

SAGE/Term 4 REVIEW - Expressions, Equations, and Inequalities

Write an algebraic equation or expression for the following verbal expressions. **DO NOT SOLVE THE PROBLEM!**

1. A number minus 3 is 21.
2. 23 added to y equals x.
3. The product of 5 and a number is 40.

Simplify the following expressions by combining like terms. Show your work.

4. $3x + 5 - x - 2$	5. $-4x + 3x - 2x + x$
6. $-4y + 3 - 3y - 9$	7. $7t + 2t - 4 + 6$

Students working on a homework assignment got the following answers. Check their solutions and circle whether they were correct or incorrect.

<p>8. $12y = -24$ CLAIM: $y = -2$</p> <p>Check:</p> <p>Correct? YES or NO</p>	<p>9. $-5 = x + 1$ CLAIM: $x = -4$</p> <p>Check:</p> <p>Correct? YES or NO</p>	<p>10. $-3 + r = -5$ CLAIM: $r = 2$</p> <p>Check:</p> <p>Correct? YES or NO</p>
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Solve the following equations. Be sure to show your work and check your answer. Answer in simplified fractions unless the problem starts out in decimal form. (2 points each)

11. $6 = \frac{a}{4} + 2$	12. $0 = 4 + \frac{n}{5}$	13. $-15 = -4m + 5$
14. $9x - 7 = -7$	15. $8n + 7 = 31$	16. $5 = 7(x + 8)$

$$17. 3x - \frac{1}{5} = \frac{2}{5}$$

$$18. \frac{4}{7}x - \frac{1}{14} = \frac{3}{14}$$

$$19. \frac{1}{2}(x+5) = 6$$

Solve each inequality below. Show your work, check your work, and graph your solution. (2 points each)

$$20. 5t - 2 \geq 10$$



$$21. -3x + 2 < 1$$



$$22. \frac{b}{8} + 14 < -2$$



$$23. -3(r + 2) \geq 4$$



Solve the following problems. Remember to answer them in context!

24. Mrs. McBride went to Jamba Juice to try their Pumpkin Spice smoothie. If she spent \$5.25 total, and \$0.32 was tax, what does Jamba Juice charge for this seasonal treat?

Solution _____

25. If you spent $\frac{3}{5}$ of your allowance on snacks and now have \$2. How much was your allowance?

Solution _____

Name _____ Period _____ Score ____/____

26. Mr. Sackett is refinishing his bathroom and the board he has is now $\frac{3}{4}$ ft. less than it was originally. If the board is now $\frac{1}{8}$ ft. long, how long was the board originally?

Solution _____

27. As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.

Solution: _____

28. Tia works at a supermarket, and part of her job is to restock the energy bars once the number of bars is less than 5. If there were 260 energy bars on the fully-stocked shelf and they sell at a rate of 15 bars per day, how many days has it been since the shelf was fully-stocked if Tia doesn't have to restock the energy bars yet?

Solution: _____

29. Angelique's MP3 player can store up to 2 hours of songs, and she already has 1 hour and 15 minutes worth of songs stored. If each of the songs that Angelique wants to store on her MP3 player is 4 minutes long, how many additional songs can Angelique store? (Hint: Use time in minutes.)

Solution: _____

Simplify the following equations using the distributive property. If it helps, draw a model!

30. $3(x - 12)$	31. $-2(y - 3)$	32. $\frac{2}{3}\left(3 - \frac{3}{4}\right)$
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Simplify the following expressions. Draw a model if it helps!

33. $3x + 15$	34. $2x - 6$	35. $4y + 18$
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