Test Prep: Algebra→ expressions and equations Mr. Paquette
Advanced Math

Topics:

1. Properties of numbers
2. Properties of equality
3. Simplifying algebraic expressions
4. Solving algebraic equations
5. Solving and graphing inequalities
6. Algebraic word problems

Properties:

Match the examples with the correct property:

1. ___ 5(6x + 4) = (6x + 4)5	**A. Distributive Property over addition**
2. ___ a + b = b + a	**B. Associative Property of Addition**
3. ___ x + (2x + 3) = (x + 2x) + 3	**C. Commutative Property of Mult.**
4. ___ 25 + 0 = 25	**D. Commutative Property of Addition**
5. ___ 3 – 2(x + 5) = -2x - 7	**E. Identity element of Addition**

6. What Properties have been used to simplify this expression?

[6x + 4(7 + 3x)] – 2

[6x + 28 + 12x] – 2 _____

[6x + 12x + 28] – 2 _____

18x + [28 + -2] _____

18x + 26

7. What operations does the associative property work under? The commutative property?

8. What does the transitive property of equality state?

***for additional practice you should refer to the notes from class and past homework.

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9) What is the additive inverse of -7v?
10) What is the multiplicative inverse of 3?
11) What is the additive identity element?
12) What is the multiplicative identity?

Expressions:

Simplify each expression.

13) – (4 – 2b)

14) 4(2a + 2) -17

15) -6 – 3(2k + 4)

16) $-4x - 5x(x + 3) + x^2$

17) $14x^3 - 5x^2 + x - x^2 + 6x^3 - x$

18) 4(n – 3) – 8(n + 5)

Solve each equation. SHOW ALL WORK!!!

19) 4a + 1 – 10a = 19

20) 16 = 2(x – 1) – x

21) n + n + n – 7n = 48

22) $-\frac{3}{5}(s-25)=9$

23) 8m – 5 = 5m + 7

24) 8(7 – p) – 8 = -16(p – 2)

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Solve each inequality and graph. SHOW ALL WORK!!!

25) $x - (12 - x) < 38$ 26) $14 < -5n + 9$ 27) $2y - 8y + 29 \geq 5$

28) $7v - (10v - 51) \leq 0$ 29) $28r - 6(3r - 5) \geq 40$ 30) $9c - 2c + 8 < 4c + 38$

31) $6(2x + 1) - 3(4x - 3) - (6x + 10) \geq -(4x - 3) + 3$

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32. Find two consecutive odd integers whose sum is 128

33. Find two consecutive odd integers whose sum is −36

34. Find three consecutive odd integers whose sum is 75

35. Find three consecutive odd integers whose sum is −45

36. Three consecutive odd integers are such that the sum of the first and the third is 70. Find the integers

37. Three consecutive integers are such that three times the smallest is 14 more than the largest. Find the integers.

38. Eight times a number increased by 9 is the same as 15 more than 7 times the number. Find the number.

39. Thirty decreased by 6 times a number is the same as 16 more than the number. Find the number.

40. When 6 times a number is increased by 11 the result is 16 less than 9 times the number. Find the number.

41. One number is twice another number. If the 12 is subtracted from the larger number the result is 7 more than the smaller number. Find the numbers.

42. The larger of two numbers is 10 more than the smaller number. Five times the larger number is 40 more than 6 times the smaller. Find the numbers.

43. A wallet contains only five-dollar bills and ten-dollar bills. There are fifteen bills all together totaling $120. How many of each bill are in the wallet?

44. Somebody found a wallet with only ten-dollar bills and twenty-dollar bills inside. The number of tens is seven less than five times the number of twenties. How many of each bill are in the wallet if there is a total of $140?

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Answers:
1. c
2. d
3. b
4. e
5. a
6. distributive property over addition; commutative property of addition; associative property of addition.
7. multiplication and addition for both
8.If a = b and b = c, then a = c
9. 7v
10. 1/3
11. 0
12. 1
13. -4 + 2b
14. 8a - 9
15. -6k -18
16. $-4x^2 - 19x$
17. $20x^3 - 6x^2$
18. -4n - 52
19. a = -3
20. 18 = x
21. n = -12
22. s = 10
23. m = 4
24. p = -2
25. $x < 25$
26. $-1 > n$
27. $y \leq 4$
28. $v \geq 17$
29. $r \geq 1$
30. $c < 10$
31. $-\frac{1}{2} \geq x$
32. 63, 65
33. −19, −17
34. 23, 25, 27
35. −17, −15, −13
36. 33, 35, 37
37. 8, 9, 10
38. 6
39. 2
40. 9
41. 19 and 38
42. 10 and 20
43. 6 five dollar bills and 9 ten dollar bills
44. 8 ten dollar bills and 3 twenty dollar bills

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