SEQ Day 1

Your Name________________________________

Partner’s Name________________________________

• You will study students’ solutions to algebra equations. You should:
  1. Describe each student’s solution to your partner and finish labeling their steps.
  2. Talk about the answers to the questions and then write your final answers.
  3. Sometimes you will solve a problem using one of the student’s ways.

• Sometimes, you will solve some problems on your own.
SEQ Day 1
Sammy’s Solution:

\[
\begin{align*}
2(x - 3) &= 8 \\
2x - 6 &= 8 \\
2x &= 14 \\
x &= 7
\end{align*}
\]

Distribute 2

Add \underline{_______} on Both

Divide \underline{_______} on Both

Complete the step labels in the blank spaces provided above.

1. How do you know if she solved her problem correctly?
**Jessica’s Solution:**

\[
3(t – 1) + 3(t – 1) = 30 \\
3t – 3 + 3t – 3 = 30 \\
6t – 6 = 30 \\
6t = 36 \\
t = 6
\]

Distribute ________  
Combine 3t’s and 3’s  
Add _________ on Both  
Divide _________ on Both

Complete the step labels in the blank spaces provided above.

2. Why did Jessica divide as her last step?
Jacob’s Solution:

\[
\begin{align*}
4(x - 5) &= 12 \\
x - 5 &= 3 \\
x &= 8
\end{align*}
\]

*Divide 4 on Both*  
*Add __________ on Both*

Complete the step labels in the blank spaces provided above.

3. Describe the steps Jacob used for a new student in your class.
Kerri’s Solution:

\[4(t - 5) + 3(t - 5) = 14\]
\[7(t - 5) = 14\]
\[t - 5 = 2\]
\[t = 7\]

Combine \((t - 5)\)’s

Divide \(\_\_\_\_\_\_\) on Both

Add \(\_\_\_\_\_\_\) on Both

Complete the step labels in the blank spaces provided above.

4. To solve \(4(y + 5) + 6(y + 4) + 5(y + 2) = 42\), would Kerri’s first step work? **Circle one:**

   YES \hspace{1cm} NO

   Explain your reasoning.

GP1. Working with your partner, solve the following equation using Kerri’s way.

\[6(x + 4) + 5(x + 4) = 22\]
SEQ Day 1

SOLVE THESE PROBLEMS BY YOURSELF. Be sure to show your work.
Next, check your answers with your partner. Last, raise your hand so a teacher can check your work.

\[
\begin{align*}
4(x - 1) &= 24 \\
5(x - 3) &= 15 \\
9 &= 3(x - 4) + 6(x - 4) \\
40 &= 7(x + 1) + 3(x + 1)
\end{align*}
\]
Complete the step labels for each solution in the blank spaces provided above.

5. Describe the steps Alexander used for a new student in your class.
SEQ Day 1

Angela’s Solution:

\[ 9 = 5(m + 2) + 4(m + 2) \]
\[ 9 = 5m + 10 + 4m + 8 \quad \text{Distribute} \quad \_\_\_\_\_ \]
\[ 9 = 9m + 18 \quad \text{Combine} \quad \_\_\_\_\_ \]
\[ -9 = 9m \quad \text{Subtract} \quad \_\_\_\_\_ \text{on Both} \]
\[ -1 = m \quad \text{Divide} \quad \_\_\_\_\_ \text{on Both} \]

Complete the step labels for each solution in the blank spaces provided above.

6. If the problem were \( 8 = 3(j + 6) + 4(j + 2) \), could you use Angela’s first step? **Circle one:** YES NO

Explain your reasoning.
SEQ Day 1

**Colleen’s Solution:**

\[
6(t + 5) = 18 \\
(t + 5) = 3 \quad \text{Divide } ____ \\
t = -2 \quad \text{Subtract } ______ on Both
\]

Complete the step labels for each solution in the blank spaces provided above.

7. Is this a good way to solve this problem? **Circle one:** \text{YES} \quad \text{NO}

Explain your reasoning.
SEQ Day 1

**Sandra’s Solution:**

\[
2(x + 3) + 6(x + 3) = 40 \\
8(x + 3) = 40 \\
x + 3 = 5 \\
x = 2
\]

**Complete the step labels for each solution in the blank spaces provided above.**

8. Will Sandra’s way work to solve most other equations that are similar to this one? **Circle one:** YES NO

Explain your reasoning.
PLEASE STOP HERE AND WAIT UNTIL WEDNESDAY: DAY 2

Do you have the same partner as yesterday? Please circle one. **YES or NO.**

If not, please write your partner’s name here: ________________________________
SEQ Day 2

Abby’s Solution:

<table>
<thead>
<tr>
<th>Step</th>
<th>Equation</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$3(h - 2) + 5(h - 2) = 24$</td>
<td>Combine $h - 2$</td>
</tr>
<tr>
<td>2</td>
<td>$8(h - 2) = 24$</td>
<td>Divide 8 on Both</td>
</tr>
<tr>
<td>3</td>
<td>$h - 2 = 3$</td>
<td>Divide 2 on Both</td>
</tr>
<tr>
<td>4</td>
<td>$h = 5$</td>
<td>Add 2 on Both</td>
</tr>
</tbody>
</table>

Complete the step labels in the blank spaces provided above.

