  |
|   | x- 7  |
|   | 7-x  |
|   | x+7  |
|   | 3x+7  |
|   | x÷7  |
|   | 7÷x |
|  Product of six and a number less than 4 |   |

|  |  |
| --- | --- |
| A number squared |  |
| Value of x quarters |  |
| Value of x dimes |  |
| Number of seconds in ‘m’ minutes |  |
| Value of x quarters and y dimes |  |

M8E: unit 6.2: Algebra with Models for Adding and Subtracting

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* 1. What is algebra?

-it is a branch of mathematics that uses symbols and letters to represent numbers in formulas and equations.

* 1. How can we use models to show adding and subtracting in algebra?

* 1. Solve using the 'algebra tile method'

Ex: x+4 = 7

Ex: x-5 = -7

 ii) solve using the 'balance method'

Ex: x+4 = 7

Ex: x - 5 = -7

 iii) solve using the 'flow chart method'

 ex: x + 4 = 7

 ex: x - 5 = -7

* 1. How can we represent these methods by doing algebraic steps?

 ex: x + 4 = 7

Ex: x - 5 = -7

Note: for all the methods, you want the variables on 1 side of the '=' sign and

 the numbers on the other side of the '=' sign.

Try:

* 1. X + 7 = 9 2) X - 3 = 11

* 1. X + 5 = -3 4) X - 2 = -5

* 1. 6 + y = 8 6) -5 + y = 2

-do: handouts (daffynition decoder, Math 8 solving equations)

M8E: Unit 6.3: solving algebra (multiplying and dividing)

Last time:

 ex: x + 5 = 7

Balance flow chart algebra steps

Now: 3x = 12

 -3x = 12





 3x + 5 = 23

 3x - 5 = -23

 -3x + 5 = -23

 2x + 3x - 6 = 29



Try:

2x = 10 -2x = -10

2x + 5 = 15 5 + 2x = 15

-2x + 5 = -15 5 - 2x = -15





Do: handouts ( math 8-solving equations algebraically; why didn't the elephant like to play cards in the jungle)

 -WB pg 201 #2 - 4 (left)

M8E: Unit 6.4: algebra with fractions, decimals and parentheses

* 1. How do we do algebra with fractions?







* 1. How do we do algebra with decimals?

-the usual way…balance, flow chart or algebra steps

Ex: x - 1.5 = 9.4 ex: 3x + 1.5 = 13.5

* 1. How do we do algebra with parentheses?

-use the distributive principal!

Ex: 3(x + 2) = 24 ex: -3(x - 2) = 24

-do math 8E/math 9 handout (exercise 4-3: from section A and section B: pick 10 from each section = 20 total))

M8E: unit 6.5: collecting like terms and more practice

How do we do:

5y + 9 = 2y - 3 -8x - 5 = -9x - 7

3y + 2 = 5y - 7 1 + 5(x-1) = 4(x-3) + 6

Do: WB pg 203 #5 (left)

 pg 210-213 #1-4 (5 each)

M8E: Unit 6.6 and Unit 6.7 +/- Linear Inequalities

* 1. What is an inequality?

-an inequality states that 2 values are not equal. It may model a situation with a range of numbers instead of a single number as an acceptable answer/response.

-inequality symbols:

|  |
| --- |
| * + 1. How do we write an inequality to describe a situation?
 |

|  |  |
| --- | --- |
| X is less than -2  |   |
| You must be at least 16 to get a driver's license  |   |
| A child under 23 kg must ride in a car seat  |   |
|   |  x> 5 |
|   |  y ≤ 5 |

* 1. How do we add/subtract inequalities?

-do like regular algebra…variables on 1 side and numbers on the other side of the '=' sign.

|  |  |  |
| --- | --- | --- |
|   | What does it mean? | On a number line? |
| X + 2 < 5      |   |   |
| X + 2 ≤ 5     |   |   |
| 3x > -12      |   |   |
| 3(x + 2) < 18        |   |   |

Note: the variable is usually on the **left** side of the inequality.

Ex: x < 5

 If the variable is on the **right** side, 5 < x, please move the variable to the left side and 'flip' the inequality (ie: 5<x changes to x>5)…but make sure you know what 5<x means, as it shows up in section **(D)**

Sometimes you may get odd answers like:

 i) 0 < 1 : this is a *true* statement…which means the answer is 'all real numbers' (all the numbers for 'x' would work for the equation).

 ii) 0 > 1: this is a *false* statement…means 'not possible' (all numbers of 'x' would NOT work for the equation)

* 1. Try, solve and graph:

* 1. X - 2 < 7 2) x - 2 < -7

* 1. 3x + 2 > 2x + 17 4) 3(x+2) ≥ 2(x+3)

 Other types of questions:

-some inequalities may show a range of possible answers between a 2 numbers.

Ex: The Math Odyssey 8 marks are between 73 and 95%.

Ex: Normal body temperature can shift between 36.1oC to 37.2oC

Do: WB pg 215 #2, 3, 5, 6

 pg 224 #3a-l

M8E: unit 6.8: Multiplying Linear Inequalities

How do we solve these type of linear inequalities?

-similar to regular algebra…except when *multiplying* or *dividing* with a *negative*

 number to solve for 'x', we **MUST** flip the inequality.

Ex: 3x < 6 -3x < 6

Why must we 'flip' the inequality?....if we don't, the answer doesn't make sense.

 ex: -3x < 6



Ex: 3x -3 ≤ 4x -2 -3(x + 7) > 4x - 9

-do WB pg 228 #2-4 (left column), 6

-upcoming: pretest, corrections, test

January 30, 2016

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