Honors Math 8th grade Summer packet

Name _____ Date _____

Lesson 1-1 Define variables and write an equation to model each situation.

1. The total length of the edges of a cube is 12 times the length of an edge.

2. The total cost of lunch is $5.50 times the number of people at the table.

3. The area of a rectangle is 12 cm times the length of the rectangle.

4. The cost of a telephone call is 75 cents plus 25 cents times the number of minutes.

1. _____
2. _____
3. _____
4. _____

Lesson 1-2 Simplify each expression.

5. $4 + 3 \cdot 8$

6. $2 \cdot 3^2 - 7$

9. $4^2 + 8 \div 2$

10. $\frac{1}{2} \div \frac{4}{3}$

13. $2 + 6 \cdot 8 \div 4$

14. $6 + 8 \div 2 - 3$

5. _____ 6. _____
9. _____ 10. _____
13. _____ 14. _____
17. _____ 18. _____
21. _____ 22. _____

Lesson 1-3 Use <, =, or > to compare.

17. $0.45 \boxempty 0.54$

18. $-1.08 \boxempty -1.008$

21. $0.444 \ldots \boxempty \frac{4}{9}$

22. $\frac{4}{13} \boxempty \frac{4}{15}$

Lesson 1-6 Find the mean, median, and mode for each set of data.

29. $36, 42, 35, 40, 35, 51, 41, 35$

30. $1.2, 0.9, 0.7, 1.1, 0.8, 1.3, 0.6$

29. _____
30. _____

Answers

Lessons 2-4 and 2-5 Simplify each expression.

24. $-4(a + 3)$

25. $-12\left(\frac{4}{3}x - 1\right)$

27. $\frac{4}{9}(18 - 9t)$

28. $1 + 3 + 5 + 7$

30. $-3(7w) + 7(3w)$

31. $2(1 - d) - (2d + 1)$

33. $5(2 - j) + (2j - 3)$

34. $\frac{1}{3}(12 - 6r)$

24. _____ 25. _____
27. _____ 28. _____
30. _____ 31. _____
33. _____ 34. _____

Lessons 2-1 to 2-3 Simplify each expression.

1. $22 + (-33)$

2. $45 + (-54)$

4. $\frac{4}{13} - \frac{4}{13}$

5. $|12 - 21|$

7. $-(-(11 - 22))$

8. $\left|\frac{2}{3} + \frac{4}{5}\right|$

10. $(-3)^2$

11. -3^2

13. $\frac{3^2}{2^3}$

14. $\frac{-5^2}{(-5)^2}$

16. $\frac{4^2}{5^2}$

17. $\frac{2 \cdot 3 + 4}{2(3 + 4)}$

19. $\left(\frac{5}{7}\right)^2$

20. $\frac{2}{3} \div \frac{4}{9}$

22. $\begin{bmatrix} 6 & 12 \\ -9 & 7 \end{bmatrix} - \begin{bmatrix} 8 & -6 \\ 15 & 0 \end{bmatrix}$

1. _____ 2. _____
4. _____ 5. _____
7. _____ 8. _____
10. _____ 11. _____
13. _____ 14. _____
16. _____ 17. _____
19. _____ 20. _____
22. _____

⚫ **Lessons 3-1 to 3-2** Solve each equation.

1. $8p - 3 = 13$ 2. $8j - 5 + j = 67$

5. $m - 9 = 11$ 6. $\frac{1}{2}(s + 5) = 7.5$

9. $3r - 8 = -32$ 10. $8g - 10g = 4$

⚫ **Lesson 3-3** Solve each equation. If the equation is an identity, write *identity*. If it has no solution, write *no solution*.

15. $4h + 5 = 9h$

18. $m + 3m = 4$

21. $10z - 5 + 3z = 8 - z$

⚫ **Lessons 3-4 and 3-5** Solve each proportion.

24. $\frac{3}{4} = \frac{-6}{m}$ 25. $\frac{t}{7} = \frac{3}{21}$

28. $\frac{s}{15} = \frac{4}{45}$ 29. $\frac{9}{4} = \frac{x}{10}$

⚫ **Lessons 4-1 to 4-4** Solve each inequality.

1. $-8w < 24$ 2. $9 + p \leq 17$

4. $7y + 2 \leq -8$ 5. $t - 5 \geq -13$

7. $8w + 7 > 5$ 8. $\frac{s}{6} \leq 3$

⚫ **Lesson 4-5** Solve each compound inequality.

