

Name _____

Solve the equation.

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

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

3) $\frac{2x}{5} - \frac{x}{3} = 2$

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

5) $\frac{1}{4}x - \frac{3}{8}x = 2$

6) $\frac{1}{4}x - \frac{3}{8}x = 3$

7) $\frac{1}{4}x - \frac{3}{8}x = 4$

8) $\frac{1}{3} - \frac{x}{2} = \frac{19}{6}$

9) $\frac{2}{3} + \frac{x}{2} = \frac{23}{6}$

10) $\frac{2}{5} - \frac{x}{4} = \frac{11}{20}$

11) $\frac{x}{4} - 8 = \frac{x}{2} + 6$

12) $\frac{x}{5} + 4 = \frac{x}{2} + 5$

13) $\frac{x}{3} + 2 = \frac{x}{4} - 1$

14) $\frac{2x}{5} - \frac{x}{3} = 2$

15) $\frac{1}{4}x - \frac{3}{8}x = 5$

16) $\frac{2}{5} - \frac{x}{2} = \frac{11}{10}$

17) $\frac{1}{4} + \frac{x}{5} = \frac{21}{20}$

18) $\frac{x}{5} - 3 = \frac{x}{3} - 6$

Solve the equation. Use words or set notation to identify equations that have no solution, or equations that are true for all real numbers.

19) $2(x + 7) = 2x - 28$

20) $4(x + 5) = 4x - 40$

21) $3(x + 7) = 3x - 42$

22) $5(x + 3) = 5x + 15$

23) $3(x + 4) = 3x + 12$

24) $6(x + 6) = 6x + 36$

25) $-3(x - 5) - 69 = 4x - 7(x + 2)$

26) $-2(x - 7) - 63 = 5x - 7(x - 3)$

27) $3(x - 4) - 114 = 9x - 6(x + 9)$

28) $12(x + 2) = 3(4x + 3) + 15$

29) $6(x + 3) = 6x - 36$

30) $14(x + 1) = 23x + 23 - 9x - 9$

Use the given information to write an equation. Let x represent the number described in the exercise. Then solve the equation and find the number.

31) Four times a number added to 8 times the number equals 36. Find the number.

32) Four times a number added to 8 times the number equals 60. Find the number.

33) Four times a number added to 7 times the number equals 33. Find the number.

34) When 2 times a number is subtracted from 7 times the number, the result is 35. Find the number.

35) When 4 times a number is subtracted from 7 times the number, the result is 21. Find the number.

36) When 5 times a number is subtracted from 7 times the number, the result is 18. Find the number.

37) If 3 times a number is added to -6 , the result is equal to 9 times the number. Find the number.

38) If 3 times a number is added to -9 , the result is equal to 12 times the number. Find the number.

39) If 5 times a number is added to -6 , the result is equal to 11 times the number. Find the number.

40) Three-fourths of a number is $\frac{1}{2}$. Find the number in lowest terms.

41) Three-fourths of a number is $\frac{3}{16}$. Find the number in lowest terms.

42) Three-fourths of a number is $\frac{7}{8}$. Find the number in lowest terms.

43) The sum of four times a number and 2 is equal to the difference of twice the number and 1. Find the number.

44) The sum of four times a number and 8 is equal to the difference of twice the number and 9. Find the number.

45) The sum of four times a number and 6 is equal to the difference of twice the number and 7. Find the number.

46) Four times a number added to 9 times the number equals 39. Find the number.

47) If 5 times a number is added to -8, the result is equal to 13 times the number. Find the number.

48) Three-fourths of a number is $\frac{5}{6}$. Find the number in lowest terms.

Let x represent the number. Write the English phrase as an algebraic expression.

49) The product of 3 and a number, added to 16.

50) The product of 8 and a number, added to 13.

51) Nine times a number, decreased by 54.

52) Five times a number, decreased by 37.

53) The quotient of 23 and the product of a number and -10.

54) The quotient of 21 and the product of a number and -10.

55) The product of -8 and the sum of a number and 4.

56) The product of -20 and the sum of a number and 15.

57) The product of -26 and the sum of a number and 38.

58) Twice a number, decreased by 9.

59) The product of 3 and a number, added to 2.

Solve the problem.

