1. If the domain is the set of students in a math class, which of the following correspondences is a function?

   I. Each student's social security number

   II. Each student's birthday

   A. I and II

   B. I only

   C. II only

   D. Neither I nor II

   E. Not enough information is given.

2. The formula $S(r)=4\pi r^2$ gives the surface area of a sphere with radius r. Find the area when the radius is 11 in.

   A. $44\pi \text{ in}^2$

   B. $88\pi \text{ in}^2$

   C. $1936\pi \text{ in}^2$

   D. $484\pi \text{ in}^2$

   E. $22\pi \text{ in}^2$

3. Determine the slope, m, and y-intercept, b, for $3x-2y=8$.

   A. $m=-\frac{3}{2}\quad b=8$

   B. $m=\frac{3}{2}\quad b=8$

   C. $m=\frac{2}{3}\quad b=-4$

   D. $m=\frac{2}{3}\quad b=8$

   E. $m=\frac{3}{2}\quad b=-4$

4. The life expectancy of American women *t* years after 1960 is given by $A(t)=\frac{3}{20}t+73$.
In what year was the life expectancy 79 years? (Hint: let *t* =0 represent the year 1960)

A. 1940

B. 2000

C. 1966

D. 1980

E. 2002

5. Describe the graph of $2x-3=1$.

A. A horizontal line in quadrants I and II.

B. A horizontal line in quadrants III and IV.

C. A vertical line in quadrants II and III.

D. A vertical line in quadrants I and IV.

E. A horizontal line in quadrant I only.

6. Find the *x*- and *y*-intercepts of $3x=2y-12$.

A. $(6,0);(0,-4)$

B. $(4,0);(0,-6)$

C. $(4,0);(0,6)$

D. $(3,0);(0,2)$

E. None of these.

7. Find an equation of the line through $(3,1)$ and $(-6,4)$. Leave your answer in standard form.

A. $3x+y=6$

B. $x+3y=2$

C. $3x+y=2$

D. $x-3y=6$

E. $x+3y=6$

Use $f(x)=2x-1$ and $g(x)=3-x$ for problems 8 and 9.

8. Find $f(a)-g(a)$

A. $a-4$

B. $3a-4$

C. $-a-1$

D. $a-3$

E. None of these.

9. Find $f\left(\frac{1}{2}\right)\cdot g\left(\frac{1}{2}\right)$

A. $\frac{5}{2}$

B. $\frac{7}{2}$

C. 0

D. $\frac{2}{5}$

E. $\frac{15}{4}$

10. Choose the equation of a line that is perpendicular to $3x+y=7$.

A. $y=\frac{1}{3}x+1$

B. $y=-3x+1$

C. $y=-\frac{1}{3}x+7$

D. $y=3x+7$

E. $y=\frac{3}{7}x+1$

11. Choose the ordered pair that is a solution of this system of equations:

$$3x+2y=1$$
$$x-y=-3$$

A. $(-1,-2)$

B. $(-1,2)$

C. $(-1,1)$

D. $(-1,-3)$

E. $(-1,3)$

12. Use the substitution method to find an equivalent equation in terms of b only.

$$a-2b=1$$
$$3a+b=6$$

A. $3(b-6)-2b=1$

B. $3(-2b+1)+b=6$

C. $(b+6)-2b=1$

D. $3(2b+1)+b=6$

E. $3(2b-1)+b=6$

13. Solve this system of equations for y. $\begin{aligned} \frac{x}{3}+\frac{y}{2}&=1 \\ \frac{x}{8}+\frac{y}{4}&=\frac{5}{8} \end{aligned}$

A. $y=4$

B. $y=-3$

C. $y=\frac{1}{2}$

D. $y=-4$

E. None of these.

14. Soybean meal is 16% protein and corn meal is 9% protein. How many pounds of each should be mixed to get a 200-lb mixture that is 13% protein? Set up the system of equations needed to solve this problem. Let s represent the number of pounds of soybean meal and c the number of pounds of corn meal. Do not solve.

A. $\begin{aligned} 0.16s+0.09c&=0.13 \\ s+c&=200 \end{aligned}$

B. $\begin{aligned} 0.16s+0.09c&=0.13(200) \\ s+c&=200 \end{aligned}$

C. $\begin{aligned} 0.09s+0.16c&=0.13(200) \\ s+c&=200 \end{aligned}$

D. $\begin{aligned} 0.16s+0.9c&=0.13 \\ s+c&=0.13(200) \end{aligned}$

E. None of these.

15. The length of a rectangular room is four feet longer than its width. If the perimeter of the room is 38 feet, find the width.

A. 17 feet

B. 9.5 feet

C. 8.5 feet

D. 19 feet

E. 7.5 feet