**Algebra Notes 1.5 Use a Problem Solving Plan**

**Key Concept---A Problem Solving Plan**

**Step 1: Read and Understand**---read, identify what you know and **what you are finding**

**Step 2: Make a Plan**---Decide on an approach

**Step 3: Solve the Problem**---Carry out your plan and if it doesn’t work try another approach

**Step 4: Look Back---**Check your answer and see if it makes sense

**Example 1: Running** You run in a city where the short blocks on north-south streets are 0.1 mile long. The long blocks on east-west streets are 0.15 mile long. You will run 2 long blocks east, a number of short blocks south, 2 long blocks west, then back to your starting point. You want to run 2 miles. How many short blocks should you run?

**Step 1: What do you know?**

The lengths of the long and short blocks.

The number of long east and west blocks.

The total distance to run.

 **What do you want to find?**

How many short blocks should you run?

**Step 2: Make a Plan:** Write a verbal model that represents the problem and solve for the unknown.

**Step 3: Solve the Problem**

**2 long blocks east + some number of short south blocks + 2 long blocks west**

**= 2 miles**

**If s = number of short blocks**

**2(0.15 miles) + 0.1s + 2(0.15 miles) = 2 miles**

**Let’s guess and check!**

If s = 10,

0.3 + 1 + 0.3 = 2

1.6 ≠ 2

If s = 20

0.3 + 2 + 0.3 = 2

2.6 ≠ 2

If s = 14

0.3 + 1.4 + 0.3 = 2

2 = 2 Check!

**Step 4: Look Back and Check**

Does it make sense?

Do we know another way to find the answer?

How about algebraically solving it?

.30 + 0.1s + .30 = 2 miles

.60 + 0.1s = 2 miles

-.60 + .60 + 0.1s = 2 -.60

0.1s = 1.40

$\frac{0.1}{0.1}s= \frac{1.40}{0.1}$

S = 14 short blocks---Check again!!!

**A formula** is an equation that relates two or more quantities.

**Important Formulas!!!**

**Temperature: C =** $\frac{5}{9}$**(F – 32)**

where C is degrees in Celsius and F is degrees in Fahrenheit

**Simple Interest: I = Prt**

 Where I = interest, P = principal,

 r = interest rate in decimal form, t = time

**Distance Traveled: d = rt**

 Where d = distance, r = rate or constant speed, t = time

**Profit: P = I – E**

 Where P = profit, I = income, and E = expenses

**Example 2:** A gardener determines the cost of planting daffodil bulbs to be $2.40 per square foot. If she makes $15 for each bouquet of daffodils and each bouquet uses a square foot of daffodils, what is her profit?

**Step 1: What do we know?**

 The cost of daffodils is $2.40 a square foot.

 Daffodil bouquets are $15 each.

 A bouquet takes a square foot of daffodils.

 Profit = Income – Expenses (P = I – E)

  **What are we finding?**

What is her profit?

**Step 2: Make a Plan**

 Use the profit formula to find profit.

**Step 3: Solve the Problem**

**P = $15 - $2.40 = $12.60**

**Step 4: Does it Make Sense?**

 **Yes!!!**

**You try:**

1. **What is the interest on $1000 invested for 3 years in an account that earns simple interest at an annual rate of 2%?**

**$60**

1. **A runner ran at a rate of 0.15 miles per minute for 40 minutes. The next day, the runner ran at a rate of 0.16 miles per minute for 50 minutes. How far did the runner run altogether?**

**14 miles**