

NAME:

DATE:

Key

A2.Q1.BERMEL:

SYSTEMS OF EQUATIONS

(DAY S1)

NOTES

Intentionally Blank

1. In a video game a player earns points for collecting Gold and Silver coins.

Player 1 collects 2 Gold and 3 Silver coins for a total of 16 points.

Player 2 collects 3 Gold and 2 Silver coins for a total of 19 points.

How many points are each the Gold and Silver coins worth in this game?

A. Write the system of equations.

$$P1: 2g + 3s = 16$$

$$P2: 3g + 2s = 19$$

B. Does $G = 3.5$ points and $S = 3$ points work for both players? Show. **NO**

$$P1: 2(3.5) + 3(3) = 16 \quad \checkmark$$

$$7 + 9 = 16$$

$$P2: 3(3.5) + 2(3) = 19 \quad \times$$

$$10.5 + 6 = 16.5$$

needs to = 19

C. Does $G = 4$ points and $S = 3.5$ points work for both players? Show. **NO**

$$P1: 2(4) + 3(3.5) = 16 \quad \times$$

$$8 + 10.5 = 18.5$$

needs to = 16

$$P2: 3(4) + 2(3.5) = 19 \quad \checkmark$$

$$12 + 7 = 19$$

D. Find the solution.

The solution is the unique combination that works for both players (both equations).

$$P1: 2(5) + 3(2) = 16 \quad \checkmark$$

$$10 + 6 = 16$$

$$P2: 3(5) + 2(2) = 19 \quad \checkmark$$

$$15 + 4 = 19$$

2. In a video game a player earns points for each badge collected and loses points for each skull that gets touched.

Player 1 collects 4 badges and runs into 2 skulls for a total point value of 200 points.

Player 2 collects 5 badges and runs into 3 skulls for a total point value of 240 points.

How many points is a badge worth and how many points is a skull worth?

A. Write the system of equations.

$$P1: 4b - 2s = 200$$

$$P2: 5b - 3s = 240$$

B. Does $B = 66$ points and $S = 30$ points work for both players? Show. NO

$$P1: 4(66) - 2(30) = 200 \text{ X}$$

$$264 - 60 = 204$$

needs to = 200

$$P2: 5(66) - 3(30) = 240 \checkmark$$

$$330 - 90 = 240$$

C. Does $B = 70$ points and $S = 40$ points work for both players? Show. NO

$$P1: 4(70) - 2(40) = 200 \checkmark$$

$$280 - 80 = 200$$

$$P2: 5(70) - 3(40) = 240 \text{ X}$$

$$350 - 120 = 230$$

needs to = 240

D. Find the solution.

The solution is the unique combination that works for both players (both equations).

$$P1: 4(60) - 2(20) = 200 \checkmark$$

$$240 - 40 = 200$$

$$P2: 5(60) - 3(20) = 240 \checkmark$$

$$300 - 60 = 240$$

These are "What price/cost" problems.

3. Richard and Liam go to a Mexican restaurant. Richard orders 2 tacos and 2 enchiladas. Liam orders 3 tacos and 1 enchilada. Richards's bill was \$16.90. Liam's bill was \$17.45. Write, but do not solve, a system of equations that could be used to find the price of each enchilada and each taco?

Richard $2x + 2y = 16.90$

Liam $3x + 1y = 17.45$

Define your variables

x = price of tacos

y = price of enchiladas

4. Joe orders 3 pizzas and 2 orders breadsticks for a total of \$29.50. Michelle orders 2 pizzas and 3 orders of breadsticks for a total of \$23. How much does a pizza cost? Write, but do not solve, a system of equations that could be used to find how much an order of breadsticks cost?

Joe $3x + 2y = 29.50$

Michelle $2x + 3y = 23$

Define your variables

x = cost of pizzas

y = cost of breadsticks

These are "what number" problems
(How many)

5. Tickets for the theater are \$5 for the balcony and \$10 for the orchestra. If 600 tickets were sold and the total receipts were \$4750, how many tickets of each type were sold? Write, but do not solve, a system of equations that could be used to find the answer.

How many?
(# of)

$$x + y = 600$$

Define your variables:

x = # of balcony seats sold

y = # of orchestra seats sold

How much?
(\$)

$$5x + 10y = 4,750$$

6. Tony sold 15 gym memberships for a total of \$585 a month. Student memberships cost \$25 per month and Adult memberships cost \$60 per month. Write, but do not solve, a system of equations that could be used to find how many of each membership Tony sold?

How many?
(# of)

$$x + y = 15$$

Define your variables

x = # of student membership

y = # of adult memberships

How much?
(\$)

$$25x + 60y = 585$$