Mini Unit: Solving Equations and Inequalities Review

OA.2: I can solve equations and identify equations that have 1 solution, no solutions or infinitely many solutions.

1. Steven wants to buy a $565 bicycle. Steven has no money saved, but will be able to deposit $30 into a savings account when he receives his paycheck each Friday. However, before Steven can buy the bike, he must give his sister $65 that he owes her. For how many weeks will Steven need to deposit money into his savings account before he can pay back his sister and buy the bike?

2. $-2 = \dfrac{-5 + z}{-2}$

3. Hannah wants to buy a $570 camera. She can save $50 each week from her paycheck. However, before Hannah can buy the camera, she must give her brother $80 that she owes him. For how many weeks will Hannah need to save before she can pay back her brother and buy the camera?

4. $5d - d - 2d + 8 - 3d = 0$

5. $2.4x + 2.6 = 17$

6. $70 = -7(-2 - 2z)$

7. $-4x - 9 = -5 - 6x$

8. $6x - 3 = 5x - 5$

9. $-6p + 7 = 3(2p - 3) - 4(-10 + 4p)$

10. $5(10x - 10) = -5(-4x + 4)$

11. Which equation is an identity?
    a. $11 - (2v + 3) = -2v - 8$
    b. $5w + 8 - w = 6w - 2(w - 4)$
    c. $7m - 2 = 8m + 4 - m$
    d. $8y + 9 = 8y - 3$

12. Which equation has no solution?
    a. $8 - (5v + 3) = 5v - 5$
    b. $3m - 6 = 5m + 7 - m$
    c. $3w + 4 - w = 5w - 2(w - 2)$
    d. $7y + 9 = 7y - 6$

13. $3 + 6z = 13 + 6z$
    a. $-\dfrac{5}{6}$
    b. $2\dfrac{2}{3}$
    c. infinitely many solutions
    d. no solution

14. $2(h - 8) - h = h - 16$
    a. 8
    b. -8
    c. infinitely many solutions
    d. no solution

15. Nina wants to download games for her video game console. Older games cost 250 points and new releases cost 500 points. Nina has 7500 points to use. The equation $250a + 500b = 7500$, where a is the number of older games and b is the number of new releases, models the situation. How many older games can she download if she downloads five new games?
    a. 20
    b. 12
    c. 17
    d. 40

16. Solve the following equation for x:
    $2x - 6y = 12$

17. Solve the following equation for a.
    $3(a + b) = 27$

18. Solve the following equation for h.
    $\dfrac{g + 3h}{2} = 15$

OA.3: I can find and graph solutions to inequalities and identify those inequalities that are never, sometimes, or always true.

19. $10.6 < b$
     a. -18
     b. -9
     c. 7
     d. 14

20. $10x - 10 - 7x \geq 3x - 2$
     a. $x \geq -8$
     b. $x \leq 8$
     c.   all real numbers
     d.   no solution

21. $-5(2x + 2) \geq -10x - 17$
     a. $x \geq 7$
     b. $x \leq 19$
     c.   all real numbers
     d.   no solution

22. $8n - 14 \leq 13n + 6$

23. $12 + 10w \geq 8(w + 12)$

24. $q + 12 - 2(q - 22) > 0$

25. $2(b - 8) > 12$

26. $4x + 6 < -6$

3.6.1: I can solve and graph compound inequalities.

27. $\dfrac{2x - 1}{3} + 3 \leq -4$ or $\dfrac{8x - 2}{2} - 1 \geq 6$

28. $2x - 2 < -12$ or $2x + 3 > 7$

29. $-2 < 4x - 10 < 6$

30. $-2 \leq 2x - 4 < 8$

Mini Unit: Solving Equations and Inequalities Review
Answer Section

1. ANS:
   21 weeks

   PTS: 1   DIF: L3   REF: 2-2 Solving Two-Step Equations
   OBJ: 2-2.1 To solve two-step equations in one variable   NAT: A.4.a| A.4.c
   STA: A1.2.3   TOP: 2-2 Problem 2 Using an Equation as a Model
   DOK: DOK 2

2. ANS:
   9

   PTS: 1   DIF: L3   REF: 2-2 Solving Two-Step Equations
   OBJ: 2-2.1 To solve two-step equations in one variable   NAT: A.4.a| A.4.c
   STA: A1.2.3   TOP: 2-2 Problem 3 Solving With Two Terms in the Numerator
   DOK: DOK 1

