NAME:_____

P.I. A.A.27: Understand and apply the multiplication property of zero to solve quadratic equations with integral coefficients and integral roots

Solve:

1. $49x = x^2$

   [A] 0, 49 [B] –7, 7 [C] 0, 7 [D] 1, 49

2. $64x = x^2$

   [A] –8, 8 [B] 0, 64 [C] 0, 8 [D] 1, 64

3. Determine the number of solutions of the equation and solve for them.
   $x^2 + 54 = 54$

4. Determine the number of solutions of the equation and solve for them.
   $9x^2 + 93 = 193$

5. Which are the solutions to $x^2 + 9x = 36$?

   [A] $x = -12, x = 3$ [B] $x = 4, x = 9$

   [C] $x = 12, x = -3$ [D] $x = -4, x = 9$

Solve:

6. $\frac{x^2}{4} + \frac{x}{4} = \frac{3}{2}$

   [A] $\frac{1}{3}, -\frac{1}{2}$ [B] $3, -2$

   [C] $-3, 2$ [D] $-\frac{1}{3}, \frac{1}{2}$

7. $\frac{x^2}{4} - \frac{3x}{2} = -\frac{5}{4}$

   [A] $5, 1$ [B] $\frac{1}{5}, 1$

   [C] $-5, -1$ [D] $-\frac{1}{5}, -1$

8. $\frac{x^2}{4} - \frac{x}{1} = \frac{5}{4}$

   [A] $\frac{1}{5}, -1$ [B] $-\frac{1}{5}, 1$

   [C] $-5, 1$ [D] $5, -1$

9. $\frac{x^2}{4} - \frac{x}{4} = \frac{3}{2}$

   [A] $\frac{1}{3}, -\frac{1}{2}$ [B] $-\frac{1}{3}, \frac{1}{2}$

   [C] $3, -2$ [D] $-3, 2$

10. $\frac{x^2}{2} - \frac{7x}{4} = -\frac{3}{2}$

11. $\frac{x^2}{4} - \frac{x}{2} = \frac{3}{4}$

12. $\frac{x^2}{4} - \frac{5x}{4} = -\frac{3}{2}$

NAME:_____

13. This table shows the height in feet of some of the tallest buildings in the United States.

Building	City	Height (in ft)
Sears Tower	Chicago	1454
World Trade Center	New York City	1377
Empire State Building	New York City	1250
AMOCO	Chicago	1136
John Hancock Center	Chicago	1127
Chrysler	New York City	1046
First Interstate World Center	Los Angeles	1017

The length of time it would take an object to fall from the top of one of these structures is $h(t) = -16t^2 + H$, where H is the height in feet of the structure, t is the number of seconds and $h(t)$ is the height after t seconds.
Find the time it would take an object to fall to the ground from the top of the John Hancock Center. Round your answer to the nearest hundredth of a second.

14. Compare the quantity in Column A with the quantity in Column B.

Column A	Column B
the sum of the solutions of $x^2 - 6x = 7$	the sum of the solutions of $x^2 + 8x = -7$

[A] The quantity in Column A is greater. [B] The quantity in Column B is greater.

[C] The two quantities are equal.

[D] The relationship cannot be determined on the basis of the information supplied.

15. Compare the quantity in Column A with the quantity in Column B.

Column A	Column B
the greater solution of $x^2 - 4x - 12 = 0$	the greater solution of $x^2 + 3x + 2 = 0$

[A] The quantity in Column A is greater. [B] The quantity in Column B is greater.

[C] The two quantities are equal.

[D] The relationship cannot be determined on the basis of the information supplied.

[1] A

[2] B

[3] one solution: 0

[4] two solutions: $-\frac{10}{3}, \frac{10}{3}$

[5] A

[6] C

[7] A

[8] D

[9] C

[10] $\frac{3}{2}, 2$

[11] $3, -1$

[12] $3, 2$

[13] 8.39 seconds

[14] A

[15] A