2.6 Problem Solving Day 1

Problem Solving Strategy

Step 1: Identify two variables/unknowns

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 number of nickels

Let q " " " quarters

① $n + q = 35$

② $0.25q + 0.05n = 4.15$

From ①

$n + q = 35$

③ $n = 35 - q$

Sub ③ into ②

$0.25q + 0.05(35 - q) = 4.15$

$0.25q + 1.75 - 0.05q = 4.15$

$0.25q - 0.05q = 4.15 - 1.75$

$0.20q = 2.4$

$q = \frac{2.4}{0.2}$

$= 12$

Sub $q = 12$ into ③

$n = 35 - 12$

$= 23$

∴ Gita has

23 nickels

12 quarters

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 # nickels ① $n = 2d$

Let d be # dimes ② $0.1d + 0.05n = 10.60$

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 the total cost

Let r be # of refills

Jump $C = 9.50 + 2.75r$

Mocha $C = 6 + 3r$

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 the total cost

Let g be # of games

Spare $C = 6g + 4.75$

PIN $C = 6.5g + 3.5$

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 the total cost

Let h be the # hours

Aquatic $C = 50h + 75$

Jawesome $C = 55h + 45$

Practice!

Set 1: p.18 #11,13,14 (no graphing; use sub/elim)

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