3. ANS:
   13 weeks

   PTS: 1   DIF: L4   REF: 2-2 Solving Two-Step Equations
   OBJ: 2-2.1 To solve two-step equations in one variable   NAT: A.4.a| A.4.c
   STA: A1.2.3   TOP: 2-2 Problem 2 Using an Equation as a Model
   DOK: DOK 2

4. ANS:
   8

   PTS: 1   DIF: L4   REF: 2-3 Solving Multi-Step Equations
   OBJ: 2-3.1 To solve multi-step equations in one variable   NAT: A.4.a| A.4.c
   STA: A1.2.3   TOP: 2-3 Problem 1 Combining Like Terms
   DOK: DOK 1

5. ANS:
   6

   PTS: 1   DIF: L3   REF: 2-3 Solving Multi-Step Equations
   OBJ: 2-3.1 To solve multi-step equations in one variable   NAT: A.4.a| A.4.c
   STA: A1.2.3   TOP: 2-3 Problem 5 Solving an Equation that Contains Decimals
   DOK: DOK 1

6. ANS:
   4

   PTS: 1   DIF: L3   REF: 2-3 Solving Multi-Step Equations
   OBJ: 2-3.1 To solve multi-step equations in one variable   NAT: A.4.a| A.4.c
   STA: A1.2.3   TOP: 2-3 Problem 3 Solving an Equation Using the Distributive Property
   DOK: DOK 1

7. ANS:
    2

    PTS: 1　　　　　DIF: L3　　　　REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.1 To solve equations with variables on both sides　　NAT: A.4.a| A.4.c
    STA: A1.2.3　　　TOP: 2-4 Problem 1 Solving an Equation With Variables on Both Sides
    DOK: DOK 1
8. ANS:
    −2

    PTS: 1　　　　　DIF: L3　　　　REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.1 To solve equations with variables on both sides　　NAT: A.4.a| A.4.c
    STA: A1.2.3　　　TOP: 2-4 Problem 1 Solving an Equation With Variables on Both Sides
    DOK: DOK 1
9. ANS:
    $p = 6$

    PTS: 1　　　　　DIF: L3　　　　REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.1 To solve equations with variables on both sides　　NAT: A.4.a| A.4.c
    STA: A1.2.3　　　TOP: 2-4 Problem 3 Solving an Equation With Grouping Symbols
    DOK: DOK 1
10. ANS:
    1

    PTS: 1　　　　　DIF: L3　　　　REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.1 To solve equations with variables on both sides　　NAT: A.4.a| A.4.c
    STA: A1.2.3　　　TOP: 2-4 Problem 3 Solving an Equation With Grouping Symbols
    DOK: DOK 1
11. ANS: B　　　　PTS: 1　　　　DIF: L3
    REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.2 To identify equations that are identities or have no solution
    NAT: A.4.a| A.4.c　STA: A1.2.3　　　TOP: 2-4 Problem 4 Identities and Equations With No Solution
    KEY: identity　　　DOK: DOK 1
12. ANS: D　　　　PTS: 1　　　　DIF: L3
    REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.2 To identify equations that are identities or have no solution
    NAT: A.4.a| A.4.c　STA: A1.2.3　　　TOP: 2-4 Problem 4 Identities and Equations With No Solution
    DOK: DOK 1
13. ANS: D　　　　PTS: 1　　　　DIF: L3
    REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.2 To identify equations that are identities or have no solution
    NAT: A.4.a| A.4.c　STA: A1.2.3　　　TOP: 2-4 Problem 4 Identities and Equations With No Solution
    DOK: DOK 1
14. ANS: C　　　　PTS: 1　　　　DIF: L3
    REF: 2-4 Solving Equations With Variables on Both Sides
    OBJ: 2-4.2 To identify equations that are identities or have no solution
    NAT: A.4.a| A.4.c　STA: A1.2.3　　　TOP: 2-4 Problem 4 Identities and Equations With No Solution
    KEY: identity　　　DOK: DOK 1

15. ANS: A   PTS: 1   DIF: L3   REF: 2-5 Literal Equations and Formulas
    OBJ: 2-5.1 To rewrite and use literal equations and formulas   NAT: A.4.a| A.4.c| A.4.e| A.4.f
    STA: A1.2.3| A1.2.8   TOP: 2-5 Problem 1 Rewriting a Literal Equation
    KEY: literal equation | formula   DOK: DOK 2

