2. It is negative.

4. $y = -\frac{1}{30}x + 12$; The fuel decreases $\frac{1}{30}$ gallon for every mile driven.

6. $y = \frac{3}{2}x$; The height increases 1.5 feet each year.

8. $y = -60x + 480$; The volume decreases 60 cubic feet per hour.

10. **a.** $y - 212 = \frac{9}{5}(x - 100)$ or $y = \frac{9}{5}x + 32$

b. 71.6°F

c. $x = \frac{5}{9}(y - 32)$

d. about 28.33°C

12. The slope was miscalculated; The slope is 11, so the income is \$11 per hour.

14. yes; *Sample answer:* $y = 0.55x - 2.25$; $y = 6$; After 15 months, the hair will be 6 inches in length.

16. no

18. *Sample answer:* $y = -6.2x + 549$; no; The value 85 is not close to the values used to create the line of fit.

20. $y = 0.88x + 1.69$; $r = 0.88$; strong positive correlation

22. $y = -1.04x + 5.68$; $r = -0.93$; strong negative correlation

24. $y = -0.48x + 4.08$; $r = -0.91$; strong negative correlation

26. **a.** $-\frac{5}{4}$; the decrease in balance per month

b. domain: $0 \le x \le 24$, range: $0 \le y \le 3000$; The domain represents the term of the balance of the loan from start to finish, and the range represents the balance of the loan.

c. \$1500

28. *Sample answer:* A: $(0, 4)$, B: $(4, 0)$, C: $(1, 1)$; line connecting A and C: $y = -3x + 4$; line connecting B and C: $y = -\frac{1}{3}x + \frac{4}{3}$

30. D

32. **a.** yes; If a country has a high number of personal computers per capita, it indicates wealth and a high quality of life which would also indicate that the country would have a health care system and, therefore, a higher life expectancy.

b. no; The high life expectancy is not caused by the computers. Both are benefits of the wealth of a country. This is an example of how correlation does not imply causation.

34. $\left(\frac{1}{2}, 0\right)$

36. $(-1, 0)$

38. $(6, 2)$