MTH 1W **2.10A Modelling with Algebra Day 1 Homework Handout**

**1. Define a variable and then write an equation to model the situation.**

a) Twelve decreased by a number is 4.
b) Reducing the square of a number by 7 gives 10.
c) The square of a number minus 3 times the number is 40.
d) Two more than 3 times a number is 26.
e) Ten reduced by 7 times a number is -11.
f) One half of 3 cm less than Leon's height is 103 cm.
g) Four fewer than 7 times the number of nickels is 26.
g) Katrina's mass is 21 kg more than one half of the mass of her mother. The sum of their masses is 102 kg.

**2. Write a let statement and an equation.**

a) Four years more than the square of Marnie's age is 85 years.
b) Three years less than twice Rod's age is 15 years.
c) Adding 12 years to double Alex's age gives 44 years.
d) Gina is 3 years older than her sister. The sum of their ages is 23 years.
e) Steve's age decreased by 2 years and then tripled is the age of his uncle. The difference of their ages is 22 years.
f) Five less than 3 times the number of nickels is 31.
g) Six more than twice the number of quarters is 22.
h) Nine less than the number of dimes, doubled is 48.
i) The number of pennies is 12 more than the number of dimes. There are 172 pennies and dimes.
j) The number of quarters is 3 times, 2 less than the number of dimes. The number of quarters minus the number of dimes is 40.
k) The sum of two consecutive integers is 17.
l) One number is 3 times another number. Their sum is 20.
m) A number squared and then decreased by 5 is equal to 4 times the number.
n) The sum of a number and 15 is equal to the square of the number, increased by 3.
o) The difference of the squares of two consecutive integers is 11.
p) The sum of the second and third of three consecutive integers is 7 more than the first integer.

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**Answers:**

1. a. Let x be the number. $12-x=4$
b. Let n be the number. $n^2-7=10$
c. Let x be the number. $x^2-3x=40$
d. Let n be the number.$3n+2=26$
e. Let s be the number. $10 -7s = -11$
f. Let h be Leon's height (m).
$\frac{1}{2}(h-3)=103$
g. Let m be the mother's mass (kg).
Let $\frac{1}{2}$ m+21 be Katrina's mass (kg).
$1\frac{1}{2}m+21=102$

2.a. Let me be Marnie's age (yrs).
$m^2+4=85$
b. Let r be Rod's age (yrs). $2r-3=15$
c. Let a be Alex's age (yrs). $2x+12=44$

d. Let s be the sister's age (yrs).
Gina's age is s+3.
$2s+3=23$
e. Let a be Steve's age(yrs).
Uncle's age is 3(a-2).
$2a-6=22$
f. Let n be the number of nickels.
$3n-5 = 31$
g. Let q be the number of quarters.
$2q + 6 = 22$
h. Let d be the number of dimes.
$2(d-9)=48$
i.Let c be the number of dimes.
Number of pennies is c+12.
$2c+12=172$
j. Let d be the number of dimes.
Number of quarter is 3(d-2).
$2d-6=40$
k. Let n be the first integer.
N+1 is the second integer.
$2n+1=17$
l. Let ne be one number.
3n is the other number.
$4n=30$
m. Let x be the number.
$x^2-5=4x$
n. Let x be the number.
$x+15=x^2+3$
o. Let b be the first integer.
Other integer is b+1.
$(b+1)^2 - b^2=11$
p. Let me be the first integer.
The others are m+1 and m+2.
$2m+3=m+7$