Baseball Jerseys

This problem gives you the chance to:
• work with equations that represent real life situations

Bill is going to order new jerseys for his baseball team.
The jerseys will have the team logo printed on the front.
Bill asks two local companies to give him a price.

1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[ 21.5n = c \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[ 70 + 18n = c \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.
   \[ \begin{align*}
   &30 \times 18 = 540 \\
   &70 + 540 = 610 \leftarrow \text{Top Print} \\
   &21.5 \times 30 = 645 \leftarrow \text{Print It}
   \end{align*} \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   \[ 21 \text{ jerseys} \]

I used guess and check. Using my calculator and the equations above, I found out buying 20 jerseys equals the prices to $430. I added 1 more jersey, and Top Print was $438 and Print It was $451.50. 21 jerseys was definitly when Top Print was cheaper.
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   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[ 21.50n = c \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[ 70 + 18n = c \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations. \[ 610 \]
   \[ 70 + 18 \times 30 = \]
   \[ 70 + 540 = 610 \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   He would have to buy 20 jerseys because it would take 20 to get the 70 dollar set up cost gone. Then it would be 3.50 dollars cheaper.
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Bill asks two local companies to give him a price.

1. ‘Print It’ will charge $21.50 each for the jerseys.

   Using $n$ for the number of jerseys ordered, and $c$ for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.

   \[ c = 21.5n \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.

   Using $n$ to stand for the number of jerseys ordered, and $c$ for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.

   \[ c = 70 + 18n \]

3. Bill decides to order 30 jerseys from ‘Top Print’.

   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.

   \[
   \begin{align*}
   &\text{\$30 more} \\
   &70 + 18(30) \\
   &70 + 540 \\
   &610 \\
   &21.5 \times 30 \\
   &645 \\
   &110 \\
   &\text{\$30}
   \end{align*}
   \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.

   Explain how you figured it out.

   \[
   \begin{align*}
   &70 + 18c = 106 \\
   &70 + 18c = 260 \\
   &21.5 \times 2 = 43 \\
   &21.5 \times 3 = 64.5 \\
   &21.5 \times 10 = 260
   \end{align*}
   \]
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   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[
   21.5n = c
   \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[
   70 + 18n = c
   \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.
   \[
   \begin{align*}
   70 + 18(30) &= 610 \\
   21.5(30) &= 645 \\
   645 - 610 &= 35
   \end{align*}
   \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   I would use guess and check.


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1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.

   \[ 21.50n = c \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.

   \[ 70 + 18n = c \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.

   \[
   \begin{align*}
   \text{Top Print} & : 18 \times 30 = 540 \\
   \text{Print It} & : 21.50 \times 30 = 645 \\
   & - 645 \\
   & = 580
   \end{align*}
   \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.

   \[ \frac{645}{21.50} \approx 30 \]

   I started from \( \frac{645}{21.50} \) and plugged it in both equations in place of variable \( n \) and then continued until “Top Print” & “Print It” had equal or more prices.
Baseball Jerseys

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Bill asks two local companies to give him a price.

1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using \(n\) for the number of jerseys ordered, and \(c\) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.

   \[
   21.50n = c
   \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \(n\) to stand for the number of jerseys ordered, and \(c\) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.

   \[
   70 + 18n = c
   \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.

   \[
   \begin{align*}
   \text{Print It} & : 21.50 \times 30 = 645 \\
   \text{Top Print} & : 70 + 18 \times 30 = 610 \\
   \text{Difference} & : 645 - 610 = 35
   \end{align*}
   \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.

   \[
   \begin{align*}
   21.50 \times 21 = 451.50 & \quad \text{while} \\
   70 + 18 \times 21 = 448
   \end{align*}
   \]
Baseball Jerseys

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1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[ 21.50n = c \]

2. ‘Top Print’ has a one-time set up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[ 18n + 70 = c \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.
   \[ \begin{align*}
   \text{Top Print} & \quad 18(30) + 70 \\
   & = 540 + 70 \\
   & = 610 \\
   \text{Print it} & \quad 21.50(30) \\
   & = 645 \\
   645 - 610 & = 35
   \end{align*} \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   \[ \begin{align*}
   21.50n & < 18n + 70 \\
   3.5n & < 70 \\
   n & < 20
   \end{align*} \]
Baseball Jerseys

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Bill asks two local companies to give him a price.

1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using $n$ for the number of jerseys ordered, and $c$ for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[ 21.50 \times n = c \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using $n$ to stand for the number of jerseys ordered, and $c$ for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[ (18 \times n) + 70 = c \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.

\[
\begin{array}{c}
21.50 \\
30 \\
\hline
645.00 \\
645.00 \\
\hline
645.00
\end{array}
\]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   \[ 20 \text{ jerseys} \]
   I estimated 3 times and used the expressions from 1 and 2.

