

EXAM 2A***PRE ALGEBRA****Dr. Rapalje****SHOW ALL WORK on this test or on separate! Circle final answers. CALCULATORS—YES!!****In 1 - 8, combine like terms and simplify completely.**

1. $3x + 7x - 21x$

2. $4x - 13x + 6x - 5$

3. $7x - 12x + 3$

4. $18x - 2 + 11x + 10$

5. **Mult:** $4(3y - 8)$

6. **Mult:** $-8(2x - 7)$

7. $3(2x+5) - x - 7$

8. $7(5y + 3) - 9y - 13$

In 9 – 20, solve for x:

9. $x + 7 = 20$

10. $x + 6 = -12$

11. $x - 7 = -3$

12. $7x - x = 42$

13. $-5x + 4x = 16 + 7$

14. $12x - 7 - 11x = 6 + (-3)$

15. $4x - 5 = 3x + 17$

16. $4x - 5 = 2x + 17$

17. $3(x + 1) = 6$

18. $7(7x + 5) = 6(8x + 3)$

19. $2(5x + 4) = 3(2x + 8)$

20. $2(5 - 4x) = 4(x - 4) - 10$

In 26 – 27, express the mixed number as an improper fraction.

26. $2\frac{2}{5}$

27. $-3\frac{1}{8}$

In 28 – 29, express the improper fraction as a mixed number.

28. $\frac{71}{8}$

29. $\frac{-27}{11}$

In 30 – 32, reduce the fractions to lowest terms.

30. $\frac{18}{45}$

31. $-\frac{15}{95}$

32. $\frac{18}{522}$

In 33 – 38, perform the indicated operations and reduce fractions to lowest terms.

33. $\frac{4}{5} + \frac{3x}{5}$

34. $\frac{7}{2x} - \frac{3}{2x}$

35. $\left(\frac{1}{6}\right)\left(1\frac{1}{5}\right)$

36. $-\frac{5}{13} \div \frac{3}{26}$

37. $\frac{x}{6} \cdot \frac{2}{7}$

38. $-\frac{4}{5} - \left(-\frac{2}{3}\right)$

In 39 – 40, simplify the complex fractions.

39. $\frac{\frac{3}{5}}{\frac{7}{8}}$

40. $\frac{\frac{7}{12}}{\frac{3}{4x}}$

In 41 – 50, solve the equations.

41. $\frac{x}{3} = -6$

42. $-\frac{x}{3} = -15$

43. $-\frac{2}{3}x = -12$

44. $-\frac{3}{5}x = 30$

45. $\frac{x}{3} + \frac{1}{2} = \frac{1}{6}$

46. $\frac{1}{3}x - 4 = 2$

47. $\frac{x}{3} + \frac{x}{2} = 10$

48. $\frac{5}{6} = x - \frac{1}{3}x$

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

50. $\frac{1}{3}x - \frac{2}{5}x = 2$

1. $3x + 7x - 21x = 10x - 21x = -11x$
 2. $4x - 13x + 6x - 5 = -9x + 6x - 5 = -3x - 5$
 3. $7x - 12x + 3 = -5x + 3$
 4. $18x - 2 + 11x + 10 = 29x + 8$

5. $4(3y - 8) = 12y - 32$
 6. $-8(2x - 7) = -16x + 56$
 7. $3(2x + 5) - x - 7 = 6x + 15 - x - 7 = 7x + 8$
 8. $7(5y + 3) - 9y - 13 = 35y + 21 - 9y - 13 = 26y + 8$

9. $x + 7 = 20$
 $\begin{array}{r} x + 7 = 20 \\ -7 \quad -7 \\ \hline x = 13 \end{array}$
 10. $x + 6 = -12$
 $\begin{array}{r} x + 6 = -12 \\ -6 \quad -6 \\ \hline x = -18 \end{array}$
 11. $x - 7 = -3$
 $\begin{array}{r} x - 7 = -3 \\ +7 \quad +7 \\ \hline x = 4 \end{array}$
 12. $7x - x = 42$
 $\begin{array}{r} 6x = 42 \\ \frac{6x}{6} = \frac{42}{6} \\ x = 7 \end{array}$
 13. $-5x + 4x = 23$
 $\begin{array}{r} -x = 23 \\ \frac{-x}{-1} = \frac{23}{-1} \\ x = -23 \end{array}$

