

2.6 Problem Solving Day 1



Problem Solving Strategy

Step 1: Identify two variables/unknowns. *(Let statements)*

Step 2: Write two equations.

Step 3: Solve using substitution or elimination.

Step 4: Conclude.

Step 5: Mental check.

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Ex 1: Gita has 35 coins in nickels and quarters. In all, she has \$4.15. How many of each kind of coin does she have?

Let n be the number of nickels
 Let q " " " " quarters

$$\begin{aligned} \textcircled{1} \quad n + q &= 35 \\ \textcircled{2} \quad 0.05n + 0.25q &= 4.15 \end{aligned}$$

$$\begin{array}{rcl} \textcircled{1} & n + q & = 35 \\ \textcircled{2} \times 20 & n + 5q & = 83 \\ \hline & 0 - 4q & = -48 \\ & q & = \frac{-48}{-4} \\ & q & = 12 \end{array}$$

Sub into $\textcircled{1}$

$$\begin{aligned} n + 12 &= 35 \\ n &= 23 \end{aligned}$$

$\therefore$ Gita has
 12 quarters
 23 nickels

Ex 2: In a collection of coins there are twice as many nickels as dimes.
Find the number of each coin if the collection is worth \$10.60.

Let n be # of nickels ① $0.05n + 0.10d = 10.60$

Let d " " " dimes ② $2d = n$

Ex 3: Jumpstart Java sells refill mugs for \$9.50 and refills for \$2.75.
Mocha madness sells refill mugs for \$6.00 and refills for \$3.00.
Which refill mug should you buy?

Let C be total cost $C_J = 9.50 + 2.75r$

Let r be number of refills $C_m = 6.00 + 3.00r$

Ex 4: Spare Me Bowling alley charges \$6.00 a game and rents shoes for \$4.75. PINomenon charges \$6.50 a game and shoe rental costs \$3.5.

Let C be total cost $C = 4.75 + 6g$

Let g be # of games $C = 3.5 + 6.50g$

Ex 5: Aquatica Boat Rentals charges \$50 per hour and a flat fee of \$75 for insurance. Jawesome Boats charges \$55 per hour and a flat fee of \$45 for insurance. Which company should you rent from?

Let C be total cost $C = 75 + 50h$

Let h be # hours $C = 45 + 55h$

Practice!

Set 1: p.18 #11,13,14 (do not graph; use sub/elim)

Set 2: p.18 #13,14,17 (do not graph; use sub/elim)