**PROBLEM SOLVED**

MAKING SENSE OF MATHEMATICS

Create a table and graph to represent and solve each problem. Use the table and graph to develop an algebraic equation that represents the problem. Check your answer by substituting your numerical solution into the algebraic equation.

1. Carpet Store A charges $4 per square foot for a certain carpet and adds an installation fee of $80. Carpet Store B charges $2 per square foot for the same carpet with an installation fee of $140. How many square feet of carpet would you need to purchase so the total cost is the same at both stores?

Table

# of Square Feet	Cost at Store A	Cost at Store B
1	$84	$142
2	$88	$144
3	$92	$146
4	$96	$148
5	$100	$150
10	$120	$160
30	**$200**	**$200**

Graph

MakingSense

PROBLEM SOLVED
MAKING SENSE OF MATHEMATICS
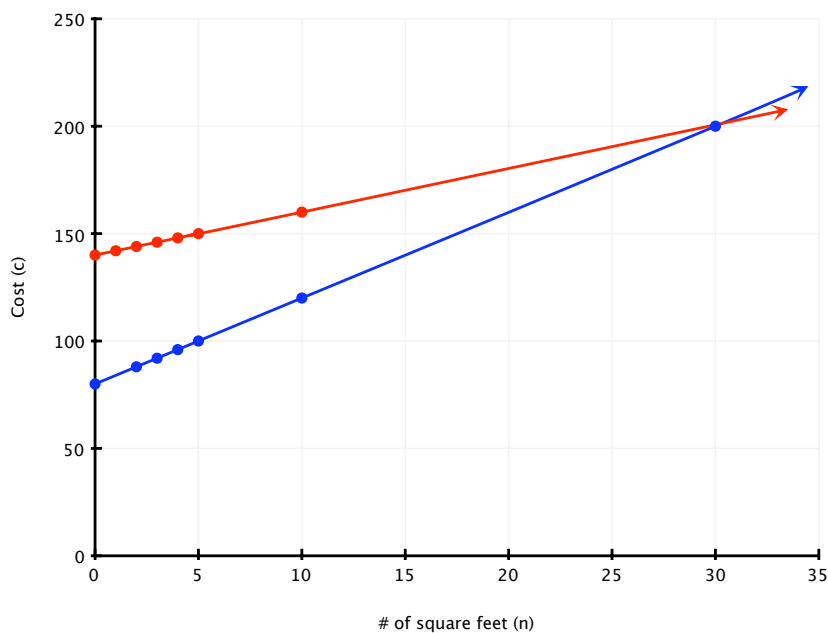
Equation
n: number of square feet of carpet
c: total cost

The total cost can be represented by the following equations. To check the graphical solution, substitute the value of n = 30 into both equations and check to see if the cost is the same.

Store A
c = 4n + 80
c = 4(30) + 80
c = 120 + 80
c = 200

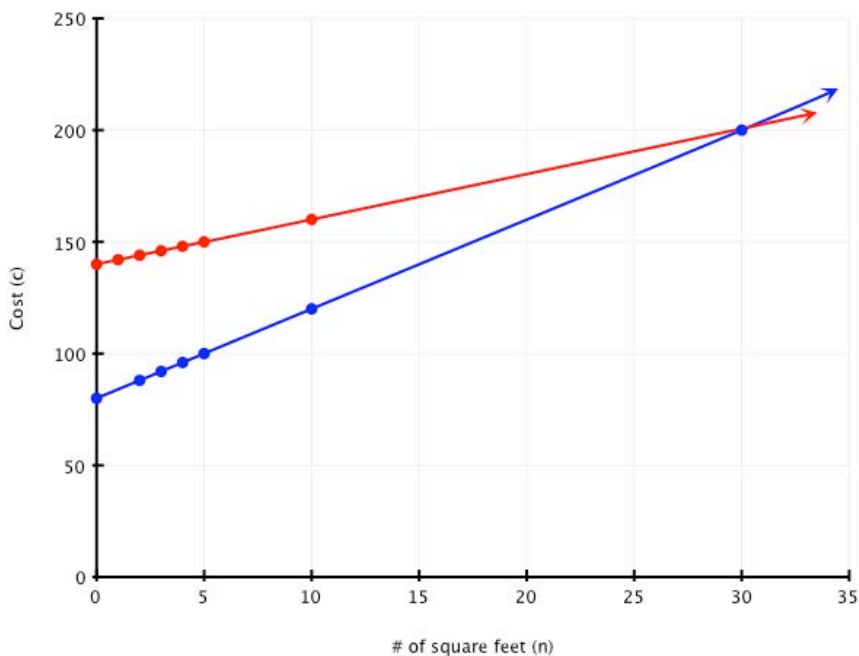**Store B**
c = 2n + 140
c = 2(30) + 140
c = 60 + 140
c = 200

Carpet Store A and Carpet Store B both charge $200 for the purchase and installation of 30 square feet of carpet.