16. ANS:
    $x = 3y + 6$

    PTS: 1

17. ANS:
    $a = 9 - b$

    PTS: 1

18. ANS:
    $h = 10 - \frac{1}{3} g$

    PTS: 1

19. ANS: D   PTS: 1   DIF: L3   REF: 3-1 Inequalities and Their Graphs
    OBJ: 3-1.1 To write, graph, and identify solutions of inequalities
    TOP: 3-1 Problem 2 Identifying Solutions by Evaluating   KEY: solution of an inequality
    DOK: DOK 1

20. ANS: D   PTS: 1   DIF: L3   REF: 3-4 Solving Multi-Step Inequalities
    OBJ: 3-4.1 To solve multi-step inequalities   STA: A1.2.1| A1.2.3
    TOP: 3-4 Problem 5 Inequalities With Special Solutions   DOK: DOK 1

21. ANS: C   PTS: 1   DIF: L3   REF: 3-4 Solving Multi-Step Inequalities
    OBJ: 3-4.1 To solve multi-step inequalities   STA: A1.2.1| A1.2.3
    TOP: 3-4 Problem 5 Inequalities With Special Solutions   DOK: DOK 1

22. ANS:
    $n \geq -4$

    PTS: 1   DIF: L2   REF: 3-4 Solving Multi-Step Inequalities
    OBJ: 3-4.1 To solve multi-step inequalities   STA: A1.2.1| A1.2.3
    TOP: 3-4 Problem 4 Solving an Inequality With Variables on Both Sides
    DOK: DOK 1

23. ANS:
    $w \geq 42$

    PTS: 1   DIF: L3   REF: 3-4 Solving Multi-Step Inequalities
    OBJ: 3-4.1 To solve multi-step inequalities   STA: A1.2.1| A1.2.3
    TOP: 3-4 Problem 4 Solving an Inequality With Variables on Both Sides
    DOK: DOK 1

24. ANS:
    $q < 56$

    PTS: 1   DIF: L3   REF: 3-4 Solving Multi-Step Inequalities
    OBJ: 3-4.1 To solve multi-step inequalities   STA: A1.2.1| A1.2.3
    TOP: 3-4 Problem 3 Using the Distributive Property   DOK: DOK 1
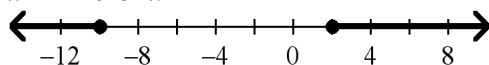
25. ANS:
$b > 14$

PTS: 1 DIF: L2 REF: 3-4 Solving Multi-Step Inequalities
OBJ: 3-4.1 To solve multi-step inequalities STA: A1.2.1| A1.2.3
TOP: 3-4 Problem 3 Using the Distributive Property DOK: DOK 1

26. ANS:
$x < -3$

PTS: 1 DIF: L3 REF: 3-4 Solving Multi-Step Inequalities
OBJ: 3-4.1 To solve multi-step inequalities STA: A1.2.1| A1.2.3
TOP: 3-4 Problem 1 Using More Than One Step DOK: DOK 1
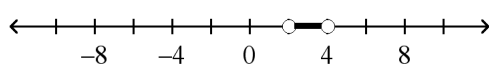
27. ANS:
$x \leq -10$ or $x \geq 2$

PTS: 1 DIF: L4 REF: 3-6 Compound Inequalities
OBJ: 3-6.2 To solve and graph inequalities containing the word or
TOP: 3-6 Problem 4 Solving a Compound Inequality Involving Or
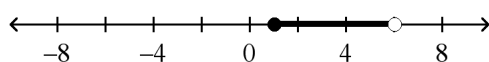KEY: compound inequality DOK: DOK 1

28. ANS:
$x < -5$ or $x > 2$
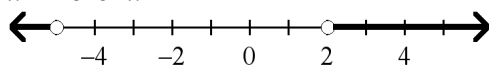
PTS: 1 DIF: L3 REF: 3-6 Compound Inequalities
OBJ: 3-6.2 To solve and graph inequalities containing the word or
TOP: 3-6 Problem 4 Solving a Compound Inequality Involving Or
KEY: compound inequality DOK: DOK 1

29. ANS:
$2 < x < 4$

PTS: 1 DIF: L3 REF: 3-6 Compound Inequalities
OBJ: 3-6.1 To solve and graph inequalities containing the word and
TOP: 3-6 Problem 2 Solving a Compound Inequality Involving And
KEY: compound inequality DOK: DOK 1

30. ANS:
$1 \leq x < 6$

PTS: 1 DIF: L3 REF: 3-6 Compound Inequalities
OBJ: 3-6.1 To solve and graph inequalities containing the word and
TOP: 3-6 Problem 2 Solving a Compound Inequality Involving And
KEY: compound inequality DOK: DOK 1