# Section 2.8 – Chapter Summary

## Problem Set 3

**Write a mathematical expression for each statement using an appropriate variable.**

1. the product of twelve and a number
2. three more than the difference between a number and eleven
3. half the sum of a number and eighteen

**If $t = 1$ then simplify the following expressions.**

4. $t + 4$
5. $2t - 1/2$
6. $-(t + 2) - t$
7. $t^2 + 3t - 1$
8. $\dfrac{-3}{t+1}$
9. $\dfrac{t^2-1}{t+4} + t$

**If $s = -1$ and $r = 2$ then simplify the following expressions.**

10. $s^2 + 3r^3$
11. $\dfrac{3r}{s^2+3} - r$
12. $\dfrac{r}{s+1}$
13. $3s + 3 - r$
14. $2\left(\dfrac{x+1}{y-2}\right)$
15. $2r + 5s$

**Give the name of the property that justifies each of the following equations.**

16. $xyz = yxz$
17. $6a = a6$
18. $(a + b) + c = a + (b + c)$
19. $3 + x = x + 3$
20. $-2(a - 1) = -2a + 2$

**User the Distributive Property to simplify the following expressions.**

21. $2a(4a + 1)$
22. $-2(x - 3 + y^2)$
23. $y(3 - 3)$
24. $2(a + 1)$
25. $3p(2a - x + 10)$

**Draw the graph of each set on a number line.**

26. the integers less than 3
27. the whole numbers between -2 and 7
28. the real numbers greater than 2

**Let $S = \{-1, 0, 3, 5, 7, 11, 12, 19\}$. Which of the following are true?**

34. $1 \in S$
35. $\{5, 7, 11, 13\} \subset S$
36. $S \subset \mathbb{R}$

**Find the union and intersection of the following sets.**

37. A = {-3, 6, 12, 18, 22}, B = {18, 19, 20, 21, 22, 23}
38. A = {letters in the English alphabet}, B = {a, b, e, f, h, l, w, x}
39. A = {positive odd numbers}, B = {odd numbers}
40. A = {people taller than 6'}, B = {people born in the United States}
41. A = {mammals}, B = {elephants}

**Graph the intersection of the following sets.**

42. $x > 5$ and $x \geq 7$
43. $x \geq 2$ and $x < 12$
44. $x < 4$ and $x < 1$

**Graph the union of the following sets.**

45. $x > 0$ and $x \leq 1$
46. $x \geq 3$ and $x > 12$
47. $x \geq 4$ and $x < -4$

**For each of the following functions, find the specified values.**

48. If $f(x) = 2x + 2/3$ then what is $f(0)$?
49. If $g(x) = x^3 + 3x^2 - 4x + 2$ then what are $g(-1)$ and $g(2)$?
50. If $h(x) = \dfrac{3x+4}{-3}$ then what are $f(0)$ and $f(3)$?

**Write the given relation in the specified format.**

51. $f(x) = 4x + 3/4$ for x = 2, 3, 4 as a table.
52. $y = 4x / 4 - 2$ for $x = -6, 0, 6$ as a list.
53. The following table as a diagram

| $x$ | $y$ or $f(x)$ |
|---|---|
| 7 | 4 |
| 2 | -2 |
| 13 | 2 |
| -2 | 3 |

**Given the following functions and their domains, find the corresponding ranges.**

54. $h(x) = -x + 2$, $D = \{2, 3, 4\}$
55. $f(x) = x \cdot x \cdot x - 2$, $D = \{-2, 0, 3\}$
56. $f(x) = x \cdot x - x + 3$, $D = \{0, .6, 2\}$