

Complete the following.

- 1) Tim is six years older than Mary is.
Let x = Mary's age.
Then _____ = Tim's age.
- 2) The Tigers won 5 more games than they lost.
Let x = the number of games lost.
Then _____ = the number won.
- 3) Jan is seven cm taller than Liz.
Let x = Liz's height.
Then _____ = Jan's height.
- 4) Kathy is 3 years younger than Jim.
Let x = Jim's age.
Then _____ = Kathy's age.
- 5) The temperature today is 8° lower than it was yesterday.
Let t = yesterday's temperature.
Then _____ = today's temperature.
- 6) There are 7 more girls here than boys.
Let x = the number of boys.
Then _____ = number of girls.
- 7) The length of a rectangle is five times the width.
Let w = the width.
Then _____ = the length.
- 8) Sam is one-half the age of Sara.
Let x = Sara's age.
Then _____ = Sam's age.
- 9) Rose is five cm taller than John.
Let x = Rose's height.
Then _____ = John's height.
- 10) The length of a rectangle is 12 cm longer than the width.
Let x = the width.
Then _____ = the length.

Solve the following. Show your work.

- 11) The Indian Hill's Wildcats played 35 games. The team won seven more games than they lost. How many games did they win?
 x = number of games lost
 $x + 7$ = number of games won _____
- 12) Robert has twice as much money as Doug. Together they have \$78. How much money does Doug have?
 x = amount Doug has
 $2x$ = amount Robert has _____
- 13) The Indian Hill's band has 135 members. If there are 15 more girls than boys in the band, how many girls are there in the band
 x = number of girls
 $x - 15$ = number of boys _____

Solve the following. Show your work.

14) $2x - 3 + 5x = 10x - 8$

22) $-2(3x - 4 + 2 - x) = 2x + 5$

15) $4y - 7 + 3y + 9 = 8y$

23) $5 + 3x - (2x + 3 - 3x + 4) = x$

16) $-6x + 5 - 2x = 12 - x$

24) $-2(x + 3) + 5(2 - x) = 3x + 26$

17) $-8y - (8 + 6y) = y + 7$

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

18) $-4x + 8 - (6 + x) = -3x$

26) $\frac{3x + 5}{7} = x - 1$

19) $-3x + 2(2x - 4) = 3x - 5$

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

20) $4x + 5 - x + 1 = 6x + 2x - 1$

28) $\frac{2}{3}(6x + 15) + 2x = x$

21) $2(y - 4) - 3(y - 3) = 3y - 12$

29) $9x - x + 5 - 6x - 6 + 2x = 0$

Solve the following. Show your work.

1. The sum of a certain number and 12 is 19. Find the number.
2. The sum of a certain number and 25 is 36. Find the number.
3. When a certain number is subtracted from 27, the difference is 16. Find the number.
4. If 24 is subtracted from a certain number, the difference is 17. Find the number.
5. One number is 8 greater than another, and their sum is 84. Find the numbers.
6. One number is 15 less than another, and their sum is 55. Find the numbers.
7. A 17-foot board is cut so that one piece is 5 feet longer than the other. Find the length of each piece.

8. A 50-foot rope is cut so that one piece is 12 feet shorter than the other. Find the length of each piece.

9. Find two consecutive integers whose sum is 35.

10. Find two consecutive integers whose sum is 39.

11. Together, Mabel paid \$16.20 for a skirt and a blouse. If the skirt cost \$3 more than the blouse, how much did it cost?

12. Miss Clark paid \$6.30 for a dinner, including the tip. If the price of the dinner was 6 times the tip how much was her tip?

13. The perimeter of a rectangle is 34 inches, and the length is 3 inches greater than the width. Find the length and width.

14. One side of a parallelogram is twice as long as an adjacent side. If the perimeter of the parallelogram is 48 yd. Find the length of each side.

Solve the following. Show your work!

1. There are 485 more students than teachers at Indian Hills.
Let x = number of teachers.
Then _____ = number of students.
2. The width of a rectangle is 15 cm less than the length.
Let y = the length.
Then _____ = the width.
3. The length of a rectangle is four times the width.
Let w = the width.
Then _____ = the length.
4. The Indian Hills' Wildcats played a total of 28 games.
Let x = number of games won.
Then _____ = number of games lost.
5. The temperature today is 12° higher than it was yesterday.
Let T = yesterday's temperature.
Then _____ = today's temperature.
6. Howard strikes out five times as often as Lucy.
Let x = Howard's strikeouts.
Then _____ = Lucy's strikeouts.
7. Al has \$5 more than Ben.
Ben has \$6 more than Carl.
Let x = Carl's amount of money.
Then _____ = Ben's amount,
and _____ = Al's amount.
8. Denny is 3 cm taller than Ed. Franco is 2 cm shorter than Ed.
Let x = Ed's height in cm.
Then _____ = Denny's height
and _____ = Franco's height.

