Lesson 3-3: Equations with Variables on Both Sides

Part 1: Solving Equations with Variables on Both Sides

1. 010807a, P.I. A.A.22
What is the value of p in the equation $8p+2=4p-10$?

[A] -1 [B] 1 [C] -3 [D] 3

2. 010705a, P.I. A.A.22
What is the value of n in the equation $3n-8=32-n$?

[A] -6 [B] -10 [C] 10 [D] 6

3. fall0732ia, P.I. A.A.22
Solve for g: $3+2g=5g-9$

4. 060323a, P.I. A.A.22
Solve for m: $0.6m + 3 = 2m + 0.2$

5. 089921a, P.I. A.A.22
Solve for x: $2(x - 3) = 1.2 - x$

6. 060404a, P.I. A.A.22
If $3(x - 2) = 2x + 6$, the value of x is

[A] 12 [B] 20 [C] 0 [D] 5

7. 010401a, P.I. A.A.22
If $2(x + 3) = x + 10$, then x equals

[A] 4 [B] 5 [C] 7 [D] 14

8. 060602a, P.I. A.A.22
What is the value of x in the equation $13x-2(x+4)=8x+1$?

[A] 1 [B] 3 [C] 4 [D] 2

9. 060634a, P.I. A.A.22
Solve for x: $3.3 - x = 3(x - 1.7)$

10. 010601a, P.I. A.A.22
What is the value of x in the equation $5(2x-7)=15x-10$?

[A] -5 [B] 0.6 [C] 1 [D] -9

11. 060702a, P.I. A.A.22
What is the value of x in the equation $6(x-2)=36-10x$?

[A] 3 [B] 6 [C] 1.5 [D] -6

12. 080731a, P.I. A.A.22
Solve for x: $5(x-2)=2(10+x)$

13. 060704a, P.I. A.A.22
What is the value of w in the equation $\frac{1}{2}w+7=2w-2$?

[A] 6 [B] 3.6 [C] 2 [D] $3\frac{1}{3}$

14. 080620a, P.I. A.A.22
What is the value of w in the equation $\frac{3}{4}w+8=\frac{1}{3}w-7$?

[A] -36 [B] -0.2 [C] -13.846 [D] 2.4

15. 010204a, P.I. A.A.22
What is the value of x in the equation $\frac{3}{4}x+2=\frac{5}{4}x-6$?

[A] 16 [B] 4 [C] -4 [D] -16

16. 060310a, P.I. A.A.22
If $x + y = 9x + y$, then x is equal to

[A] y [B] 0 [C] 8 [D] $\frac{1}{5}y$

17. 010011a, P.I. A.A.22
If $9x + 2a = 3a - 4x$, then x equals

[A] $-a$ [B] $\frac{5a}{12}$ [C] a [D] $\frac{a}{13}$

18. 060513a, P.I. A.A.22
If $7x+2a=3x+5a$, then x is equivalent to

[A] $\frac{3a}{4}$ [B] $\frac{3a}{10}$ [C] $\frac{7a}{4}$ [D] $\frac{7a}{10}$

19. 060111a, P.I. A.A.6
If one-half of a number is 8 less than two-thirds of the number, what is the number?

[A] 48 [B] 24 [C] 32 [D] 54

20. 060418a, P.I. A.A.6
The number of people on the school board is represented by x. Two subcommittees with an equal number of members are formed, one with $\frac{2}{3}x-5$ members and the other with $\frac{x}{4}$ members. How many people are on the school board?

[A] 12 [B] 20 [C] 4 [D] 8

[1] C

[2] C

[3]
[2] 4, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] 4, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[4]
[2] 2, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error or one conceptual error is made.
or [1] 2, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[5]
[2] 2.4 and appropriate work is shown.
[1] The student shows correct use of the distributive property to obtain $2x - 6$ or other appropriate algebraic technique.
or [1] 2.4 and no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[6] A

[7] A

[8] B

[9]
[2] 2.1, and appropriate work is shown.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] 2.1, but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[10] A

[11] A

[12]
[2] 10, and appropriate work is shown, such as solving the equation or trial and error with at least three trials and appropriate checks.
[1] Appropriate work is shown, but one computational error is made.
or [1] Appropriate work is shown, but one conceptual error is made.
or [1] The trial-and-error method is attempted and at least six systematic trials and appropriate checks are shown, but no solution is found.
or [1] 10, but no work or fewer than three trials and appropriate checks are shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[13] A

[14] A

[15] A

[16] B

[17] D

[18] A

[19] A

[20] A