14. $12x - 7 - 11x = 6 + (-3)$
 $\begin{array}{r} x - 7 = 3 \\ +7 \quad +7 \\ \hline x = 10 \end{array}$
 15. $4x - 5 = 3x + 17$
 $\begin{array}{r} 4x - 5 = 3x + 17 \\ -3x \quad -3x \\ \hline x - 5 = 17 \\ +5 \quad +5 \\ \hline x = 22 \end{array}$
 16. $4x - 5 = 2x + 17$
 $\begin{array}{r} 4x - 5 = 2x + 17 \\ -2x \quad -2x \\ \hline 2x - 5 = 17 \\ +5 \quad +5 \\ \hline 2x = 22 \\ \frac{2x}{2} = \frac{22}{2} \\ x = 11 \end{array}$
 17. $3(x + 1) = 6$
 $\begin{array}{r} 3x + 3 = 6 \\ -3 \quad -3 \\ \hline 3x = 3 \\ \frac{3x}{3} = \frac{3}{3} \\ x = 1 \end{array}$

18. $7(7x + 5) = 6(8x + 3)$
 $\begin{array}{r} 49x + 35 = 48x + 18 \\ -48x \quad -48x \\ \hline x + 35 = 18 \\ -35 \quad -35 \\ \hline x = -17 \end{array}$
 19. $2(5x + 4) = 3(2x + 8)$
 $\begin{array}{r} 10x + 8 = 6x + 24 \\ -6x \quad -6x \\ \hline 4x + 8 = 24 \\ -8 \quad -8 \\ \hline 4x = 16 \\ \frac{4x}{4} = \frac{16}{4} \\ x = 4 \end{array}$
 20. $2(5 - 4x) = 4(x - 4) - 10$
 $\begin{array}{r} 10 - 8x = 4x - 16 - 10 \\ 10 - 8x = 4x - 26 \\ -4x \quad -4x \\ \hline 10 - 12x = -26 \\ -10 \quad -10 \\ \hline -12x = -36 \\ \frac{-12x}{-12} = \frac{-36}{-12} \\ x = 3 \end{array}$

21. Let $x =$ the no.
 $\begin{array}{r} 2x - 7 = 17 \\ +7 \quad +7 \\ \hline 2x = 24 \\ \frac{2x}{2} = \frac{24}{2} \\ x = 12 \end{array}$
 ch: $24 - 7 = 17$

22. Let $x =$ the no.
 $\begin{array}{r} 2x - 7 = 17 + x \\ -x \quad -x \\ \hline x - 7 = 17 \\ +7 \quad +7 \\ \hline x = 24 \end{array}$
 ch: $48 - 7 = 17 + 24$
 $41 = 41$

23. Let $x =$ smaller no.
 $2x + 4 =$ larger no.
 $x + 2x + 4 = 100$
 $\begin{array}{r} 3x + 4 = 100 \\ -4 \quad -4 \\ \hline 3x = 96 \\ \frac{3x}{3} = \frac{96}{3} \\ x = 32 \text{ sm} \\ \begin{array}{r} (32) \\ 2x + 4 = 68 \text{ lg.} \\ \hline \text{ch: } \rightarrow 100 \text{ Total} \end{array} \end{array}$

24. Let $x = 1^{\text{st}}$ no.
 $3x = 2^{\text{nd}}$ no.
 $x + 2 = 3^{\text{rd}}$ no.
 $\begin{array}{r} x + 3x + x + 2 = 37 \\ 5x + 2 = 37 \\ -2 \quad -2 \\ \hline 5x = 35 \\ \frac{5x}{5} = \frac{35}{5} \\ x = 7 \text{ 1st no.} \\ 3x = 21 \text{ 2nd no.} \\ x + 2 = 9 \text{ 3rd no.} \\ \hline \text{check } \rightarrow 37 \text{ Total} \end{array}$

25. Let $x = 1^{\text{st}}$ no.
 $3x = 2^{\text{nd}}$ no.
 $3x + 2 = 3^{\text{rd}}$ no.
 $\begin{array}{r} x + 3x + 3x + 2 = 37 \\ 7x + 2 = 37 \\ -2 \quad -2 \\ \hline 7x = 35 \\ \frac{7x}{7} = \frac{35}{7} \\ x = 5 \text{ 1st no.} \\ 3x = 15 \text{ 2nd no.} \\ 3x + 2 = 17 \text{ 3rd no.} \\ \hline \text{Check } \rightarrow 37 \text{ Total} \end{array}$

