Name:

A.REI.B.4: Solving Quadratics 6

- 1 The quadratic equation $x^2 6x = 12$ is rewritten in the form $(x+p)^2 = q$, where q is a constant. What is the value of p?
 - 1) -12
 - 2) -9
 - 3) -3
 - 4) 9
- 2 Which equation has the same solution as
 - $x^2 6x 12 = 0?$
 - 1) $(x+3)^2 = 21$
 - 2) $(x-3)^2 = 21$
 - 3) $(x+3)^2 = 3$
 - 4) $(x-3)^2 = 3$
- 3 Which equation is equivalent to $x^2 6x + 4 = 0$?
 - 1) $(x-3)^2 = -4$
 - 2) $(x-3)^2 = 5$
 - 3) $(x-3)^2 = 6$
 - 4) $(x-3)^2 = 9$
- 4 When solving the equation $x^2 8x 7 = 0$ by completing the square, which equation is a step in the process?
 - 1) $(x-4)^2 = 9$
 - 2) $(x-4)^2 = 23$
 - 3) $(x-8)^2 = 9$
 - 4) $(x-8)^2 = 23$
- 5 When solving $x^2 10x 13 = 0$ by completing the square, which equation is a step in the process?
 - 1) $(x-5)^2 = 38$
 - 2) $(x-5)^2 = 12$
 - 3) $(x-10)^2 = 38$
 - 4) $(x-10)^2 = 12$

- 6 Which step can be used when solving
 - $x^2 6x 25 = 0$ by completing the square?
 - 1) $x^2 6x + 9 = 25 + 9$
 - 2) $x^2 6x 9 = 25 9$ 3) $x^2 - 6x + 36 = 25 + 36$
 - 4) $x^2 6x 36 = 25 36$
 - 4) x = 0x = 30 = 23 = 30
- 7 Which equation has the same solutions as $x^2 + 6x 7 = 0$?
 - 1) $(x+3)^2 = 2$
 - 2) $(x-3)^2 = 2$
 - 3) $(x-3)^2 = 16$
 - 4) $(x+3)^2 = 16$
- 8 Which equation has the same solutions as $x^2 + 6x 18 = 0$?
 - 1) $(x+3)^2 = 24$
 - 1) $(x+3) = 2^{2}$
 - 2) $(x+3)^2 = 27$
 - 3) $(x+6)^2 = 24$
 - 4) $(x+6)^2 = 27$
- 9 Which equation has the same solution as
 - $x^2 + 8x 33 = 0?$
 - 1) $(x+4)^2 = 49$
 - 2) $(x-4)^2 = 49$
 - 3) $(x+4)^2 = 17$
 - 4) $(x-4)^2 = 17$
- 10 When using the method of completing the square, which equation is equivalent to $x^2 - 12x - 10 = 0$?
 - 1) $(x+6)^2 = -26$
 - 2) $(x+6)^2 = 46$
 - 3) $(x-6)^2 = -26$
 - 4) $(x-6)^2 = 46$
- 11 When completing the square for $x^2 18x + 77 = 0$, which equation is a correct step in this process?
 - 1) $(x-9)^2 = 4$
 - 2) $(x-3)^2 = 2$
 - 3) $x = \pm 13$
 - 4) $x-9=\pm 9$

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- 12 If $x^2 = 12x 7$ is solved by completing the square, one of the steps in the process is
 - 1) $(x-6)^2 = -43$
 - 2) $(x+6)^2 = -43$
 - 3) $(x-6)^2 = 29$
 - 4) $(x+6)^2 = 29$
- 13 If $x^2 + 2 = 6x$ is solved by completing the square, an intermediate step would be
 - 1) $(x+3)^2 = 7$
 - 2) $(x-3)^2 = 7$
 - 3) $(x-3)^2 = 11$
 - 4) $(x-6)^2 = 34$
- 14 The method of completing the square was used to solve the equation $2x^2 - 12x + 6 = 0$. Which equation is a correct step when using this method?
 - 1) $(x-3)^2 = 6$
 - 2) $(x-3)^2 = -6$
 - 3) $(x-3)^2 = 3$
 - 4) $(x-3)^2 = -3$
- 15 What are the roots of the equation $x^2 + 4x 16 = 0$? 1) $2 \pm 2\sqrt{5}$
 - 1) $2\pm 2\sqrt{5}$ 2) $-2\pm 2\sqrt{5}$
 - 2) $-2 \pm 2\sqrt{3}$ 3) $2 \pm 4\sqrt{5}$
 - 3) $2\pm 4\sqrt{5}$ 4) $-2\pm 4\sqrt{5}$
 - 4) $-2\pm 4\sqrt{5}$
- 16 What are the solutions to the equation $x^2 8x = 10$?
 - 1) $4 \pm \sqrt{10}$
 - 2) $4 \pm \sqrt{26}$
 - 3) $-4 \pm \sqrt{10}$
 - 4) $-4 \pm \sqrt{26}$
- 17 What are the solutions to the equation $x^2 8x = 24$?

