**Chapter 4 assessment (CFA in Mastery Connect)**

1. The equations $y=\frac{x^{2}}{2}-8$ and $y=2x-2$ are graphed below. What are the solutions to the equation $\frac{x^{2}}{2}-8=2x-2$?

A $x=-8$ and $x=-2$

B $x=-6$ and $x=10$

C $x=-4$ and $x=4$

D $x=-2$ and $x=6$

1. What are complex solutions to the equation$ 2x^{2}-x+0.5=0$?

A $\frac{1\pm i\sqrt{3}}{4}$ B $\frac{-4\pm i\sqrt{3}}{4}$ C $\frac{-1\pm i^{2}\sqrt{3}}{4}$ D $\frac{-1\pm i\sqrt{3}}{2}$

1. Tobias is asked to solve the equation $-x^{2}-6x-18=0$. His work is shown below. Based on his work, Tobias states the solutions to the equation are $x=3\pm 3\sqrt{3}$.



* 1. Unfortunately, Tobias is incorrect. Explain the flaw in his reasoning.
	2. Determine the correct solutions to the equation.
1. Solve $x^{2}+x+1=0$

A -1 B 1 C $ \frac{-1\pm i\sqrt{5}}{2}$ D $\frac{-1\pm i\sqrt{3}}{2}$

1. A rectangular piece of land measures 20 feet by 15 feet. James created a cement sidewalk, *x* feet wide to border a rectangular garden on all four sides as shown below. If the garden has an area of 150 square feet, how wide is the sidewalk?

A 12.25 feet

B 6.12 feet

C 5 feet

D 2.5 feet

1. Marissa is playing a game at the carnival that requires her to hit a spring with a large hammer. After the spring is hit, a puck shoots upward towards the bell. Marissa hits the spring according to the model. $y=-16x^{2}-32x-20$, where $y$ represents the distance between the puck and the bell and *x* represents the time after hitting the spring (in seconds).

a. What type of solution(s) does the equation $0=-16x^{2}-32x-20$ have?

b. Will the puck hit the bell after Marissa hit? Why or why not?

1. What are the solutions to the equation $x^{2}-2x+3=0$

A $1\pm i\sqrt{2}$ B $-1\pm \sqrt{2}$ C $1\pm i\sqrt{3}$ D $-1\pm 2\sqrt{i}$

1. The dimensions of a square table are *x* inches by *x* inches. The table has adjustable sides of the table are lifted up, the table is extended by 5 inches on each end of the table, as shown by the diagram. The total area *A*, in square inches, of the table when the adjustable sides are lifted up is a function of the distance *x* in inches. Write the quadratic function *A*(*x*), in standard form that represents the total area of the table when the adjustable sides are lifted up as a function of the distance, in inches.



1. Anthony is solving the equation $x^{2}-12x=16$ by completing the square. What number should be added to both sides to complete the square?

A 20 B 36 C 52 D 144

1. The graphs of the equations $y=f(x)$ and $y=g(x)$ intersect at 4 points. Which of these is a correct statement?

A $x=4$ must be a solution to the equation $f\left(x\right)=0 $and to the equation $g\left(x\right)=0$.

B The number of solutions to the equation $f\left(x\right)=0$ and the number of solutions to the equation $g\left(x\right)=0$ must be 4.

C $x=4$ must be a solution to $f\left(x\right)=g(x)$.

D The number of solutions to the equation $f\left(x\right)=g(x)$ must be 4.

1. In her playhouse Josie turns a balloon full of air loose that follows the path in the drawing below and the equation $y=-x^{2}-5x-12$. Where will the balloon hit the ceiling if the ceiling is the *x*-axis (*y* = 0)?

A no solution

B (-1, -8)

C (-4, -8)

D (0, 0)

1. Us the binomial theorem to expand the complex number $(2+i)^{4}$. Simplify the expansion.

A $13+6i$ B $-7+24i$ C $-7+40i$ D $-9+24i$

1. A table of values was created for the system of equations below. Using the table of values, find the solutions to the system of equations. Select three that apply. $\left\{\begin{array}{c}f\left(x\right)=x^{3}+2x^{2}-5x-6\\g\left(x\right)=-2x-6\end{array}\right.$

A (-3, 0)

B (-2, 4)

C (0, -6)

D (1, -8)