Solve the following. Show your work.

9. Carmine's golf score is six strokes less than Linda's. The total of their two scores is 168. What is Carmine's score?
 x = Carmine's score
 $x + 6$ = Linda's score

10. A hamburger has twice as many calories as a cup of soup. If together they have a total of 495 calories, how many calories has the soup?
 x = hamburger's calories
 $\frac{x}{2}$ = soup's calories

11. South High School has 85 students more than North High School. If the total number for both schools is 1495, how many students are at South High School?
 x = number at North
 $x + 85$ = number at South

Solve the following.

12. $4x - 2 - 2x = 7x + 8 - 3x$

16. $4 + 2(3x - 4) = 4x - 3 + 31 - 9$

13. $\frac{x}{2} + \frac{x}{3} + \frac{2}{3} = 0$

17. $\frac{2x - 8 + 3x + 17}{-6} = -2$

14. $3x - 8 + 2x - 13 = 3(2x - 12)$

18. $\frac{4x - 7 + 2x}{5} = \frac{3x + (-4) - (-2x)}{3}$

15. $\left(2\frac{1}{2}\right)x + \frac{x}{2} = 4x - 5$

19. $3y - 4 + 41y - (2 + 38y) = 6y - 12 - 3y$

Solve the following. Show your work!

- 1) An apple has 30 more calories than a peach. If five peaches have as many calories as three apples, how many calories are in an apple?

$$x = \text{calories in one apple} \quad 5(x - 30) = 3x$$

$$x - 30 = \text{calories in one peach}$$

- 2) The Wildcats football team scored a total of 63 points in their first two games. If they scored twice as many points in the second game as in the first, how many points did they score in the first game?

$$x = \text{points in first game}$$

$$2x = \text{points in second game}$$

- 3) The perimeter of a rectangle measures 148 cm. The length measures 14 cm more than twice the width. What is the width of the rectangle?



$$x + 2x + 14 + x + 2x + 14 = 148$$

- 4) Martha has three times as much money as Phil. If together they have \$44, how much money does Phil have?

- 5) The Wildcats played 48 games. If they won twice as many games as they lost, how many games did they win?

- 6) The sum of two numbers is 87. One number is 17 greater than the other number. What are the two numbers?

7) $3(5x - 6) = 13x - 30$	8) $\frac{x}{2} + \frac{3x}{5} + 4\frac{2}{5} = 0$
9) $x(8+1) + x = 8 + 2x$	10) $\frac{2x+5}{4} - \frac{5x+3}{6} = \frac{4x+23}{4}$
11) $5(2y-4) = 8 + 7y$	12) $2(3x+14) + 8 = 3x - 13 - (2x+8)$
13) $14x - x = 5(2x+4)$	14) $\frac{10x-9}{2} - 3 = 2(4x-9)$
15) $\frac{y+6}{2} = \frac{10-y}{3}$	16) $\frac{3x+4}{2} = \frac{2x-9}{3}$
17) $3(x+1) = 2(x-2)$	18) $7x - 5 + (-8x) = 15 - 18 + (-5)$
19) $\frac{1}{3}(9x-18) = 14 - 2x$	20) $\frac{4}{5}(3x+6) + 3 = 18 - x$
21) $y - \frac{1}{2}(y+4y) + (-4) = 3 - y$	22) $\frac{2}{3}(6x+12) = \frac{1}{2}(5x-8)$

Solve the following. Show your work!

- 1) Sandy is two years younger than Greg. If the total of their ages is 32, how old is Greg?

$x =$ Greg's age

_____ = Sandy's age

- 2) The sum of two numbers is 88. If one number is 14 greater than the other, what is the larger number?

$x =$ smaller number

_____ = larger number

- 3) There are 27 pupils in a math class. The girls outnumber the boys two-to-one. How many girls are there in the class?

$x =$ number of boys

_____ = number of girls

- 4) A board 400 cm long is cut into two pieces. If one piece is 66 cm longer than the other, what is the length of the shorter piece?



