Two-variable systems: quantities and models

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Name: _____ Class: _____ Date: _____

Worked example 1

A notebook costs x dollars and a pen y dollars. 2 notebooks and 3 pens cost 16 dollars; 4 notebooks and 1 pens cost 12 dollars. Find both unit prices.

Guided attempt 2

A tickets cost 2 dollars each and B tickets 5 dollars each. 10 tickets cost 32 dollars. Let x and y be the numbers of A and B tickets. Form and solve a system; check whole nonnegative counts.

1. Count condition: $x + y = \square$; revenue: $2x + 5y = \square$.
2. Use $x = 10 - y$: $2(10 - y) + 5y = 32$.
3. Then $3y = 32 - 20 = \square$; find y=____ and x=____, both whole nonnegative counts.

Prerequisite 3

x adults and y children visit a museum. Write their total number. Do not add ticket prices to a count.

Prerequisite 4

Convert 1 hour 30 minutes to hours before using a speed in km/h.

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Independent practice 5

A tickets cost 3 dollars each and B tickets 5 dollars each. 12 tickets cost 44 dollars. Let x and y be the numbers of A and B tickets. Form and solve a system; check whole nonnegative counts.

Independent practice 6

A notebook costs x dollars and a pen y dollars. 3 notebooks and 2 pens cost 19 dollars; 2 notebooks and 5 pens cost 31 dollars. Find both unit prices.

Independent practice 7

A boat travels downstream at 28 km/h and upstream at 20 km/h. Let x be its still-water speed and y the current speed, both in km/h. Find x and y.

Independent practice 8

A group has 18 people. Adults number twice the children. Let x and y be adult and child counts. Find both counts.

Exit question 9

If x is a ticket count and p is dollars per ticket, what is px?

A. The total count in tickets. B. A speed.
C. The total price in dollars.

Exit question 10

Solving a ticket model gives x=11/3, y=7/3. May these be rounded to 4 and 2 and reported as the exact solution? Explain.