1. $\frac{3}{1600} = \frac{x}{48000}$

$x = \frac{48000^{30} \cdot 3}{1600_{1}}$

$x = 90$ buttons

2. $\frac{330^{22}}{900_{15_{1}}} = \frac{x}{60_{1}}$

$x = 22$ grape flavored gummy bears

3. $8 - 1 = 7$, $7 = 3 + 4$, ✗ $1 + 3 = 4$, $8 - 2 = 6$, $6 = 3 + 3$, ✓ $3 + 2 > 3$

$8 - 3 = 5$, ✓ $5 = 2 + 3$, ✓ $2 + 3 > 3$, $8 - 4 = 4$, ✗ $4 = 4$

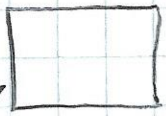
2, 3, 3

4. False $6 > 4$, but $6 < 7$
5. If $x > 7$, then $x > 4$
True
6. If $x \not> 7$, then $x \not> 4$
false $6 < 7$, but $6 > 4$
7. If $x \not> 4$, then $x \not> 7$
True

8. False I could be a sophmore
9. If I am a freshman, I am in highschool. True
10. If I am not a freshmen, I am not in highschool. False
I could be a sophmore.
11. If I am not in highschool, I am not a freshmen. True

12. True

13. If a shape is a rectangle, it is a square.
False → not a square →



14. If a shape is not a square, it is a rectangle.
False

not square, but rectangle

15. If a shape is not a rectangle, it is not a square
True

16. True

17. If an organism is a producer, it is an autotroph.
True.

18. If an organism is not an autotroph, it is not a producer.
True.

19. If an organism is not a producer, it is not an autotroph.
True

20. 2, 4, 8, 16

21. 2992, 29992, 299992, 2999992

22. 1, -2, -5, -8

23. (0, 4) (7, 0)

$m = -\frac{4}{7}$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{4 - 0}{0 - 7} = -\frac{4}{7}$

24. decreasing

25. (6, 10) (4, 5)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10-5}{6-4} = \frac{5}{2}$

26. increasing

27. (5, 7) (11, 8)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8-7}{11-5} = \frac{1}{6}$

28. increasing

29. (3, 1) (10, 1)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1-1}{10-3} = \frac{0}{7} = 0$

30. constant

31. (2, 8) (3, 4)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8-4}{2-3} = -\frac{4}{1} = -4$

32. decreasing

33. (4, 1) (7, 1)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1-1}{7-4} = \frac{0}{3} = 0$

34. constant

35. (6, 50) (13, 90)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{90-50}{13-6} = \frac{40}{7}$

36. increasing

37. increasing

38. $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{12-6}{10-5} = \frac{6}{5}$

39. $6 = 5 \cdot \frac{6}{5} + b$ vertical intercept $\boxed{= 0}$

40 decreasing

41 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-3}{7-21} = -\frac{1}{14}$

42 $4 = \frac{-7}{14} + b$

$4 = -\frac{1}{2} + b$

$\boxed{b = 4.5}$ ← vertical intercept

43 decreasing

44 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{91-41}{4-5} = \frac{50}{-50} = -50$

$5 = 41\left(\frac{1}{-50}\right) + b$

$5 = -0.82 + b$

$\boxed{b = 5.82}$ ← vertical intercept

45

46 increasing

47 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-3}{8-6} = \frac{1}{2}$

48 $6 = 8\left(\frac{1}{2}\right) + b$

$6 = 4 + b$

$\boxed{b = 2}$ ← vertical intercept

49 increasing

50. $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{19-16}{9-2} = \frac{3}{7}$

51 $16 = 2\left(\frac{3}{7}\right) + b$

$16 = \frac{6}{7} + b$

$\boxed{b = 15\frac{1}{7}}$

$y = 15^x$

52 $y = 15^3 = 3,375$

53 $y = 15^{\frac{1}{2}} = \sqrt{15}$

54 $y = 15^0 = 1$

55 $3 = 15^x$

$\log_{15}(3) = x = 0,405$

56 $225 = 15^x$

$x = 2$

57 $1 = 15^x$

$x = 1$