Section 4.5a – Modeling With Algebra

MPM1D

Part 1: English to Algebra

Example 1: Write an algebraic expression for each English phrase.

a) the sum of 5 and y _____

b) the product of 4 and x _____

c) the product of 4 and m, then increase the result by 7 _____

d) the sum of 4 and d, then multiply the result by 2 _____

e) add 4 to d, then double the result _____

f) three consecutive numbers _____

Example 2: Write an algebraic expression for each English phrase.

a) 7 more than twice a number

b) one-quarter of a number increased by 3

c) double the sum of a number and 5

d) triple a number

e) 6 less than one-half of a number

f) the quotient of a number and 4

Example 3: Write an equation for each English statement.

a) Five more than a number is twenty-seven.

b) Seven less than a number is 4.

c) Double a number less eleven is sixteen.

d) The sum of 4 consecutive integers is fifty.

e) Six times a number is 42.

Example 4: Write an equation for each sentence.

a) A number increased by six is twenty _____

b) A number multiplied by four is sixteen _____

c) Seven less than a number is fifteen _____

d) One fifth of a number is six _____

e) A number divided by six is seven. _____

f) Two more than triple a number is 14 _____

Part 2: Word Problems

When solving word problems,

- define the unknowns.
- write an equation to model the situation.
- solve the equation.
- answer the question asked in the problem.

Example 5: Mr. Jensen operates a variety store with his two best friends, Sidney and Evgeni. Sidney makes twice as much as Evgeni. Mr. Jensen makes $200 a week more than Sidney. The total weekly payroll is $1450. How much does each friend make?

Step 1: Let's define our variables:

Worker	Expression
Evgeni	
Sidney	
Mr. Jensen	
Total	

Step 2: Write an equation that relates these expressions to the total payroll

Step 3: Solve the equation

Step 4: Answer the question in context.

Example 6: Curtis works at a ballpark selling peanuts. He is paid $6/h plus a 50 cent commission for every bag of peanuts he sells.

a) Find Curtis' earnings if he sells 42 bags of peanuts during a 4 hour shift.

b) How many bags of peanuts must he sell to earn $100 in 7 hours?

Example 7: The length of a rectangle is 7m more than its width. The perimeter of the rectangle is 60m. What are the dimensions?