26. $2\frac{2}{5} = \frac{10+2}{5} = \frac{12}{5}$ 27. $-3\frac{1}{8} = -\frac{24-1}{8} = -\frac{25}{8}$

28. $\frac{71}{8} = 8\frac{7}{8}$ 29. $-\frac{27}{11}$ $11\overline{) -27} \begin{array}{r} -22 \\ \hline -5 \end{array}$

30. $\frac{18}{45} = \frac{9 \cdot 2}{9 \cdot 5} = \frac{2}{5}$ 31. $-\frac{15}{95} = -\frac{3}{19}$ 32. $\frac{18}{522} = \frac{2}{58} = \frac{1}{29}$
 ($\div 9$) ($\div 5$) ($\div 9$) ($\div 2$)

33. $\frac{4}{5} + \frac{3x}{5} = \frac{4+3x}{5}$ 34. $\frac{7}{2x} - \frac{3}{2x} = \frac{7-3}{2x} = \frac{4}{2x} = \frac{2}{x}$ 35. $(\frac{1}{6}) \cdot (1\frac{1}{5}) = \frac{1}{6} \cdot \frac{6}{5} = \frac{1}{5}$ 36. $-\frac{5}{13} \div \frac{3}{26} = -\frac{5}{13} \cdot \frac{26}{3} = -\frac{10}{3}$

37. $\frac{x}{6} \cdot \frac{2}{7} = \frac{2x}{42}$ 38. $-\frac{4}{5} - (-\frac{2}{3}) = -\frac{4}{5} + \frac{2}{3}$
 $= -\frac{4 \cdot 3}{5 \cdot 3} + \frac{2 \cdot 5}{3 \cdot 5}$
 LCD = 15
 $= -\frac{12}{15} + \frac{10}{15} = -\frac{2}{15}$ 39. $\frac{\frac{3}{5}}{\frac{7}{8}} = \frac{3}{5} \div \frac{7}{8} = \frac{3}{5} \cdot \frac{8}{7} = \frac{24}{35}$

40. $\frac{\frac{7}{12}}{\frac{3}{4x}} = \frac{7}{12} \div \frac{3}{4x} = \frac{7}{12} \cdot \frac{4x}{3} = \frac{7x}{9}$ 41. $\frac{x}{3} = -6 \Rightarrow x = -18$ 42. $-\frac{x}{3} = -15 \Rightarrow -x = -45 \Rightarrow x = 45$ 43. $-\frac{2}{8}x = -12 \Rightarrow -2x = -36 \Rightarrow x = 18$

44. $-\frac{5}{3} - \frac{3}{5}x = -\frac{5}{3} \Rightarrow -\frac{3}{5}x = 0 \Rightarrow x = -50$
 OR - $\frac{3}{5}x = 0 \Rightarrow -3x = 150 \Rightarrow x = -50$ 45. $\frac{x}{8} + \frac{1}{2} = \frac{1}{6} \Rightarrow 2x + 3 = 1 \Rightarrow 2x = -2 \Rightarrow x = -1$ 46. $\frac{1}{3}x - 4 = 2 \Rightarrow \frac{1}{3}x = 6 \Rightarrow x = 18$ 47. $\frac{x}{8} + \frac{x}{2} = 10 \Rightarrow 2x + 3x = 60 \Rightarrow 5x = 60 \Rightarrow x = 12$

48. $\frac{5}{8} = x - \frac{1}{3}x$ OR $\frac{5}{6} = \frac{3}{3}x - \frac{1}{3}x$
 $5 = 6x - 2x \Rightarrow 5 = 4x \Rightarrow x = \frac{5}{4}$ 49. $\frac{5x}{7} - \frac{2x}{2} = 3 \Rightarrow 5x - 2x = 12 \Rightarrow 3x = 12 \Rightarrow x = 4$ 50. $\frac{1}{3}x - \frac{2}{8}x = 2 \cdot 15 \Rightarrow 5x - 6x = 30 \Rightarrow -x = 30 \Rightarrow x = -30$