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   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from 'Print It'.

\[ 21.50n = c \]

2. 'Top Print' has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from 'Top Print'.

\[ 18n + 70 = c \]

3. Bill decides to order 30 jerseys from 'Top Print'.
   How much more would the jerseys cost if he buys them from 'Print It'? Show all your calculations.

\[ \begin{align*}
   &21.50 \\
   &30 \times 21.50 = 645 \\
   &30 \times 18 + 70 = 610 \\
   \end{align*} \]

\[ \text{\$35.00} \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from 'Top Print' to be less than from 'Print It'. Explain how you figured it out.

\[ 20 \]

I used them until I found the difference that I kept on multiplying the numbers.
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1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using n for the number of jerseys ordered, and c for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[ 21.5n = c \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using n to stand for the number of jerseys ordered, and c for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[ 70 + 18n = c \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.
   \[ 21.5n = c \]
   \[ 21.5 \times 30 = c \]
   \[ 645 = c \]

   \[ 70 + 18n = c \]
   \[ 70 + 18 \times 30 = c \]
   \[ 645 = c \]

   \[ \text{Print It} \]
   \[ 610 = c \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   \[ 21.5n = 21.5 \times 5 = c, \quad 107.5 = c \]
   \[ 70 + 18n = c, \quad 70 + 18 \times 5 = c \]
   \[ 70 + 90 = c, \quad c = 150 \]
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   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from 'Top Print'.
   \[ 70 + 18n = c \]

3. Bill decides to order 30 jerseys from 'Top Print'.
   How much more would the jerseys cost if he buys them from 'Print It'?
   Show all your calculations.
   \[ 18 \times 30 + 70 = 610 \]
   \[ 21.50 \times 30 = 645 \]
   \[ 645 - 610 = 35 \] more

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from 'Top Print' to be less than from 'Print It'.
   Explain how you figured it out.
   \[ if \text{ you buy } 20 \text{ jersey, they cost the same, } \]
   \[ 420, \text{ so you need to buy } 21 \text{ of them.} \]
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1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[
   (n)(21.50) = c
   \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[
   (n)(18) = c + 70
   \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   \[
   (30)(21.50) = 645
   (30)(18) = 540 + 70
   \]
   \[
   \begin{array}{c}
   645 \\
   \underline{- 540} \\
   \hline
   105
   \end{array}
   \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.

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   Using $n$ for the number of jerseys ordered, and $c$ for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[21.50n = c\]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using $n$ to stand for the number of jerseys ordered, and $c$ for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[70 + 18n = c\]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.
   \[70 + 18(30) = 610\]
   \[21.50(30) = 645\]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   Explain how you figured it out.
   \[10\text{ jerseys}\]

   because of guess and check


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   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from 'Print It'.
   \[
   21.50n = c
   \]

2. 'Top Print' has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from 'Top Print'.
   \[
   70 + 18n = c
   \]

3. Bill decides to order 30 jerseys from 'Top Print'.
   How much more would the jerseys cost if he buys them from 'Print It'? Show all your calculations.
   \[
   \begin{align*}
   c_{\text{Top Print}} &= 70 + 18(30) \\
   &= 70 + 540 \\
   &= 610 \\
   \end{align*}
   \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from 'Top Print' to be less than from 'Print It'. Explain how you figured it out.
   \[
   \begin{align*}
   21.50n &< 70 + 18n \\
   21.50n - 18n &< 70 \\
   3.50n &< 70 \\
   \frac{3.50n}{3.50} &< \frac{70}{3.50} \\
   n &< 20
   \end{align*}
   \]
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The jerseys will have the team logo printed on the front.

Bill asks two local companies to give him a price.

1. ‘Print It’ will charge $21.50 each for the jerseys.
   Using \( n \) for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Print It’.
   \[ n = 21.50 \]
   \[ c = 21.50n \]

2. ‘Top Print’ has a one-time setting up cost of $70 and then charges $18 for each jersey.
   Using \( n \) to stand for the number of jerseys ordered, and \( c \) for the total cost in dollars, write an equation to show the total cost of jerseys from ‘Top Print’.
   \[ c = 70 + 18n \]

3. Bill decides to order 30 jerseys from ‘Top Print’.
   How much more would the jerseys cost if he buys them from ‘Print It’?
   Show all your calculations.
   \[ c = 70 + 18(30) \]
   \[ c = 880 \]
   \[ c = 21.50 \times 30 \]
   \[ c = 645 \]

4. Use the two equations from questions 1 and 2 to figure out how many jerseys Bill would need to buy for the price from ‘Top Print’ to be less than from ‘Print It’.
   \[ \text{# of Jerseys} < 20 \]
   \[ c = 70 + 18n \]
   \[ c = 21.50n \]