- 5) There were 68 students on the Indian Hills honor roll. There were fourteen more boys than girls on the list. How many girls made the honor roll?

$x =$ number of boys

_____ = number of girls

- 6) Ray is three years older than Tim. Wendy is twice as old as Ray. If the sum of their ages is 33, how old is Tim?

$x =$ Ray's age

_____ = Tim's age

_____ = Wendy's age

7) $\frac{x}{2} = 5 - x$	8) $-9x - \frac{3}{4} = 8 - \left(\frac{1}{4}\right)x$
9) $\frac{1}{2}x = 4x - 14$	10) $\frac{3x}{4} - 2 = -\left(\frac{6x}{8}\right) + 4$
11) $4x - \frac{2}{3} = \frac{x}{6} + 7$	12) $\frac{5x}{12} - 1 = -\frac{x}{3} - 13$
13) $\frac{y}{2} - 2 = \left(\frac{5}{4}\right)y$	14) $\frac{5y}{8} + \frac{3}{2} = \frac{3y}{4} - 6$
15) $5x = 1 - 2(1 - 4x)$	16) $\frac{7x}{10} - 3 = \left(\frac{4}{5}\right)x - 2$
17) $7x + 1 = 3(3x + 1)$	18) $5(x + 1) - 3x = 3(2x + 3)$
19) $\frac{2y}{5} - \frac{9}{10} = \frac{14y}{20}$	20) $2(2y - 3) - 5(2y + 3) = 10y - 5$
21) $2\frac{2}{5} - \frac{x}{10} = x - \frac{3x}{10}$	22) $\frac{x}{3} - 2 = -x + \frac{2}{3}$

Solve the following. Show your work!

- 1) If seven is subtracted from five times a certain number, the result is 88. Find the number.

- 2) The sum of two consecutive integers is 49. Find the integers.

- 3) One number is seven less than another number. The sum of the two numbers is twenty-three. Find the numbers.

- 4) One number is ten more than another number; their sum is 72. Find the numbers.

- 5) The sum of three consecutive integers is 66. Find the numbers.

- 6) A man is four years older than his wife. If the sum of their ages is 54, how old is the man?

- 7) The perimeter of a rectangle measures 50 centimeters. The length measures seven centimeters more than the width. What are the dimensions of the rectangle?

- 8) The perimeter of a triangle measures 43 inches. The longest side is three times as long as the shortest side and six inches longer than the other side. Find the length of the three sides.

- 9) A board 10 feet in length is cut into two pieces. The one piece is six inches shorter than three times the length of the other piece. Find the length, in inches, of the shorter piece.
- 10) One number is 13 less than another number; their sum is 81. Find the numbers.
- 11) One number is 23 more than another number; their sum is 145. Find the numbers.
- 12) The width of a rectangle is four centimeters less than twice the length. If the perimeter is 88 cm, what is the length?
- 13) The sum of two numbers is 70; their difference is 22. What are the numbers?
- 14) Three-fifths of a certain number is 21. What is the number?
- 15) Find the three consecutive even integers whose sum is 120.
- 16) Find the dimensions of a rectangle in which one side is four meters longer than an adjacent side. The rectangle has a perimeter of 72 meters.

Solve the following. Show your work!

- 1) Jane is now one-half the age of Dennis. In six years, the sum of their ages will be sixty-six. How old is Jane now?

	now	In 6 years
Jane	x	$x + 6$
Dennis	$2x$	$2x + 6$

$$\begin{aligned}(x + 6) + (2x + 6) &= 66 \\ 3x + 12 &= 66 \\ 3x &= 66 - 12 \\ 3x &= 54 \\ x &= 18\end{aligned}$$

Jane is now 18 years old.

- 2) Bill is twice as old as Lorie. In five years, the sum of their ages will be thirty-one. How old is Bill now?
- 3) A board $20\frac{1}{4}$ feet in length is cut into two pieces. The one piece is nine inches shorter than twice the length of the other piece. Find the length of the longer piece.
- 4) A pair of trousers and a tie together cost \$26.15. If the trousers cost \$11.55 more than the tie, how much does the tie cost?
- 5) A box containing 254 oranges, grapefruit, and tangerines has twice as many oranges as grapefruit, and six more tangerines than grapefruit. How many of each kind are in the box?
- 6) Joe is at present twice as old as his sister. In eight years, he will be one and one-half times as old as she will be then. Determine their present ages.