27. $8 < w + 3 < 10$ 28. $-6 < t - 1 < 6$

30. $9j - 5j \geq 20$ and $8j > -36$ 31. $37 < 3c + 7 < 43$

⚫ **Lesson 5-2** Find the range of each function when the domain is $\{-4, -1, 0, 3\}$.
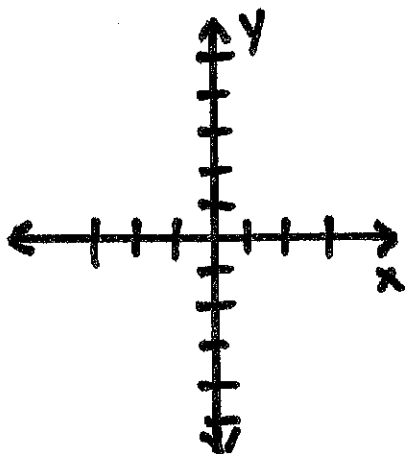
5. $y = 6x - 5$ 6. $y = |x| - 2$

8. $y = \frac{1}{2}x + 8$ 9. $y = -x^2 - x$

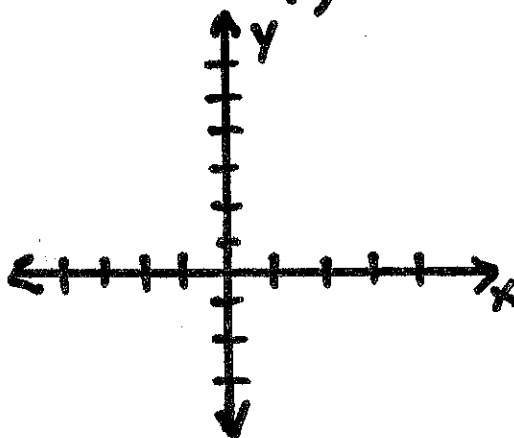⚫ **Lesson 5-3** Graph each function.

15. $y = 2x + 1$ 16. $y = 4 - x$

15)

16)

Answers

1) _____   2) _____
5) _____   6) _____
9) _____   10) _____

15) _____
18) _____
21) _____
24) _____   25) _____
28) _____   29) _____

1) _____   2) _____
4) _____   5) _____
7) _____   8) _____

27) _____   28) _____
30) _____   31) _____

5) _____   6) _____
8) _____   9) _____

● Lessons 6-2 and 6-3 Find the slope and *y*-intercept.

5. $y = 6x + 8$ **6.** $3x + 4y = -24$

Write the equation in point-slope form for the line through the given point with the given slope.
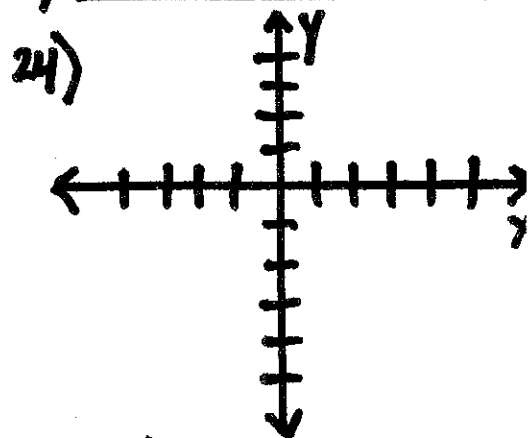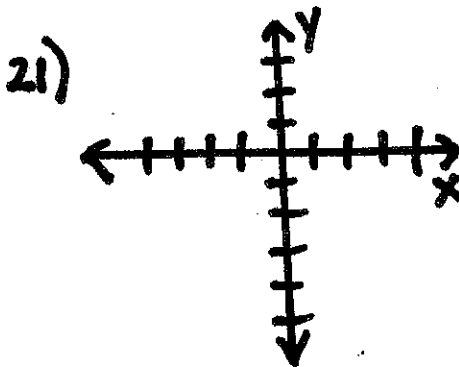
17. $(4,6); m = -5$ **18.** $(3,-1); m = 1$ **19.** $(8,5); m = \frac{1}{2}$

Graph each equation.

21. $x + 4y = 8$

24. $4x - 3y = 12$

21)

24)

A line passes through the given points. Write an equation for the line in slope-intercept form.

27. $(2,5)$ and $(4,8)$ **28.** $(1,6)$ and $(7,3)$

31. $(0,-7)$ and $(-1,0)$ **32.** $(7,0)$ and $(3,-4)$

● Lesson 6-5 Write an equation in standard form that satisfies the given conditions.

35. parallel to $y = 4x + 1$, through $(-3,5)$

37. perpendicular to $3x + 4y = 12$, through $(7,1)$

39. parallel to the *x*-axis and through $(4,-1)$

36. perpendicular to $y = -x - 3$, through $(0,0)$

38. parallel to $2x - y = 6$, through $(-6,-9)$

40. through $(4,44)$ and parallel to the *y*-axis

● Lesson 7-1 Solve each system.

1. $x - y = 7$
    $3x + 2y = 6$

2. $y = 2x + 3$
    $y = -\frac{3}{2}x - 4$

3. $y = -2x + 6$
    $3x + 4y = 24$

● Lesson 7-6 Solve each system by graphing.

