

Solve the equation.

1) $3m + 7 + 5(2m - 3) = 3(m + 3)$ 1) _____
 A) $\left\{\frac{17}{16}\right\}$ B) $\left\{\frac{17}{10}\right\}$ C) $\left\{\frac{31}{10}\right\}$ D) $\left\{\frac{1}{10}\right\}$

2) $-[8x + (2x + 7)] = 1 - (9x + 3)$ 2) _____
 A) $\left\{\frac{5}{3}\right\}$ B) $\{-5\}$ C) $\{3\}$ D) $\{-1\}$

Decide whether the equation is conditional, an identity, or a contradiction. Give the solution set.

3) $16m + 6 = 2(5m + 21)$ 3) _____
 A) Contradiction; \emptyset B) Conditional; $\{-8\}$
 C) Identity; {all real numbers} D) Conditional; $\{6\}$

4) $3(27t + 6) = 9(5t - 2)$ 4) _____
 A) Conditional; $\{-1\}$ B) Identity; {all real numbers}
 C) Contradiction; \emptyset D) Conditional; $\{-0\}$

5) $5(2f - 31) = 10f - 155$ 5) _____
 A) Contradiction; \emptyset B) Identity; \emptyset
 C) Conditional; $\{0\}$ D) Identity; {all real numbers}

Solve the equation.

6) $\frac{p}{4} - \frac{3p}{8} = 3$ 6) _____
 A) $\{-24\}$ B) $\{24\}$ C) $\{21\}$ D) $\{-21\}$

7) $\frac{3x + 8}{5} + \frac{7}{5} = -\frac{7x}{4}$ 7) _____
 A) $\left\{-\frac{4}{47}\right\}$ B) $\left\{\frac{60}{23}\right\}$ C) $\left\{\frac{4}{47}\right\}$ D) $\left\{-\frac{60}{47}\right\}$

Solve the mixture problem.

8) How many liters of a 30% alcohol solution must be mixed with 60 liters of a 50% solution to get a 40% solution? 8) _____
 A) 6 liters B) 60 liters C) 12 liters D) 120 liters

9) A merchant has coffee worth \$4 a pound that she wishes to mix with 90 pounds of coffee worth \$8 a pound to get a mixture worth \$7 a pound. How many pounds of the \$4 coffee should be used? 9) _____
 A) 30 lb B) 60 lb C) 120 lb D) 15 lb

Find all solutions by factoring.

10) $2k^2 = 24k - 64$ 10) _____
 A) $\{-8, 4\}$ B) $\{8, 16\}$ C) $\{4, 8\}$ D) $\{-8, -4\}$

11) $2x^2 + 14 = x^2 + 9x$

A) $\{2, 7\}$

B) $\{7\}$

C) $\left\{7, \frac{9}{2}\right\}$

D) $\left\{\frac{9}{2}, -2\right\}$

11) _____

12) $(x + 6)(x - 1) = -10$

A) $\{-9, -6\}$

B) $\{1, -16\}$

C) $\{-4, -1\}$

D) $\{-6, 1\}$

12) _____

Solve the equation.

13) $1 + \frac{1}{x} = \frac{72}{x^2}$

A) $\left\{-\frac{1}{9}, \frac{1}{8}\right\}$

B) $\{8, 9\}$

C) $\{-8, 9\}$

D) $\{-9, 8\}$

13) _____

14) $\frac{2}{t} = \frac{t}{-2t + 6}$

A) $\{0, 4\}$

B) $\{-6\}$

C) \emptyset

D) $\{-6, 2\}$

14) _____

15) $\frac{3}{x-2} + \frac{7}{x} = \frac{-14}{x^2 - 2x}$

A) $\{-2\}$

B) $\{0, 2\}$

C) $\{0\}$

D) \emptyset

15) _____

Use the quadratic formula to solve the equation. (All solutions are real numbers.)

16) $\frac{z^2}{3} = \frac{z}{2} + \frac{5}{6}$

A) $\left\{-1, \frac{5}{2}\right\}$

C) $\{-1\}$

B) $\left\{\frac{3 + 2\sqrt{10}}{4}, \frac{3 - 2\sqrt{10}}{4}\right\}$

D) $\left\{\frac{5}{2}\right\}$

16) _____

17) $7x^2 - 2x - 9 = 0$

A) $\left\{\frac{7}{9}, 0\right\}$

B) $\left\{\frac{7}{9}, -1\right\}$

C) $\left\{\frac{7}{9}, 1\right\}$

D) $\left\{\frac{9}{7}, -1\right\}$

17) _____

Use the square root property to solve the equation.