- 60) The president of a certain university makes three times as much money as one of the department heads. If the total of their salaries is \$210,000, find each worker's salary.
- 61) The president of a certain university makes three times as much money as one of the department heads. If the total of their salaries is \$260,000, find each worker's salary.
- 62) The president of a certain university makes three times as much money as one of the department heads. If the total of their salaries is \$180,000, find each worker's salary.
- 63) 30 marbles are to be divided into three bags so that the second bag has three times as many marbles as the first bag and the third bag has twice as many as the first bag. If x is the number of marbles in the first bag, find the number of marbles in each bag.
- 64) 30 marbles are to be divided into three bags so that the second bag has three times as many marbles as the first bag and the third bag has twice as many as the first bag. If x is the number of marbles in the first bag, find the number of marbles in each bag.
- 65) 30 marbles are to be divided into three bags so that the second bag has three times as many marbles as the first bag and the third bag has twice as many as the first bag. If x is the number of marbles in the first bag, find the number of marbles in each bag.
- 66) A promotional deal for long distance phone service charges a \$15 basic fee plus \$0.05 per minute for all calls. If Joe's phone bill was \$57 under this promotional deal, how many minutes of phone calls did he make? Round to the nearest integer, if necessary.
- 67) A promotional deal for long distance phone service charges a \$15 basic fee plus \$0.05 per minute for all calls. If Joe's phone bill was \$73 under this promotional deal, how many minutes of phone calls did he make? Round to the nearest integer, if necessary.
- 68) A promotional deal for long distance phone service charges a \$15 basic fee plus \$0.05 per minute for all calls. If Joe's phone bill was \$68 under this promotional deal, how many minutes of phone calls did he make? Round to the nearest integer, if necessary.
- 69) A car rental agency advertised renting a luxury, full-size car for \$29.95 per day and \$0.49 per mile. If you rent this car for 4 days, how many whole miles can you drive if you only have \$200 to spend?
- 70) A car rental agency advertised renting a luxury, full-size car for \$19.95 per day and \$0.39 per mile. If you rent this car for 4 days, how many whole miles can you drive if you only have \$200 to spend?
- 71) A car rental agency advertised renting a luxury, full-size car for \$34.95 per day and \$0.19 per mile. If you rent this car for 3 days, how many whole miles can you drive if you only have \$200 to spend?

Answer Key

Testname: Q04PREP_2.3, & 2.5V01

- 1) {75}
- 2) {60}
- 3) {30}
- 4) {45}
- 5) {-16}
- 6) {-24}
- 7) {-32}
- 8) $\left\{-\frac{17}{3}\right\}$
- 9) $\left\{\frac{19}{3}\right\}$
- 10) $\left\{-\frac{3}{5}\right\}$
- 11) $\{-56\}$
- 12) $\left\{-\frac{10}{3}\right\}$
- 13) $\{-36\}$
- 14) {30}
- 15) {-40}
- 16) $\left\{-\frac{7}{5}\right\}$
- 17) {4}
- 18) $\left\{\frac{45}{2}\right\}$
- 19) \emptyset
- 20) \emptyset
- 21) \emptyset
- 22) {x | x is a real number}
- 23) {x | x is a real number}
- 24) {x | x is a real number}
- 25) \emptyset
- 26) \emptyset
- 27) \emptyset
- 28) {x | x is a real number}
- 29) \emptyset
- 30) {x | x is a real number}
- 31) $4x + 8x = 36$; 3
- 32) $4x + 8x = 60$; 5
- 33) $4x + 7x = 33$; 3
- 34) $7x - 2x = 35$; 7
- 35) $7x - 4x = 21$; 7
- 36) $7x - 5x = 18$; 9
- 37) $3x + (-6) = 9x$; -1
- 38) $3x + (-9) = 12x$; -1
- 39) $5x + (-6) = 11x$; -1
- 40) $\frac{3}{4}x = \frac{1}{2}$; $\frac{2}{3}$

Answer Key

Testname: Q04PREP_2.3, & 2.5V01

41) $\frac{3}{4}x = \frac{3}{16}; \frac{1}{4}$

42) $\frac{3}{4}x = \frac{7}{8}; \frac{7}{6}$

43) $4x + 2 = 2x - 1; -\frac{3}{2}$

44) $4x + 8 = 2x - 9; -\frac{17}{2}$

45) $4x + 6 = 2x - 7; -\frac{13}{2}$

46) $4x + 9x = 39; 3$

47) $5x + (-8) = 13x; -1$

48) $\frac{3}{4}x = \frac{5}{6}; \frac{10}{9}$

49) $16 + 3x$

50) $13 + 8x$

51) $9x - 54$

52) $5x - 37$

53) $\frac{23}{-10x}$

54) $\frac{21}{-10x}$

55) $-8(x + 4)$

56) $-20(x + 15)$

57) $-26(x + 38)$

58) $2x - 9$

59) $2 + 3x$

60) president's salary = \$157,500; department head's salary = \$52,500

61) president's salary = \$195,000; department head's salary = \$65,000

62) president's salary = \$135,000; department head's salary = \$45,000

63) 1st bag = 5 marbles; 2nd bag = 15 marbles; 3rd bag = 10 marbles

64) 1st bag = 5 marbles; 2nd bag = 15 marbles; 3rd bag = 10 marbles

65) 1st bag = 5 marbles; 2nd bag = 15 marbles; 3rd bag = 10 marbles

66) 840 minutes

67) 1160 minutes

68) 1060 minutes

69) 163 miles

70) 308 miles

71) 500 miles