2. The Heartland Area Tennis Club charges a $55 membership fee plus $12 for each hour of court time. The Raccoon Valley Tennis Club charges $25 for membership plus $15 for each hour of court time. How many hours of court time would result in costs being the same at both clubs?

Table

Hours of Court Time	Cost at Heartland Area	Cost at Raccoon Valley
1	$67	$40
2	$79	$55
3	$91	$70
4	$103	$85
5	$115	$100
6	$127	$115
7	$139	$130
8	$151	$145
9	$163	$160
10	**$175**	**$175**

MakingSense

Graph

Equation

h: number of hours of court time
c: total cost

The total cost can be represented by the following equations. To check the graphical solution, substitute the value of h = 10 into both equations and check to see if the cost is the same.

Heartland Area Tennis Club
c = 12h + 55
c = 12(10) + 55
c = 120 + 55
c = 175

Raccoon Valley Tennis Club
c = 15h + 25
c = 15(10) + 25
c = 150 + 25
c = 175

The total cost for membership and 10 hours of court time is $175 for each tennis club.

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MAKING SENSE OF MATHEMATICS

3. Joan and Brett are bricklayers involved in constructing a new garage. Joan can lay bricks at the rate of 5 bricks per minute, and Brett can lay bricks at the rate of 3 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 8 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?

Table

number of minutes (m)	number of bricks laid by Joan	number of bricks laid by Brett
1	25 bricks	83 bricks
5	45 bricks	95 bricks
10	70 bricks	110 bricks
20	120 bricks	140 bricks
30	**170 bricks**	**170 bricks**

Graph

MakingSense
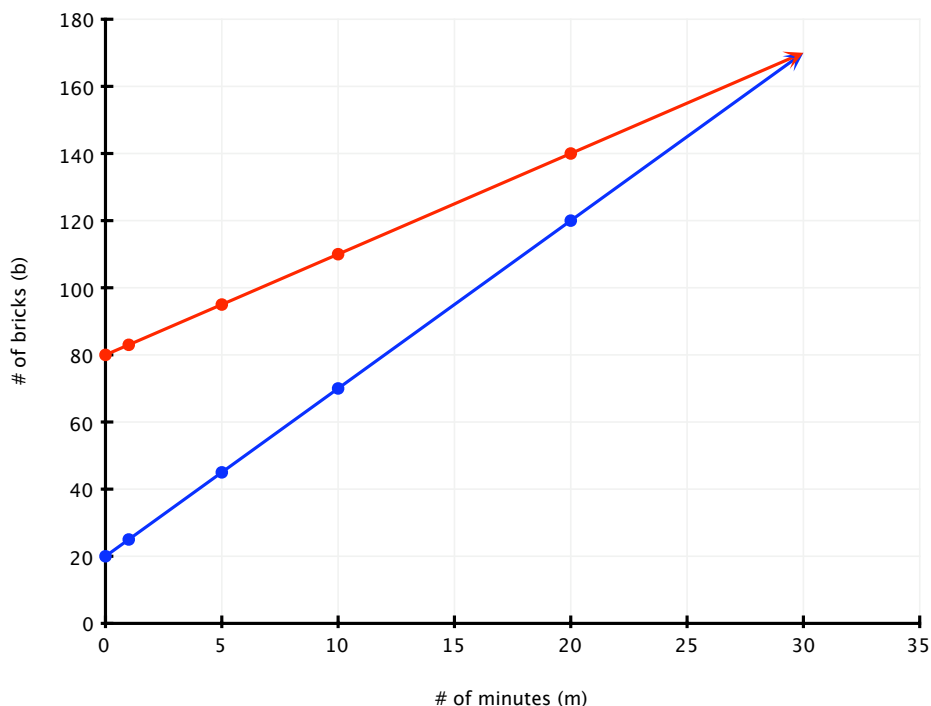
Equation

m: number of minutes
b: total number of bricks laid

The total number of bricks laid for each person can be represented by the following equations. To check the graphical solution, substitute the value of m = 30 into both equations and check to see if the number of bricks is the same.

Joan's Progress
$b = 5m + 20$
$b = 5(30) + 20$
$b = 150 + 20$
$b = 170$

Brett's Progress
$b = 3m + 80$
$b = 3(30) + 80$
$b = 90 + 80$
$b = 170$

Both Joan and Brett will have laid 170 bricks in 30 minutes.

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