18) $8z^2 - 512 = 0$

A) $\{258\}$

B) $\{8, -8\}$

C) $\{9, -9\}$

D) $\{8\}$

18) _____

19) $y^2 = 18$

A) $\{9\}$

B) $\{\sqrt{18}\}$

C) $\{324\}$

D) $\{3\sqrt{2}, -3\sqrt{2}\}$

19) _____

20) $(3s + 8)^2 = 36$

A) $\left\{-\frac{2}{3}, 0\right\}$

B) $\left\{\frac{28}{3}\right\}$

C) $\left\{-\frac{2}{3}, -\frac{14}{3}\right\}$

D) $\left\{\frac{2}{3}, \frac{14}{3}\right\}$

20) _____

Add or subtract as indicated. Write your answer in the form $a + bi$.

21) $(9 - 3i) + (5 + 6i)$

A) $4 + 9i$

B) $14 - 3i$

C) $-14 - 3i$

D) $14 + 3i$

21) _____

22) $(9 + 8i) - (2 + 8i) + (9 + 2i)$

A) $16 + 18i$

B) $-2 - 2i$

C) $16 + 2i$

D) $-2 + 2i$

22) _____

Multiply.

23) $i(6 - 3i)(8 - 3i)$

A) $42 + 39i$

B) $57 - 6i$

C) $-42 - 39i$

D) $9i^3 + 42i^2 + 48i$

23) _____

Write the expression in the form $a + bi$.

24) $\frac{2}{5 - 3i}$

A) $\frac{5}{17} - \frac{3}{17}i$

B) $\frac{5}{8} - \frac{3}{8}i$

C) $\frac{5}{17} + \frac{3}{17}i$

D) $\frac{5}{8} + \frac{3}{8}i$

24) _____

25) $\frac{4 + 3i}{5 + 3i}$

A) $\frac{11}{16} - \frac{3}{16}i$

B) $\frac{11}{34} - \frac{27}{34}i$

C) $\frac{29}{34} + \frac{3}{34}i$

D) $\frac{29}{16} - \frac{3}{16}i$

25) _____

Find the power of i .

26) i^{14}

A) i

B) $-i$

C) -1

D) 1

26) _____

27) i^{21}

A) $-i$

B) 1

C) i

D) -1

27) _____

Multiply.

28) $(4 - 2i)^2$

A) $16 - 20i$

B) $12 - 16i$

C) $20 - 16i$

D) $16 - 12i$

28) _____

Find the nonreal complex solutions of the equation.

29) $x^2 - 4x + 20 = 0$

A) $\{-2 + 4i, -2 - 4i\}$

B) $\{6, -2\}$

C) $\{2 + 4i, 2 - 4i\}$

D) $\{4 + 8i, 4 - 8i\}$

29) _____

30) $x^2 + 4x + 53 = 0$

A) $\{5, -9\}$

B) $\{-2 + \sqrt{53}i, -2 - \sqrt{53}i\}$

C) $\{2 + 7i, 2 - 7i\}$

D) $\{-2 + 7i, -2 - 7i\}$

30) _____

31) $-5x^2 - 4x - 4 = 0$

A) $\left\{\frac{-2 + 4i}{5}, \frac{-2 - 4i}{5}\right\}$

B) $\left\{\frac{2}{5}, -\frac{6}{5}\right\}$

C) $\left\{\frac{-4 + i\sqrt{64}}{10}, \frac{-4 - i\sqrt{64}}{10}\right\}$

D) $\left\{\frac{2 + 4i}{5}, \frac{2 - 4i}{5}\right\}$

31) _____

Solve the equation.

