

WORKSHEET T 3

MATHEMATICAL LANGUAGE AND SYMBOLS (PART 1)

Let's Do This!

A. Let the number be represented by any variable. Translate the following English phrases to mathematical phrases.

Ex. Eight less than twice a number. Answer: $2x - 8$

- Twice the sum of a number and ten.
= $x^2 + 10$
- The square of the sum of five and a number.
= $(x+5)^2$
- The product of two consecutive numbers subtracted from eighty.
= $x^2 + x - 80$
- The square of a number added to its reciprocal.
= $x^2 + \frac{1}{x}$
- The square root of the sum of the number and four if greater than zero.
= $\sqrt{x+4} > 0$
- Two more than five times a number is equal to two less than a number.
= $5x + 2 = x - 2$
- One more than three times a number is ten.
= $3x + 1 = 10$
- The sum of the squares of two consecutive numbers.
= $x^2 + (x+1)^2$
- The square of the sum of four and a number.
= $(x+4)^2$
- One half of some number increase by six.
= $\frac{1}{2}x + 6$

B. Translate the following mathematical phrases to English phrases.

Ex. $2x - 8$. Answer: Eight less than twice a number.

- $N + 7$
= The sum of the number and seven
- $(x + y)^2$
= The square of the sum of two numbers
- $2mt$
= Twice the product of m and t
- $\frac{sx}{2}$
= Ratio of s and x to two
- $(2 + n^2)^2$
= The square of the sum of two numbers
- $x + 5 = 15$
= The sum of the number five is equal to 15.

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7. $3(x+4)$
=Thrice the sum of the number and four
8. $2f-20$
=Twenty less than twice a number.

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9. $kj-\sqrt{7}$
=The square root of seven less than the two number
10. $5x+4=x-2$
=Five times a number plus four equals to the number less than two

C. Write each of the following sets in Roster Form:

- The set of the first seven natural numbers.
 $A = \{1, 2, 3, 4, 5, 6, 7\}$
- The set of positive integers less than 15
 $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
- The set of letters in the word "mathematics".
 $A = \{M, A, T, H, E, I, C, S\}$
- The set of integers between -5 and 5.
 $A = \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$
- The set of prime factors of 36.
 $A = \{1, 2, 3, 4, 6, 9, 12, 18, 36\}$
- The set of all prime numbers between 1 and 25.
 $A = \{2, 3, 5, 7, 11, 13, 17, 19, 23\}$
- The set of the first four odd numbers divisible by 3.
 $A = \{3, 9, 15, 21\}$
- The set of names of the last four months of a year.
 $A = \{SEPTMBER, OCTOBER, NOVEMBER, DECEMBER\}$
- The set of any four geometrical figures names.
 $A = \{OVAL, SQUARE, TRIANGLE\}$
- The set of days in a week.
 $A = \{MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY\}$

D. Write each of the given set in the Set-Builder Form.

- $Y = \{2, 4, 6, 8, 10\}$
 $A = \{x | x \text{ is an even natural numbers less than } 12\}$
- $K = \{January, June, July\}$
 $K = \{x | x \text{ is a month whose name starts with letter J}\}$
- $R = \{5, 10, 15, 20, 25, 30\}$
 $R = \{x | x \text{ is a natural number up to } 30 \text{ and divisible by } 5\}$
- $A = \{16, 25, 36, 49, 64\}$
 $A = \{x | x \text{ is a perfect square natural number between } 15 \text{ and } 64\}$

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5. $M = \{-2, -1, 0, 1, 2\}$
 $M = \{x \mid x \text{ is an integer, } -2 \leq x \leq 2\}$

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MATHEMATICAL LANGUAGE AND SYMBOLS
(PART 1)

E. State, whether the given set is finite or infinite.

1. The set of all even integers.
= Infinite
2. $\{ \text{multiples of } 5 \}$
= Infinite
3. $\{ \text{fractions between } 1 \wedge 2 \}$
= Infinite
4. $\{ x \mid x \text{ is an integer between } -10 \wedge 10 \}$
= Finite
5. $\{ \text{prime numbers} \}$
= Infinite

F. State, whether each pair of sets, given below, is equal sets or equivalent sets.

1. $\{ a, b, c, d \} \wedge \{ 1, 2, 3, 4 \}$
= Equivalent sets
2. $\{ \text{even natural numbers} \}$ and $\{ \text{odd natural numbers} \}$
= Equivalent sets
3. $\{ \text{letters of the word member} \} \wedge \{ \text{letters of the word remember} \}$
= Equal sets
4. $\{ 2, 4, 6, 8, 10 \}$ and $\{ \text{even natural numbers less than } 12 \}$
= Equal sets
5. $\{ x \mid x \text{ is a month having } 33 \text{ days} \}$ and $\{ x \mid x \text{ is a year having } 360 \text{ days} \}$
= Equal sets