Linear Equations: Expressions and Diagrams

Use What You've Learned

Create a diagram to represent and solve each problem. Use the diagram to develop an algebraic expression representing each part of the problem. Set the expressions equal to each other to create an equation. Check your numerical solution by substituting it into the equation.

1. The Golden Racquet Tennis Club charges a $55 membership fee plus $12 for each hour of court time. The River Valley Tennis Club charges $20 for a membership fee plus $17 for each hour of court time. How many hours of court time would result in costs being the same for both clubs?

   Diagram

   Expressions

   Golden Racquet Tennis Club

rate per hour	# of hours	cost

   Expression:

   River Valley Tennis Club

rate per hour	# of hours	cost

   Expression:

   Using Expressions

   Check the solution from the diagram above by substituting the value of the solution into both expressions.

   Golden Racquet Tennis Club River Valley Tennis Club

2. Joan and Brett are bricklayers involved in constructing a new garage. Joan can lay bricks at the rate of 4 bricks per minute, and Brett can lay bricks at the rate of 2 bricks per minute. Both bricklayers are picking up from where they were the day before. Joan had been working on a wall where each row contained 10 bricks, and she had completed 2 rows. Brett was working on another wall where each row also contained 10 bricks, and Brett had completed 5 rows. If they begin working at the same time and continue non-stop, how long will it be before they each have laid the same number of bricks? How many total bricks would each wall contain at that time?

Diagram

Expressions

Joan's Progress

rate (bricks per minute)	# of minutes	# of bricks laid

Expression:

Brett's Progress

rate (bricks per minute)	# of minutes	# of bricks laid

Expression:

Using Expressions

Check the solution from the diagram above by substituting the value of the solution into both expressions.

Joan's Progress

Brett's Progress

3. Rita plans on purchasing some inexpensive books for several friends. At Books Online, the books cost $95 and the company charges $3 in shipping per address. The same books at Literature Hub cost $100 and shipping charges are $2 per address. To how many addresses can Rita send a book so the total cost from each online store is the same?

Diagram

Expressions

Cost at Books Online

rate per address	# of addresses	cost

Expression:

Cost at Literature Hub

rate per address	# of addresses	cost

Expression:

Using Expressions

Check the solution from the diagram above by substituting the value of the solution into both expressions.

Cost at Books Online

Cost at Literature Hub