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Simplify each of the following expressions.

1. **2(7x – 2) + 3(x + 3) = _____**
2. **2(3x – 4) + 5(x – 1) = _____**
3. **3(2x + 5) – 6(x – 3) = _____**
4. **7(2x – 5) – 8(3x + 2) = _____**

Solve each of the following equations. Show your process steps neatly organized.

5. **3x + 7 = 22**
6. **4x – 6 = 24**
7. **8x + 6 = 3x + 10**
8. **5x – 3 = x + 6**
9. **4(5x – 3) – 7(x – 1) = 5(2x – 1)**
10. **2(8x – 5) – 7(x – 3) = 3(x – 2) + 5(2x + 1)**

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Solve each of the following for the indicated variable. Show your process steps neatly organized.

11. $ax + by = c$ **solve for x**

12. $A = \pi r^2 + 2\pi rh$ **solve for** π

13. $d = vt + (\frac{1}{2})at^2$ **solve for v**

14. $s = b + 1.1T$ **solve for T**

15. $ax - by = cx + d$ **solve for x**

16. $y = ax^2 + bx + c$ **solve for a**

17. $A - abr = bc^2$ **solve for b**

18. $b(px - 3c) = a(qx - 4)$ **solve for x**

Solve each of the following word problems algebraically. Show your process steps neatly organized. (Use only one variable in your solutions please.)

19. Susan has 3 times as many marbles as Joe. Sam has one less than twice the number Joe has. Altogether they have 101 marbles. How many does each person have?

20. The length of a rectangle is 2 feet less than twice its width. The perimeter of the rectangle is 15 feet. Find the dimensions of the rectangle. Express your answer using feet and inches.

21. In a collection of ordinary nickels and dimes, the number of nickels is 5 less than 3 times the number of dimes. If the value is worth $7, then how many coins of each type are there?

Solve each of the following word problems algebraically. Show your process steps neatly organized. (Use only one variable in your solutions please.)

22. A collection of 58 ordinary coins consists of dimes and nickels and is worth $4. How many coins of each type are in the collection?

23. Tom, Dick, and Harry win a total of $700. Tom wins $30 less than twice the amount Harry wins. Dick receives $10 more than 3 times the amount Harry receives. How much did each person win?

24. Find four consecutive even integers whose sum is 348.