- 32) $\sqrt{7q-6} = 6$ 32) _____
 A) $\left\{\frac{36}{7}\right\}$ B) {6} C) $\left\{\frac{30}{7}\right\}$ D) {36}
- 33) $\sqrt{2k+1} = 5$ 33) _____
 A) {24} B) {-12} C) {6} D) {12}
- 34) $\sqrt{3x-3} - 10 = 0$ 34) _____
 A) $\left\{\frac{103}{3}\right\}$ B) \emptyset C) $\left\{\frac{13}{3}\right\}$ D) {100}
- 35) $\sqrt{x} + 3 = 0$ 35) _____
 A) {-9} B) $\{\sqrt{3}\}$ C) \emptyset D) {9}
- 36) $\sqrt{6a-5} - \sqrt{4a+8} = 0$ 36) _____
 A) $\left\{\frac{13}{10}\right\}$ B) $\left\{\frac{3}{2}\right\}$ C) $\left\{\frac{13}{2}\right\}$ D) $\left\{\frac{2}{13}\right\}$
- 37) $\sqrt[3]{2z^2+10z-8} = \sqrt[3]{2z^2+7z+8}$ 37) _____
 A) $\left\{-\frac{3}{16}\right\}$ B) $\left\{\frac{3}{16}\right\}$ C) $\left\{-\frac{16}{3}\right\}$ D) $\left\{\frac{16}{3}\right\}$
- 38) $36x^4 - 85x^2 + 49 = 0$ 38) _____
 A) $\left\{-1, -\frac{6}{7}, \frac{6}{7}, 1\right\}$ B) $\left\{1, \frac{7}{6}\right\}$ C) $\left\{-\frac{7}{6}, -1, 1, \frac{7}{6}\right\}$ D) $\left\{-1, -\frac{6}{7}\right\}$
- 39) $(3m-7)^2 + 3(3m-7) - 18 = 0$ 39) _____
 A) $\left\{-\frac{13}{7}, \frac{4}{3}\right\}$ B) $\left\{\frac{1}{3}, \frac{10}{3}\right\}$ C) $\left\{\frac{1}{3}, -\frac{10}{3}\right\}$ D) $\left\{\frac{13}{3}, -\frac{4}{3}\right\}$
- 40) $(m-2)^{2/3} - 5(m-2)^{1/3} + 4 = 0$ 40) _____
 A) {3, 6} B) {-3, 66} C) {-3, 0} D) {3, 66}
- 41) $16t^3 - 81t = 0$ 41) _____
 A) $\left\{\pm\frac{9}{4}\right\}$ B) $\left\{\frac{9}{4}\right\}$ C) {0} D) $\left\{\frac{-9}{4}, \frac{9}{4}, 0\right\}$
- 42) $3x^3 + 17x^2 + 24x = 0$ 42) _____
 A) $\left\{0, 3, \frac{8}{3}\right\}$ B) $\left\{-3, -\frac{8}{3}\right\}$ C) $\left\{3, \frac{8}{3}\right\}$ D) $\left\{-3, -\frac{8}{3}, 0\right\}$
- 43) $2p^3 - 3p^2 - 98p + 147 = 0$ 43) _____
 A) {-7, 0, 7} B) $\left\{-7, \frac{3}{2}, 7\right\}$ C) $\left\{-7, -\frac{3}{2}, 7\right\}$ D) {-7, 7}

Solve the inequality. Give the solution set in both interval and graph forms.

44) $3(6x - 6) < 2(9x - 6)$

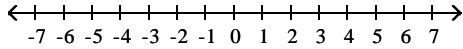
44) _____

45) $-3x + 9(x - 4) > 6x - 2$

45) _____

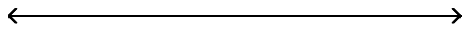
46) $9 < -3y + 3 \leq 21$

46) _____



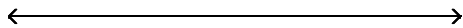
47) $6 \leq \frac{3x - 1}{2} \leq 12$

47) _____



48) $4 < 1 - 4x \leq 12$

48) _____



Solve the equation.

49) $|x| = 6.9$

49) _____

A) $\{-6.9\}$

B) $\{6.9\}$

C) $\{6.9, -6.9\}$

D) $\{4761\}$

50) $|6m + 5| = 6$

50) _____

A) $\left\{\frac{1}{5}, -\frac{11}{5}\right\}$

B) $\left\{\frac{1}{6}, -\frac{11}{6}\right\}$

C) $\left\{-\frac{1}{6}, \frac{11}{6}\right\}$

D) \emptyset

51) $\left|11 - \frac{12}{5}x\right| = 3$

51) _____

Solve the given equation or inequality. If an equation is given, then write the solution set in set notation. If an inequality is given, then write the solution set in interval notation.

52) $|8k + 4| + 7 < 12$

52) _____

53) $|4x + 7| + 5 < 3$

53) _____

54) $|3y - 3| - 8 > -13$

54) _____

A) $(-\infty, \infty)$

B) $\left(-\frac{2}{3}, \frac{8}{3}\right)$

C) $\left(-\frac{2}{3}, \infty\right)$

D) \emptyset

55) $\left|\frac{1}{5}x + \frac{1}{5}\right| + \frac{1}{8} = \frac{5}{8}$

55) _____

A) $\left\{0, \frac{3}{2}\right\}$

B) $\left\{-\frac{7}{2}, \frac{3}{2}\right\}$

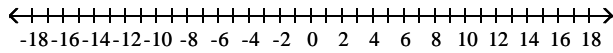
C) $\left\{\frac{3}{2}\right\}$

D) $\left[-\infty, -\frac{7}{2}\right] \cup \left[\frac{3}{2}, \infty\right)$

Solve the inequality and graph the solution set.