25. $y \leq 5x + 1$
    $y > x - 3$

28. $y < -2x + 1$
    $y > -2x - 3$

25)

28)
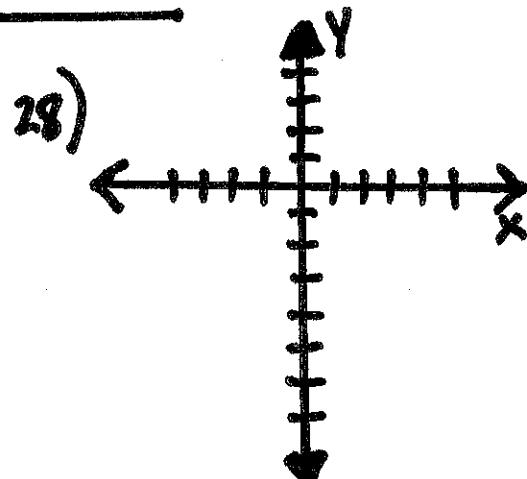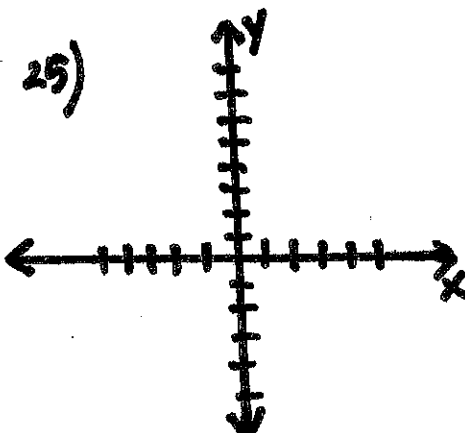
Lessons 8-1 to 8-5 Simplify each expression. Use only positive exponents.

1. $(2t)^{-6}$

2. $5m^5m^{-8}$

3. $(4.5)^4(4.5)^{-2}$

5. $(x^2n^4)(n^{-8})$

6. $(w^{-2}j^{-4})^{-3}(j^7j^3)$

7. $(t^6)^3(m)^2$

9. $\dfrac{r^5}{g^{-3}}$

10. $\dfrac{1}{a^{-4}}$

11. $\dfrac{w^7}{w^{-6}}$

13. $\dfrac{a^2b^{-7}c^4}{a^5b^3c^{-2}}$

14. $\dfrac{(2t^5)^3}{4t^8t^{-1}}$

15. $\left(\dfrac{a^6}{a^7}\right)^{-3}$

Evaluate each expression for $m = 2$, $t = -3$, $w = 4$, and $z = 0$.

17. t^m

18. t^{-m}

19. $(w \cdot t)^m$

21. $(w^z)^m$

22. $w^m w^z$

23. $z^{-t}(m^t)^z$

Write each number in scientific notation.

25. 34,000,000

26. 0.00063

29. 360,000

30. 6,200,000,000

Answers

1) _____ 2) _____ 3) _____

5) _____ 6) _____ 7) _____

9) _____ 10) _____ 11) _____

13) _____ 14) _____ 15) _____

17) _____ 18) _____ 19) _____

21) _____ 22) _____ 23) _____

25) _____ 26) _____

29) _____ 30) _____

Lesson 9-1 Simplify. Write each answer in standard form.

1. $(5x^3 + 3x^2 - 7x + 10) - (3x^3 - x^2 + 4x - 1)$

3. $(4m^3 + 7m - 4) + (2m^3 - 6m + 8)$

5. $(-7c^3 + c^2 - 8c - 11) - (3c^3 + 2c^2 + c - 4)$

7. $(s^4 - s^3 - 5s^2 + 3s) - (5s^4 + s^3 - 7s^2 - s)$

1) _____

3) _____

5) _____

7) _____

Lesson 9-2 Simplify each product.

11. $4b(b^2 + 3)$

12. $9c(c^2 - 3c + 5)$

15. $5r^2(r^2 + 4r - 2)$

16. $2m^2(m^3 + m - 2)$

11) _____ 12) _____

15) _____ 16) _____

Lessons 9-3 and 9-4 Simplify each product. Write in standard form.

27. $(5c + 3)(-c + 2)$

28. $(3t - 1)(2t + 1)$

31. $(2n - 3)(2n + 4)$

32. $(b + 3)(b + 7)$

35. $(w - 1)(w^2 + w + 1)$

36. $(a + 4)(a - 4)$

27) _____ 28) _____

31) _____ 32) _____

35) _____ 36) _____

Lessons 9-5 to 9-7 Factor each expression.

41. $x^2 - 4x + 3$

42. $3x^2 - 4x + 1$

43. $v^2 + v - 2$

45. $m^2 + 9m - 22$

46. $x^2 - 2x - 15$

47. $2n^2 + n - 3$

41) _____

42) _____

43) _____

45) _____

46) _____

47) _____