

CH. 5, L4 – REAL-WORLD SYSTEMS OF EQUATIONS WITH SUBSTITUTION

Objective: Given a real-world situation, I will write and solve a system of equations using substitution

Think About It: Given the question below, write two different functions describing Yellow Cab and Blue Cab. Then write one equation that could be used to answer the question. If you finish early, complete the problem.

Yellow cab charges an initial fee of \$2 and then an additional \$0.50 per mile for each mile driven. Blue cab only charges \$0.90 per mile with no initial fee. What distance could you travel in both cabs where the cost would be exactly the same and what is the cost?

System of equations:

Check:

$$f(x) = \frac{\square}{\square}x + \underline{\quad}$$

$$g(x) = \frac{\square}{\square}x + \underline{\quad}$$

Keyword(s): *system, substitution*

Big Idea:

CFS:

1. Situations are annotated for key information
2. System of equations is written
3. System is solved with substitution
4. Solution is checked

Interaction with New Material:

Ex. 1) Last week, a candle store received \$355.60 for selling 20 candles. Small candles sell for \$10.98 and large candles sell for \$27.98. How much more money was spent on large candles than small candles last week?

System of equations:

Check:

Cost of small candles:

Cost of large candles:

Difference (large – small):

CFS:

1. Situations are annotated for key information
2. System of equations is written
3. System is solved with substitution
4. Solution is checked

Partner Practice:

1. One cable television provider has a \$60 setup fee and costs \$80 per month, and the second has a \$160 setup fee and charges \$70 per month. In how many months will the cost be the same?

System of equations:**Check:**

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2. Casey wants to buy a gym membership. One gym has a \$150 joining fee and costs \$35 per month. Another gym has no joining fee and costs \$60 per month. In how many months will both gym memberships cost the same?

System of equations:**Check:**

CFS:

1. Situations are annotated for key information
2. System of equations is written
3. System is solved with substitution
4. Solution is checked

3. Tori told her friend that she has a combination of quarters and dimes in her pocket. She also told her that there are 8 total coins worth \$1.55. Tori told her friend that if she can guess the exact number of quarters and dimes, she will give her all the money in her pocket. How many quarters and dimes are in Tori's pocket?

System of equations:

Check:

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4. The admission fee at a small fair is \$1.50 for children and \$4.00 for adults. On a certain day, 2200 people enter the fair and \$5050 is collected. How many children and how many adults attended the fair on that day?

System of equations:

Check:

CFS:

1. Situations are annotated for key information
2. System of equations is written
3. System is solved with substitution
4. Solution is checked

5. An investor owns shares of Stock A and Stock B. The investor owns a total of 200 shares with a total value of \$4000. Which stock does he have more of and by how many?

Stock	Price
A	\$9.50
B	\$27.00

System of equations:

Check:

CFS:

1. Situations are annotated for key information
2. System of equations is written
3. System is solved with substitution
4. Solution is checked

6. The senior classes at Amistad High and Brooklyn High planned separate trips local amusement parks. Amistad High rented and filled 7 vans and 4 busses with 219 scholars. Brooklyn High rented and filled 8 vans and 1 bus with 136 scholars. Each van and each bus carried the same number of scholars. If Hartford High rents 2 busses and 3 vans, how many scholars can they take on their trip?

System of equations:

Check:

CFS:

1. Situations are annotated for key information
2. System of equations is written
3. System is solved with substitution
4. Solution is checked