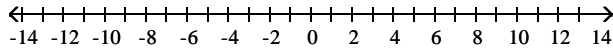
56) $|r - 4| > 3$

56) _____



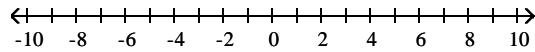
57) $|9x - 5| \geq 7$

57) _____



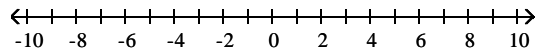
58) $|2y - 4| > -9$

58) _____



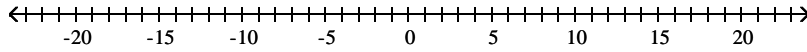
59) $|z + 8| \geq 0$

59) _____



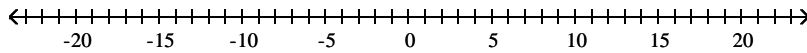
60) $|x| \leq 10$

60) _____



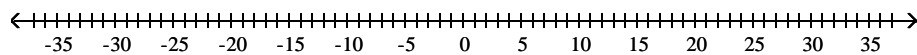
61) $|g - 3| < 4$

61) _____



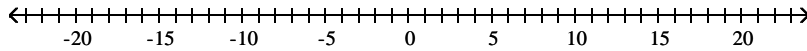
62) $|8 - x| \leq 18$

62) _____



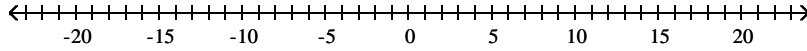
63) $|x| \leq 19$

63) _____



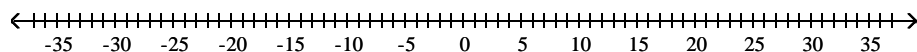
64) $|g - 6| < 6$

64) _____



65) $|8 - x| \leq 17$

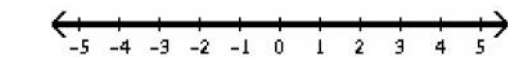
65) _____



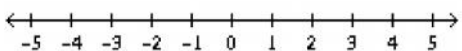
Answer Key

Testname: M12 CH1PP

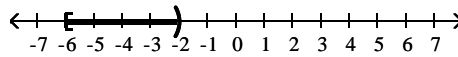
- 1) B
- 2) B
- 3) D
- 4) A
- 5) D
- 6) A
- 7) D
- 8) B
- 9) A
- 10) C
- 11) A
- 12) C
- 13) D
- 14) D
- 15) D
- 16) A
- 17) D
- 18) B
- 19) D
- 20) C
- 21) D
- 22) C
- 23) A
- 24) C
- 25) C
- 26) C
- 27) C
- 28) B
- 29) C
- 30) D
- 31) A
- 32) B
- 33) D
- 34) A
- 35) C
- 36) C
- 37) D
- 38) C
- 39) B
- 40) D
- 41) D
- 42) D
- 43) B
- 44) $(-\infty, \infty)$



- 45) \emptyset



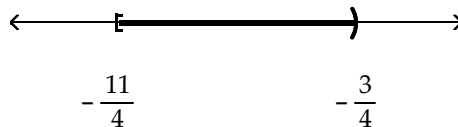
- 46) $[-6, -2)$



- 47) $\left[\frac{13}{3}, \frac{25}{3}\right]$



- 48) $\left[-\frac{11}{4}, -\frac{3}{4}\right)$



- 49) C

- 50) B

- 51) $\left\{\frac{35}{6}, \frac{10}{3}\right\}$

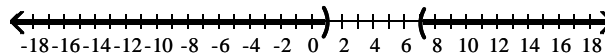
- 52) $\left[-\frac{9}{8}, \frac{1}{8}\right)$

- 53) \emptyset

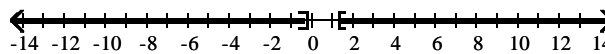
- 54) A

- 55) B

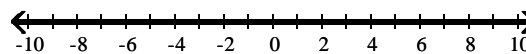
- 56) $(-\infty, 1) \cup (7, \infty)$



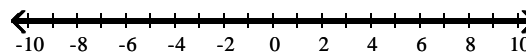
- 57) $\left(-\infty, -\frac{2}{9}\right] \cup \left[\frac{4}{3}, \infty\right)$



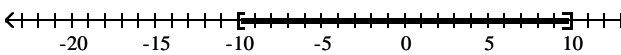
- 58) $(-\infty, \infty)$



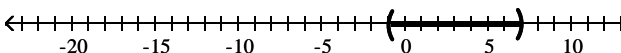
- 59) $(-\infty, \infty)$



- 60) $[-10, 10]$



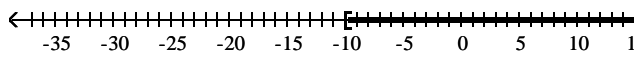
- 61) $(-1, 7)$



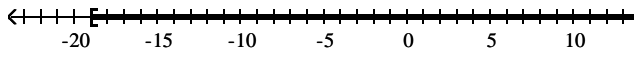
Answer Key

Testname: M12 CH1PP

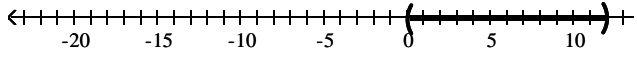
62) $[-10, 26]$



63) $[-19, 19]$



64) $(0, 12)$



65) $[-9, 25]$