9. Why did Abby combine like terms for her first step?
Patrick’s Solution:

\[
\begin{align*}
5(y + 1) &= 3(y + 1) + 8 \\
2(y + 1) &= 8 \\
y + 1 &= 4 \\
y &= 3
\end{align*}
\]

Subtract \[_______\] on Both

Divide \[_______\] on Both

Subtract \[_______\] on Both

Complete the step labels in the blank spaces provided above.

10. Could you use Patrick’s way to solve many different kinds of problems? Circle one: YES NO

Why or why not?

GP2. Working with your partner, solve the following equation using Patrick’s way.

\[
6(x + 2) = 4(x + 2) + 16
\]
SEQ Day 2

Matt’s Solution:

\[
10(x + 3) = 6(x + 3) + 16 \\
10x + 30 = 6x + 18 + 16 \\
10x + 30 = 6x + 34 \\
4x + 30 = 34 \\
x = 1
\]

Complete the step labels in the blank spaces provided above.

11. Why are each of Matt’s steps OK to do?
Roger’s Solution:

\[
6(w - 4) + 7(w - 4) = 26 \\
6w - 24 + 7w - 28 = 26 \\
13w - 52 = 26 \\
13w = 78 \\
w = 6
\]

**Distribute** ____________
**Combine** ____________
**Add** _________ on Both
**Add** _________ on Both
**Divide** _________ on Both

Complete the step labels in the blank spaces provided above.

12. On what types of equations might you use Roger’s way?

Give an example.
SOLVE THESE PROBLEMS BY YOURSELF. Be sure to show your work. Next, check your answers with your partner. Last, raise your hand so a teacher can check your work.

\[
\begin{align*}
9 + 5(x + 1) &= 8(x + 1) \\
16 + 3(x - 2) &= 7(x - 2) \\
2(y + 6) + 3(y + 6) &= 25 \\
5(b - 3) + 2(b - 3) &= 35
\end{align*}
\]
Elizabeth’s Solution:

\[
\begin{align*}
5(m + 4) &= 2(m + 4) + 15 \\
3(m + 4) &= 15 \\
m + 4 &= 5 \\
m &= 1 \\
\end{align*}
\]

Subtract \_______\ on Both
Divide \_______\ on Both
Subtract \_______\ on Both

Complete the step labels for each solution in the blank spaces provided above.

13. To solve \(6(y + 3) = 4(y + 7) + 18\), would Elizabeth’s first step work? Explain your reasoning.
SEQ Day 2

Jason’s Solution:

\[
21 = 7(x - 2) \\
3 = x - 2 \quad Divide \text{ __________ on Both} \\
5 = x \quad Add \text{ __________ on Both}
\]

Complete the step labels for each solution in the blank spaces provided above.

14. Describe the steps Jason used for a new student in your class.
Tia’s Solution:

\[8 + 2(x + 5) = 6(x + 5)\]
\[8 + 2x + 10 = 6x + 30\]  \[\text{Distribute} \______\]
\[2x + 18 = 6x + 30\]  \[\text{Combine} \______\]
\[18 = 4x + 30\]  \[\text{Subtract} \______\text{ on Both}\]
\[-12 = 4x\]  \[\text{Subtract} \______\text{ on Both}\]
\[-3 = x\]  \[\text{Divide} \______\text{ on Both}\]

Complete the step labels for each solution in the blank spaces provided above.

15. Why did Tia distribute as her first step?
Peter’s Solution:

\[ 3(w + 4) = 24 \]
\[ 3w + 12 = 24 \]
\[ 3w = 12 \]
\[ w = 4 \]

Distribute \___________

Subtract \___________

Divide \___________ on Both

16. How do you know if he solved his problem correctly?
PLEASE STOP HERE AND WAIT UNTIL THURSDAY: DAY 3

Do you have the same partner as yesterday? Please circle one. **YES** or **NO**.

If not, please write your partner’s name here: ________________________________
SEQ Day 3

Brianna’s Solution:

\[3(n - 2) + 12 = 6(n - 2)\]
\[12 = 3(n - 2)\] Subtract \[\_\_\_\_\_\_\_\_\_\_\_\] on Both
\[4 = n - 2\] Divide \[\_\_\_\_\_\_\_\_\_\_\_\] on Both
\[6 = n\] Add \[\_\_\_\_\_\_\_\_\_\_\_\] on Both

Complete the step labels in the blank spaces provided above.