1)
$$x = 4 \pm 2\sqrt{10}$$

2)
$$x = -4 \pm 2\sqrt{10}$$

- 3) $x = 4 \pm 2\sqrt{2}$
- $4) \quad x = -4 \pm 2\sqrt{2}$

- 18 Which value of k will make $x^2 \frac{1}{4}x + k$ a perfect square trinomial?
 - 1) $\frac{1}{64}$ 2) $\frac{1}{16}$ 3) $\frac{1}{8}$ 4) $\frac{1}{4}$
- 19 Brian correctly used a method of completing the square to solve the equation $x^2 + 7x 11 = 0$. Brian's first step was to rewrite the equation as $x^2 + 7x = 11$. He then added a number to both sides of the equation. Which number did he add?
 - 1) $\frac{7}{2}$ 2) $\frac{49}{4}$ 3) $\frac{49}{2}$ 4) 49
- 20 When directed to solve a quadratic equation by completing the square, Sam arrived at the equation

$$\left(x - \frac{5}{2}\right)^2 = \frac{13}{4}$$
. Which equation could have been

the original equation given to Sam?

- 1) $x^{2} + 5x + 7 = 0$ 2) $x^{2} + 5x + 3 = 0$ 3) $x^{2} - 5x + 7 = 0$
- 4) $x^2 5x + 3 = 0$

A.REI.B.4: Solving Quadratics 6 Answer Section

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1 ANS: 3
     x^2 - 6x = 12
  x^2 - 6x + 9 = 12 + 9
     (x-3)^2 = 21
  REF: 061812ai
2 ANS: 2
     x^2 - 6x = 12
  x^2 - 6x + 9 = 12 + 9
     (x-3)^2 = 21
  REF: 061408ai
3 ANS: 2
  x^2 - 6x + 9 = -4 + 9
  x^2 - 6x + 9 = 5
     (x-3)^2 = 5
  REF: 082320ai
4 ANS: 2
      x^2 - 8x = 7
  x^2 - 8x + 16 = 7 + 16
      (x-4)^2 = 23
  REF: 011614ai
5 ANS: 1
  x^{2} - 10x + 25 = 13 + 25
       (x-5)^2 = 38
  REF: 082215ai
6 ANS: 1
                      REF: 061408a2
7 ANS: 4
     x^2 + 6x = 7
  x^{2} + 6x + 9 = 7 + 9
     (x+3)^2 = 16
  REF: 011517ai
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8 ANS: 2

$$x^{2} + 6x = 18$$

 $x^{2} + 6x + 9 = 18 + 9$
 $(x + 3)^{2} = 27$
REF: 082408ai
9 ANS: 1
 $x^{2} + 8x = 33$
 $x^{2} + 8x + 16 = 33 + 16$
 $(x + 4)^{2} = 49$
10 ANS: 4
 $x^{2} - 12x + 36 = 10 + 36$
 $(x - 6)^{2} = 46$
11 ANS: 1
 $x^{2} - 18x + 81 = -77 + 81$
 $(x - 9)^{2} = 4$
REF: 062306ai
12 ANS: 3
 $x^{2} = 12x - 7$
 $x^{2} - 12x = -7$
 $x^{2} - 12x + 36 = -7 + 36$
 $(x - 6)^{2} = 29$
13 ANS: 2
 $x^{2} + 2 = 6x$
 $x^{2} - 6x = -2$
 $x^{2} - 6x + 9 = -2 + 9$
 $(x - 3)^{2} = 7$
REF: 011116a2

14 ANS: 1

$$2(x^{2} - 6x + 3) = 0$$

$$x^{2} - 6x = -3$$

$$x^{2} - 6x + 9 = -3 + 9$$

$$(x - 3)^{2} = 6$$
REF: 011722ai
15 ANS: 2

$$x^{2} + 4x = 16$$

$$x^{2} + 4x + 4 = 16 + 4$$

$$(x + 2)^{2} = 20$$

$$x + 2 = \pm \sqrt{4 \cdot 5}$$

$$= -2 \pm 2\sqrt{5}$$
REF: 061410ai
16 ANS: 2

$$x^{2} - 8x + 16 = 10 + 16$$

$$(x - 4)^{2} = 26$$

$$x - 4 = \pm \sqrt{26}$$
REF: 061722ai
17 ANS: 1

$$x^{2} - 8x + 16 = 24 + 16$$

$$(x - 4)^{2} = 40$$

$$x - 4 = \pm \sqrt{40}$$

$$x = 4 \pm \sqrt{40}$$

$$x = 4 \pm 2\sqrt{10}$$
REF: 061523ai
18 ANS: 1
2

$$\left(\frac{1}{2}\left(-\frac{1}{4}\right)\right)^2 = \frac{1}{64}$$

REF: 081527a2 19 ANS: 2 REF: 061122a2

ID: A

20 ANS: 4

$$x^{2} - 5x = -3$$

 $x^{2} - 5x + \frac{25}{4} = \frac{-12}{4} + \frac{25}{4}$
 $\left(x - \frac{5}{2}\right)^{2} = \frac{13}{4}$

REF: 061518ai