Homework Answers

1. $20, 45x$
   
   5

2. $15r, 25$
   
   5

3. $8xy, 14x$
   
   2x

4. $30w, 70w$
   
   10w

5. $4st, 12s$
   
   4s

6. $11gh, 33g$
   
   11

Mr. G made one mistake, can you find it?
SWBAT solve word problems by factoring linear expressions.

Do Now: Simplify the following expression: \(8a - 2b + 12a - 2a - 4b\) = \(18a - 6b\)

What is the Greatest Common Factor of the simplified expression 6

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Real World Example:

The drawing of the garden at the right has a total area of \((15x + 18)\) square feet. Find possible dimensions of the garden.

Factor \(15x + 18\).

\[
15x = 3 \cdot 5 \cdot x
\]

\[
18 = 2 \cdot 3 \cdot 3
\]

Circle the common factors.

The GCF of \(15x\) and \(18\) is 3. Write each term as a product of the GCF and its remaining factors.

\[
15x + 18 = 3(5x) + 3(6)
\]

\[
= 3(5x + 6) \quad \text{Distributive Property}
\]

So, the possible dimensions are 3 feet by \((5x + 6)\) feet.

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You Try:

Factor each expression. If the expression cannot be factored, write cannot be factored.

1. \(3x + 9\)  \(\overset{3}{\overline{\text{\(3(x+3)\)}}}\)

2. \(2x - 15\)  \(\overset{CBF}{\overline{\text{\(6(2x+5y)\)}}}\)

3. \(12x + 30y\)  \(\overset{CB}{\overline{\text{\(6(2x+5y)\)}}}\)

4. \(5x + 5\)  \(\overset{5}{\overline{\text{\(5(x+1)\)}}}\)

5. \(18x + 6\)  \(\overset{6}{\overline{\text{\(6(3x+1)\)}}}\)

6. \(4x - 7\)  \(\overset{CB}{\overline{\text{\(\text{cannot be factored)\)}}}\)

7. \(10x - 35\)  \(\overset{5}{\overline{\text{\(5(2x-7)\)}}}\)

8. \(32x + 24y\)  \(\overset{8}{\overline{\text{\(8(4x+3y)\)}}}\)

9. \(30x - 40\)  \(\overset{10}{\overline{\text{\(10(3x-4)\)}}}\)
Work Together

1) The area of a rectangular dance floor is \((4x - 8)\) square units. Factor \(4x - 8\) to find possible dimensions of the dance floor.

2) The area of a rectangular porch is \((9x + 18)\) square units. Factor \(9x + 18\) to find possible dimensions of the porch.

3) Six friends visited a museum to see the new holograms exhibit. The group paid for admission to the museum and $12 for parking. The total cost of the visit can be represented by the expression \(6x + 12\). What was the cost of the visit for one person?

\[6(x + 2)\]

Cost of 1 person \(\$(x + 2)\)

4) **GEOMETRY** The rectangle shown below has a total area of \((4x + 36)\) square feet. Factor \(4x + 36\).

\[\begin{array}{c}
4x \\
36
\end{array}\]

5) **FUNDRAISING** The Art Club receives $10 plus $2 for every sculpture they sell for a fundraiser. The expression \(2x + 10\) represents the amount the Art Club receives if they sell \(x\) sculptures. Factor \(2x + 10\).
6\( \times \) \( 10 \cdot 15 \times = 150 \)
\( 4x + 3 \)
\( 24x + 18 \)
6) James has $120 in his savings account and plans to save $x each month for 6 months. The expression $6x + $120 represents the total amount in the account after 6 months. Factor the expression $6x + 120$.

7) The Venn diagram shows the factors of 12 and 18x.

![Venn Diagram]

What is the greatest common factor of the two monomials?
- 2
- 3
- 6
- 36

8) Which pair of monomials has a GCF of 4a?
- 16a, 8a
- 18a, 8a
- 16ab, 12b
- 16ab, 12a

9) The perimeter of a rectangular garden is shown at the right. What is the perimeter of the garden in factored form?

\[ P = (3w + 12) \text{ ft} \]

10) Mr. Phen’s monthly income can be represented by the expression 25x + 120 where x is the number of hours worked. Factor the expression 25x + 120.
SWBAT factor linear expressions.

1) Factor $48j + 60k + 24$ by finding the greatest common factor of the terms.

2) Simplify: $(x + 5) + (x + 5) + (x + 5)$

Answer: ___________ Now, factor your answer: ________________

3) Simplify: $2x + (5 + x) + 5 \cdot 2$

Answer: ___________ Now, factor your answer: ________________

4) Simplify: $2x + (y + x) + 2y$

Answer: ___________ Now, factor your answer: ________________