14

SYSTEM OF EQUATIONS

2012B

1. **Answer (D):** Because 20 seconds is $\frac{1}{3}$ of a minute, Cagney can frost $5 \div \frac{1}{3} = 15$ cupcakes in five minutes. Because 30 seconds is $\frac{1}{2}$ of a minute, Lacey can frost $5 \div \frac{1}{2} = 10$ cupcakes in five minutes. Altogether they can frost $15 + 10 = 25$ cupcakes in five minutes.

2003A

2. (B) The cost for each member is the price of two pairs of socks, \$8, and two shirts, \$18, for a total of \$26. So there are $2366/26 = 91$ members.

2003B

2. (D) The cost of each day's pills is $546/14 = 39$ dollars. If x denotes the cost of one green pill, then $x + (x - 1) = 39$, so $x = 20$.

2011A

2. **Answer (E):** Because $14 \cdot 35 = 490 < 500$ and $15 \cdot 35 = 525 \geq 500$, the minimum number of bottles that she needs to buy is 15.

2005A

3. **(B)** Since $2x + 7 = 3$ we have $x = -2$. Hence

$$-2 = bx - 10 = -2b - 10, \quad \text{so} \quad 2b = -8, \text{ and } b = -4.$$

2007A

5. **Answer (B):** Let p be the cost in cents of a pencil and n be the cost in cents of a notebook. Then

$$7p + 8n = 415 \quad \text{and} \quad 5p + 3n = 177.$$

The solution of this pair of equations is $p = 9$ and $n = 44$. So the cost of 16 pencils and 10 notebooks is $16(9) + 10(44) = 584$ cents, or \$5.84.