# Simplifying Linear Expressions

Grade 7 Linear Equation Worksheet

Date:_____ Name:_____

## LET'S MAKE SIMPLIFYING LINEAR EXPRESSIONS EASY

Complete the following problems

1. Write an equivalent expressions for 5a + 30.

2. Write an equivalent expressions for 7a + 21.

3. Write an equivalent expression for 4(x+7)- 9

4. Write an equivalent expression for (x + 6)- 5 + 9

5. Write an equivalent expression for 5(x+7)-4

6. An equilateral triangle has a perimeter of (18x + 3). What is the length of each side of the triangle?

7. Adil says the two expressions 2(3a -2)+ 4a and 2(5a- 2) are equivalent. Is he correct? Explain why or why not?

Simplify the following

8. 40z -6 + z =

9. -14(m+6)=

10. 9b - 3v -(8+2v)=

11. 10u - 9a -(14+8a)=

12. 18b - 10 + b=

13. 2(7p - 4)- 18=

14. x - (15e - e)=

15. -15b + (8b -3)=

# Simplifying Linear Expressions

**Answers**

1. 5(a + 6)

2. 7(a + 3)

3. 4x + 19

4. x + 10

5. 5x + 31

6. (6x +1).

7. Yes, they are equivalent.
   Reason: After simplifying both expressions, we got the same expressions.

8. 41z - 6

9. -14m - 84

10. 9b - 5v - 8

11. -17a + 10u - 14

12. 19b - 10

13. 14p - 26

14. x - 14e

15. -7b - 3

**Answer Explanation**

1. Write it in factorized form.
   Find the GCF.
   Which is 5.
   Place that outside the parenthesis.
   And you get an answer of:
   5(a + 6)

2. Write it in factorized form.
   Find the GCF.
   Which is 7.
   Place that outside the parenthesis.
   And you get an answer of:
   7(a + 3)

3. We have to find an equivalent equation. If we work the equation out, we will generate an equal expression:
   =4(x + 7) − 9 (parenthesis)
   = 4x + 28 − 9 (combine like terms)
   = 4x + 19

4. We have to find an equivalent equation. If we work the equation out, we will generate an equal expression:
   =(x + 6) − 5 + 9 (parenthesis)
   = x + 6 − 5 + 9 (combine like terms)
   = x + 6 + 9 - 5 (order of operation)
   = x + 10

5. We have to find an equivalent equation. If we work the equation out, we will generate an equal expression:
   =5(x + 7) − 4 (parenthesis)
   = 5x + 35 − 4 (combine like terms)
   = 5x + 31

6. **Step 1:** This looks very hard at first. We need to remember that in an equilateral triangle all three sides are equal. So, it stands to reason that if we divide the perimeter by 3, we can determine the length of one side.
   **Step 2:** Take 3 as common factor in (18x + 3). The result will be 3(6x +1) 3(6x +1) is the perimeter of equilateral triangle whose all three sides are equal.
   **Step 3:** So divide 3(6x +1) by 3.
   The length of each of the three sides is (6x +1).

7. **Step 1:** We will write each expression in its simplest form.
   **Step 2:** Distribute and combine like terms in the first expression to get
   2(3a − 2) + 4a = 6a − 4 +4a (combine like terms)
   = 10a − 4 (take 2 as common factor)
   = 2(5a − 2)
   The second expression is: 2(5a − 2).
   The first expression is equivalent to the second expression. Yes, Adil is correct.

8. 41z - 6

9. -14m - 84

10. 9b - 3v -(8 + 2v) (parenthesis)
    = 9b - 3v - 8 - 2v (combine like terms)
    = 9b - 3v - 2v - 8
    = 9b - 5v - 8

11. 10u - 9a -(14 + 8a) (parenthesis)
    = 10u - 9a - 14 - 8a (combine like terms)
    = 10u - 9a - 8a - 14 = 10u - 17a - 8

12. 18b - 10 + b (parenthesis)
    = 18b + b - 10 (combine like terms)
    = 19b - 10

13. 2(7p - 4) - 18 (parenthesis)
    = 14p - 8 - 18 (combine like terms)
    = 14p - 26

14. x -(15e - e) (parenthesis)
    = x - 15e + e (combine like terms)
    = x - 14e

15. -15b +(8b - 3) (parenthesis)
    = -15b + 8b - 3 (combine like terms)
    = -7b - 3