A.REI.B.3: Solving Linear Equations 2a

1 Which value of $x$ is the solution of the equation \( \frac{2}{3}x + \frac{1}{2} = \frac{5}{6} \)?

1) \( \frac{1}{2} \)
2) \( 2 \)
3) \( \frac{2}{3} \)
4) \( \frac{3}{2} \)

2 In the equation \( \frac{1}{4}n + 5 = 5 \frac{1}{2} \), \( n \) is equal to

1) \( 8 \)
2) \( 2 \)
3) \( \frac{1}{2} \)
4) \( \frac{1}{8} \)

3 What is the solution set of the equation \( \frac{x}{5} + \frac{x}{2} = 14 \)?

1) \( \{4\} \)
2) \( \{10\} \)
3) \( \{20\} \)
4) \( \{49\} \)

4 What is the value of \( x \) in the equation \( \frac{x}{2} + \frac{x}{6} = 2 \)?

1) \( 12 \)
2) \( 8 \)
3) \( 3 \)
4) \( \frac{1}{4} \)

5 Which value of \( x \) is the solution of the equation \( \frac{2x}{3} + \frac{x}{6} = 5 \)?

1) \( 6 \)
2) \( 10 \)
3) \( 15 \)
4) \( 30 \)

6 What is the value of \( x \) in the equation \( \frac{3}{4}x + 2 = \frac{5}{4}x - 6 \)?

1) \( -16 \)
2) \( 16 \)
3) \( -4 \)
4) \( 4 \)

7 What is the value of \( w \) in the equation \( \frac{3}{4}w + 8 = \frac{1}{3}w - 7 \)?

1) \( 2.4 \)
2) \( -0.2 \)
3) \( -13.846 \)
4) \( -36 \)

8 What is the value of \( w \) in the equation \( \frac{1}{2}w + 7 = 2w - 2 \)?

1) \( 6 \)
2) \( 2 \)
3) \( \frac{3}{3} \)
4) \( 3.6 \)

9 Solve for \( x \): \( \frac{3}{5}(x + 2) = x - 4 \)

1) \( 8 \)
2) \( 13 \)
3) \( 15 \)
4) \( 23 \)

10 Which value of \( x \) satisfies the equation \( \frac{7}{3}\left(x + \frac{9}{28}\right) = 20 \)?

1) \( 8.25 \)
2) \( 8.89 \)
3) \( 19.25 \)
4) \( 44.92 \)
11 Which value of $x$ satisfies the equation
\[
\frac{5}{6} \left( \frac{3}{8} - x \right) = 16?
\]
1) $-19.575$
2) $-18.825$
3) $-16.3125$
4) $-15.6875$

12 The value of $x$ which makes
\[
\frac{2}{3} \left( \frac{1}{4} x - 2 \right) = \frac{1}{5} \left( \frac{4}{3} x - 1 \right)
\]
true is
1) $-10$
2) $-2$
3) $-9.09$
4) $-11.3$

13 Which value of $x$ is the solution of
\[
\frac{2x}{5} + \frac{1}{3} = \frac{7x - 2}{15}?
\]
1) $\frac{3}{5}$
2) $\frac{31}{26}$
3) $3$
4) $7$

14 Which value of $x$ is the solution of the equation
\[
\frac{1}{7} + \frac{2x}{3} = \frac{15x - 3}{21}?
\]
1) $6$
2) $0$
3) $\frac{4}{13}$
4) $\frac{6}{29}$

15 Which value of $x$ is the solution of
\[
\frac{x}{3} + \frac{x + 1}{2} = x?
\]
1) $1$
2) $-1$
3) $3$
4) $-3$

16 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?
1) 20
2) 12
3) 8
4) 4

17 What is the value of $x$ in the equation
\[
\frac{x - 2}{3} + \frac{1}{6} = \frac{5}{6}?
\]
1) 4
2) 6
3) 8
4) 11

18 Solve for $x$: $\frac{1}{16} x + \frac{1}{4} = \frac{1}{2}$

19 Solve the equation below algebraically for the exact value of $x$.
\[
6 - \frac{2}{3}(x + 5) = 4x
\]

20 Solve for $x$: $\frac{x + 3}{2} + \frac{2x}{7} = 7$

21 Solve for $x$: $\frac{x - 3}{5} + \frac{4x}{3} = 4$

22 Solve for $m$: $\frac{m}{5} + \frac{3(m - 1)}{2} = 2(m - 3)$

23 Solve: $\frac{3x + 1}{3} = \frac{4x + 5}{4} - \frac{8 + x}{6} + \frac{2x + 5}{8}$

24 Solve: $2x - 1 - \frac{2x - 2}{2} = \frac{3x + 1}{5} + \frac{x + 1}{4}$

25 Solve: $\frac{x + 3}{2} + \frac{x - 3}{3} - x = \frac{4x - 2}{6} + \frac{x}{3} - 5$
A.REI.B.3: Solving Linear Equations 2a

Answer Section

1
ANS: 1
\[
\frac{2x}{3} + \frac{1}{2} = \frac{5}{6}
\]
\[
\frac{2x}{3} = \frac{1}{3}
\]
\[
x = 3
\]
\[
x = \frac{1}{2}
\]

