

Math 365 Lecture Notes Section 1.3 – Algebraic Thinking

★ Principles/Standards for PreK – 2

Problem 1: At a local store the price tags in the figures below were on display. Give a thorough explanation to your 2nd grade class of how to find the cost of each object?



★ Principles/Standards for 3 – 5

Definitions

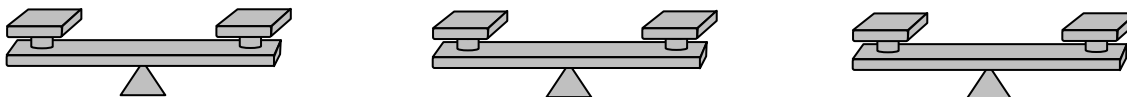
Variable:

Problem 2: Translate the given information into a symbolic expression.

One weekend, a store sold twice as many CDs as DVDs and 25 fewer tapes than CDs. If the store sold d DVDs, how many tapes and CDs did it sell?

★ Principles/Standards for 6 – 8

Problem 3: Solve $5 + x = 7$ for x . Demonstrate using the balancing scales below. (Note: You may not need to use all of the given scales.)



A good website that demonstrates the solving of equations using a balance.

http://matti.usu.edu/nlvm/nav/frames_asid_201_g_4_t_2.html?open=instructions

Important Properties:

1) The Addition Property of Equality:

2) The Multiplication Property of Equality:

3) Cancellation Properties of Equality:

a)

b)

4) Substitution Property

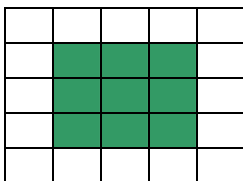
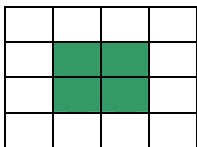
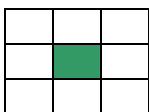
Problem 4: Analyze the instructions and determine how the teacher finds the original number.

Take any number and add 15 to it. Now multiply that sum by 4. Next subtract 8 and divide the difference by 4. Now subtract 12 from the quotient and tell me the answer, I will tell you the original number.

Problem 5: The perimeter of a rectangle is 68 feet. The length of the rectangle is 4 feet more than twice the width. Find the length and width of the rectangle.



Find an algebraic expression to represent the number of white tiles below:



Overdue Books

Bruno has five overdue books from the library. The fine is 10¢ a day per book. He remembers he checked out an astronomy book a week earlier than the four novels. If his total fine was \$8.70, how long was each book overdue?

Understanding the Problem:

There are 5 overdue books.

The astronomy book has been checked out 7 days more than the novels.

The fine is 10¢/day per book.

Find out how many days each book is overdue.

Devising a plan.

d = the number of days the novels are overdue

$d+7$ = the number of days the astronomy book is overdue

Write all money in cents.

= the fine for each novel

= the fine for the astronomy book

Carrying Out the Plan

Looking Back

Newspaper Delivery Service

In a small town, 3 children deliver all the newspapers. Abby delivers 3 times as many papers as Bob, and Connie delivers 13 more papers than Abby. If the 3 children deliver a total of 496 papers, how many papers does each one deliver?