17. Will Brianna’s way work to solve most other equations that are similar to \(3(n - 2) + 12 = 6(n - 2)\)? **Circle one:** YES NO

Explain your reasoning.
### Matthew’s Solution:

\[
\frac{1}{4}(x + 8) = 5 \\
x + 8 = 20 \quad \text{Divide } \text{on Both} \\
x = 12 \quad \text{Subtract } \text{on Both}
\]

Complete the step labels in the blank spaces provided above.

18. Is this a good way to solve the problem? **Circle one:** YES  NO

Explain your reasoning.

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GP3. Working with your partner, solve the following equation using **Matthew’s** way.

\[
\frac{1}{5}(x - 4) = 2
\]
Scott’s Solution:

\[ 2(y - 4) + 36 = 8(y - 4) \]
\[ 2y - 8 + 36 = 8y - 32 \]
\[ 2y + 28 = 8y - 32 \]
\[ 28 = 6y - 32 \]
\[ 60 = 6y \]
\[ 10 = y \]

*Distribute ____________*
*Combine ____________*
*Subtract ____________ on Both*
*Add ____________ on Both*
*Divide ____________ on Both*

Complete the step labels in the blank spaces provided above.

19. If the problem were \( 8(j + 2) = 4(j + 8) + 12 \), could you use Scott’s first step? **Circle one:**  

\[ \text{YES}\quad\text{NO} \]

Explain your reasoning.
SEQ Day 3

**Stacy’s Solution:**

\[
\frac{1}{3}(x + 2) = 4 \\
\frac{1}{3}x + \frac{2}{3} = 4 \\
\frac{1}{3}x = \frac{10}{3} \\
x = 10
\]

*Distribute _______________

*Subtract ___________ on Both

*Divide ___________ on Both

Complete the step labels in the blank spaces provided above.

20. Describe the steps Stacy used for a new student in your class.
SEQ Day 3

SOLVE THESE PROBLEMS BY YOURSELF. Be sure to show your work.
Next, check your answers with your partner. Last, raise your hand so a teacher can check your work.

\[
\frac{1}{6}(x + 1) = 1 \quad \quad 4(x - 3) = 2(x - 3) + 10
\]

\[
\frac{1}{9}(x + 3) = 1 \quad \quad 4(f + 5) + 18 = 10(f + 5)
\]
Jarrod’s Solution:

\[ 9 = 3(y + 5) + 6(y + 5) \]
\[ 9 = 9(y + 5) \quad \text{Combine} \quad \text{on Both} \]
\[ 1 = y + 5 \quad \text{Divide} \quad \text{on Both} \]
\[ -4 = y \quad \text{Subtract} \quad \text{on Both} \]

Complete the step labels for each solution in the blank spaces provided above.

21. Why did Jarrod combine like terms for his first step?
Peter’s Solution:

\[2(t - 1) + 20 = 7(t - 1)\]
\[20 = 5(t - 1)\]
\[4 = t - 1\]
\[5 = t\]

Subtract \[\underline{\_\_\_\_\_\_}\]
Divide \[\underline{\_\_\_\_\_\_}\] on Both

Complete the step labels for each solution in the blank spaces provided above.

22. Could you use Peter’s way to solve many different kinds of problems? **Circle one:**  

YES  NO

Explain your reasoning.
### Danielle’s Solution:

\[
18 = 4(r - 1) + 2(r - 1) \\
18 = 4r - 4 + 2r - 2 \\
18 = 6r - 6 \\
24 = 6r \\
4 = r
\]

Distribute \[\underline{_________}\]

Combine \[\underline{_________}\]

Add \[\underline{_____ \text{ on Both}}\]

Divide \[\underline{_____ \text{ on Both}}\]

Complete the step labels for each solution in the blank spaces provided above.

23. Why are each of Danielle’s steps OK to do?
Johan’s Solution:

\[
\begin{align*}
9(w + 2) &= 3(w + 2) + 24 \\
9w + 18 &= 3w + 6 + 24 & \text{Distribute} \underline{\text{(w + 2)}} \\
9w + 18 &= 3w + 30 & \text{Combine} \underline{\text{(w + 2)}} \\
6w + 18 &= 30 & \text{Subtract} \underline{\text{(w + 2)}} \text{ on Both} \\
6w &= 12 & \text{Subtract} \underline{\text{(3w + 24) - (3w + 6)}} \text{ on Both} \\
w &= 2 & \text{Divide} \underline{\text{(6) on Both}}
\end{align*}
\]

Complete the step labels for each solution in the blank spaces provided above.

24. On what types of equations might you use Johan’s way? Give an example.