REF: 011112ia

2
ANS: 2
\[
\frac{1}{4}x + 5 = \frac{5}{2}
\]
\[
\frac{1}{4}x - \frac{1}{2} = 2
\]
\[
x = 2
\]

REF: 080708a

3
ANS: 3
\[
\frac{2x + 5x}{10} = 14
\]
\[
7x = 140
\]
\[
x = 20
\]

REF: 010507a

4
ANS: 3
\[
\frac{6x + 2x}{12} = 2
\]
\[
8x = 24
\]
\[
x = 3
\]

REF: 010719a
5 ANS: 1

\[
\frac{(2x \times 6) + (3\times x)}{3 \times 6} = 5
\]

\[
\frac{12x + 3x}{18} = 5
\]

\[
15x = 90
\]

\[
x = 6
\]

REF: 060907ia

6 ANS: 2

\[
\frac{3}{4}x + 2 = \frac{5}{4}x - 6
\]

\[
8 = \frac{2}{4}x
\]

\[
x = 16
\]

REF: 010204a

7 ANS: 4

\[
\frac{3}{4}w + 8 = \frac{1}{3}w - 7
\]

\[
\frac{5}{12}x = -15
\]

\[
5x = -180
\]

\[
x = -36
\]

REF: 080620a

8 ANS: 1

\[
\frac{1}{2}w + 7 = 2w - 2
\]

\[
\frac{3}{2}w = 9
\]

\[
w = 6
\]

REF: 060704a
9 ANS: 2
\[
\frac{3}{5}(x + 2) = x - 4
\]
\[
3(x + 2) = 5(x - 4)
\]
\[
3x + 6 = 5x - 20
\]
\[
26 = 2x
\]
\[
x = 13
\]
REF: 080909ia

10 ANS: 1
\[
\frac{7}{3}\left(\frac{x + 9}{28}\right) = 20
\]
\[
\frac{7}{3}x + \frac{3}{4} = \frac{80}{4}
\]
\[
\frac{7}{3}x = \frac{77}{4}
\]
\[
x = \frac{33}{4} = 8.25
\]
REF: 061405ai

11 ANS: 2
\[
6\left(\frac{5}{6}\left(\frac{3}{8} - x\right)\right) = 16
\]
\[
8\left(\frac{5}{3}\left(\frac{3}{8} - x\right)\right) = 96
\]
\[
15 - 40x = 768
\]
\[
-40x = 753
\]
\[
x = -18.825
\]
REF: 081713ai

12 ANS: 4
\[
\frac{2}{3}\left(\frac{1}{4}x - 2\right) = \frac{1}{5}\left(\frac{4}{3}x - 1\right)
\]
\[
10(3x - 24) = 3(16x - 12)
\]
\[
30x - 240 = 48x - 36
\]
\[
-204 = 18x
\]
\[
x = -11.3
\]
REF: 011822ai
13 ANS: 4

\[
\frac{2x}{5} + \frac{1}{3} = \frac{7x - 2}{15}
\]

\[
\frac{(2x \times 3) + (5 \times 1)}{5 \times 3} = \frac{7x - 2}{15}
\]

\[
\frac{6x + 5}{15} = \frac{7x - 2}{15}
\]

\[
x = 7
\]

REF: 080820ia

14 ANS: 1

\[
\frac{1}{7} + \frac{2x}{3} = \frac{15x - 3}{21}
\]

\[
\frac{14x + 3}{21} = \frac{15x - 3}{21}
\]

\[
14x + 3 = 15x - 3
\]

\[
x = 6
\]

REF: 011328ia

15 ANS: 3

\[
\frac{x}{3} + \frac{x + 1}{2} = x
\]

\[
\frac{2x + 3(x + 1)}{6} = x
\]

\[
5x + 3 = 6x
\]

\[
3 = x
\]

REF: 061019ia
16 ANS: 2
\[ \frac{2}{3} x - 5 = \frac{x}{4} \]
\[ \frac{5}{12} x = 5 \]
\[ 5x = 60 \]
\[ x = 12 \]
REF: 060418a

17 ANS: 1
\[ \frac{x - 2}{3} = \frac{4}{6} \]
\[ 6x - 12 = 12 \]
\[ 6x = 24 \]
\[ x = 4 \]
REF: 081420ai

18 ANS:
\[ \frac{1}{16} x + \frac{1}{4} = \frac{1}{2} \]
\[ \frac{1}{16} x = \frac{1}{4} \]
\[ x = 4 \]
REF: 010636a

19 ANS:
\[ 18 - 2(x + 5) = 12x \]
\[ 18 - 2x - 10 = 12x \]
\[ 8 = 14x \]
\[ x = \frac{8}{14} = \frac{4}{7} \]
REF: 061830ai

20 ANS:
7
REF: 069405siii

21 ANS:
3
REF: 069803siii
22 ANS: 
\[ \frac{m}{5} + \frac{3(m-1)}{2} = 2(m-3) \]
\[ \frac{2m}{10} + \frac{15(m-1)}{10} = 2m - 6 \]
\[ \frac{17m - 15}{10} = 2m - 6 \]
\[ 17m - 15 = 20m - 60 \]
\[ 45 = 3m \]
\[ 15 = m \]

REF: 081139ia

23 ANS: 
\[ \frac{5}{2} \]

REF: 019104al

24 ANS: 
3

REF: 069805al

25 ANS: 
5

REF: 089606al