

The cost in dollars,  $C$ , to manufacture  $n$  necklaces is given by the equation  $C(n) = an + b$ , where  $a$  and  $b$  are positive constants. In this equation, what does  $a$  represent?

- (a) the fixed costs, in dollars, independent of any necklaces being manufactured
- (b) the total cost, in dollars, to produce  $n$  necklaces, not including fixed costs
- (c) the total cost, in dollars, to produce one necklace, including fixed costs
- (d) the cost, in dollars, to produce one necklace, not including any fixed costs

In the mesosphere, the atmospheric layer between 50 km and 80 km in altitude, the average atmospheric temperature varies linearly with altitude. If the average temperature at 50 km altitude is  $10^{\circ}\text{C}$  and the average temperature at 80 km is  $-80^{\circ}\text{C}$ , then at what altitude is the average temperature  $-50^{\circ}\text{C}$ ?

- (a) 60 km
- (b) 65 km
- (c) 70 km
- (d) 75 km

For the function  $f$ ,  $f(1) = 4$  and  $f(2) = 13$ . Which of the following equations could describe  $f$ ?

- (a)  $f(x) = x^2 + 3$
- (b)  $f(x) = x^2 + 9$
- (c)  $f(x) = 2x^2 + 2$
- (d)  $f(x) = 3x^2 + 1$

The value of  $y$  varies with  $x$  according to the equation  $y = a(x - 2)(x + 1)$ , where  $a < 0$ . As the value of  $x$  increases from 0 to 5, which of the following best describes the behavior of  $y$ ?

- (a) It increases and then decreases.
- (b) It decreases and then increases.
- (c) It increases only.
- (d) It decreases only.

An online trading company charges a 3% commission for all stock purchases. If a trader purchases 200 shares of a stock through this company and is charged \$3,399 including commission, what is the cost per share for this stock?

- (a) \$16.45
- (b) \$16.48
- (c) \$16.50
- (d) \$16.52

The value of  $y$  varies with  $x$  according to the equation  $y = kx^2$ , where  $k > 0$ . When the value of  $x$  increases from 3 to 12, which of the following best describes the behavior of  $y$ ?

- (a) It increases by 81.
- (b) It increases by 135.
- (c) It is multiplied by 4.

(d) It is multiplied by 16.