



PAIRING PROBLEMS

TRY IT

From a problem set, students choose the two most similar or most different problems and explain what makes them alike or different.

WHY TRY IT?

- Encourages students to compare multiple problems
- Promotes understanding of mathematical structure
- Spurs discussion about big mathematical ideas

Solve the following equations for x :

- $5x - 8 = 7$
- $7x - 5 = 3x + 3$
- $12 + 6x = 3(x - 4)$
- $4(3x - 12) = 12x - 48$
- $8x + 2(3x - 4) = 6x$
- $3(2x - 8) = 6(4 - 3x)$

Pairing

7. Identify two problems, from the above set, you think are the most similar. What makes them the most similar to you?

Students choose two problems that are similar.

Solve the following equations for x :

- $5x - 8 = 7$

$$\begin{array}{r} 5x - 8 = 7 \\ + 8 \quad + 8 \\ \hline 5x = 15 \\ \div 5 \quad \div 5 \\ \hline x = 3 \end{array}$$
- $7x - 5 = 3x + 3$

$$\begin{array}{r} 7x - 5 = 3x + 3 \\ - 3x \quad - 3x \\ \hline 4x - 5 = 3 \\ + 5 \quad + 5 \\ \hline 4x = 8 \\ \div 4 \quad \div 4 \\ \hline x = 2 \end{array}$$
- $12 + 6x = 3(x - 4)$

$$\begin{array}{r} 12 + 6x = 3(x - 4) \\ 12 + 6x = 3x - 12 \\ - 3x \quad - 3x \\ \hline 12 + 3x = -12 \\ + 12 \quad + 12 \\ \hline 3x = -24 \\ \div 3 \quad \div 3 \\ \hline x = -8 \end{array}$$
- $4(3x - 12) = 12x - 48$

$$\begin{array}{r} 4(3x - 12) = 12x - 48 \\ 12x - 48 = 12x - 48 \\ - 12x \quad - 12x \\ \hline -48 = -48 \\ \div -48 \quad \div -48 \\ \hline \text{infinite solutions} \end{array}$$
- $8x + 2(3x - 4) = 6x$

$$\begin{array}{r} 8x + 2(3x - 4) = 6x \\ 8x + 6x - 8 = 6x \\ - 6x \quad - 6x \\ \hline 8x - 8 = 0 \\ + 8 \quad + 8 \\ \hline 8x = 8 \\ \div 8 \quad \div 8 \\ \hline x = 1 \end{array}$$
- $3(2x - 8) = 6(4 - 3x)$

$$\begin{array}{r} 3(2x - 8) = 6(4 - 3x) \\ 6x - 24 = 24 - 18x \\ + 18x \quad + 18x \\ \hline 24x - 24 = 24 \\ + 24 \quad + 24 \\ \hline 24x = 48 \\ \div 24 \quad \div 24 \\ \hline x = 2 \end{array}$$

Pairing

7. Identify two problems, from the above set, you think are the most similar. What makes them the most similar to you?

Number 3 and 4 both have a parentheses on one side of the equation.

TEACHER NOTES

This strategy works well as either a standalone activity or a discussion starter. Use problems students have already completed so attention stays on comparison and justification. Emphasize that multiple answers can be valid if students can explain their reasoning.



CAUTION

Students' solutions will likely differ from yours. The goal is to draw out students' ideas.