- 7) There are 49 marbles in a box, all of which are red, white, or green. If the number of red marbles is twice the number of white marbles, and the number of green marbles is twice the number of red marbles, how many marbles of each color are there in the box?
- 8) The measure of the length of a rectangle is four times the measure of the width. The perimeter is 300 inches. Determine the width of the rectangle.
- 9) The sum of the perimeters of two equilateral triangles is 60 cm. Determine the length of the sides of each triangle if a side of the larger triangle is nine times as long as a side of the smaller triangle.
- 10) The perimeter of an isosceles triangle is 72 inches. If one leg is six inches longer than the base, determine the length of each side of the triangle.
- 11) One number is six greater than another number, and their sum is 18. What is the larger number?
- 12) A coat and a pair of slacks together cost \$151.50. If the coat costs \$4.50 less than twice the pair of pants, how much did the coat cost?
- 13) The sum of four consecutive odd integers is 112. What is the largest integer?
- 14) Bill is now six years younger than Kathy. In four years Kathy will be twice as old as Bill will be then. How old is Bill now?

Solve the following. Show your work!

- 1) Ten years ago John was four times as old as Bill. Now he is only twice as old as Bill. Find their present ages.

- 2) Robert has 50 coins, all in nickels and dimes, amounting to \$3.50. How many dimes does he have?

- 3) In a purse are nickels, dimes, and quarters amounting to \$1.85. There are twice as many dimes as quarters, and the number of nickels is two less than twice the number of dimes. Determine the number of dimes.

- 4) The first of three numbers exceeds twice the second number by four, while the third number is twice the first. If the sum of the three numbers is 54, what are the numbers?

- 5) Erica is four years older than Margo. In six years the sum of their ages will be thirty-six. How old is Erica now?

- 6) Kris has \$2.20 in dimes and nickels. If she has four more dimes than nickels, how many dimes does she have?

- 7) A piggy bank contained four fewer dimes than quarters, ten more nickels than dimes, and three times as many half-dollars as quarters. The total value of the coins was \$11.30. How many dimes were there in the bank?

- 8) The sum of two numbers is forty-two. If one number is six greater than the other, what are the numbers?
- 9) Jim is at present four years older than his sister. In two years he will be one and one-half times as old as she will be then. How old is Jim now?
- 10) The perimeter of a rectangle measures 148 cm. The length measures seven cm more than twice the width. What are the dimensions of the rectangle?
- 11) Dan is now seven years younger than Kathy is. In eight years the sum of their ages will be fifty-three. How old is Dan now?
- 12) Chip has \$2.15 in nickels, dimes, and quarters. If the number of dimes is two-thirds the number of nickels, and he has five fewer quarters than dimes, how many of each type coin does he have now?
- 13) The sum of four consecutive integers is 170. What is the largest integer?
- 14) A board 12 feet in length is cut into two pieces. The one piece is 15 inches longer than twice the length of the other piece. Find the length of the longer piece.
- 15) Find three consecutive even integers whose sum is 132.

Solve the following. Show your work!

- 1) A movie theater charges \$2.75 admission for adults and \$1.25 for children. At one matinee 252 admissions were sold for a total of \$468.00. How many adult tickets were sold?
- 2) A man has \$4.80 in dimes and nickels. If the total number of coins is sixty, how many dimes does he have?
- 3) 215 tickets were sold for a church supper. Adult tickets were \$1.50 each and children's tickets were 70 cents each. The sale of both kinds of tickets amounted to \$270.50. How many adult tickets were sold?
- 4) Tom has \$3.25 in change. He has five more dimes than quarters and twice as many dimes as nickels. Find the number of quarters, dimes and nickels he has.
- 5) The length of a rectangle is four feet more than twice the width. If the perimeter is 98 feet, what is the length?
- 6) Morgan has \$3.15 in nickels, dimes, and quarters. She has twice as many dimes as quarters, and two fewer nickels than twice the number of dimes. How many nickels does Morgan have?
- 7) Jimmy is five years older than Courtney is. In eight years the sum of their ages will be forty-five. How old is Jimmy now?
- 8) The first of three numbers exceeds twice the second number by five; the third number is twice the first. If the sum of the three numbers is sixty-four, what are the numbers?
- 9) Mike is at present twice as old as his sister. In six years he will be one and one-half times as old as she will be then. Determine their present ages.
- 10) A board fourteen feet in length is cut into two pieces. The one piece is three inches shorter than twice the length of the other piece. Find the length of the longer piece.
- 11) A coat and a pair of pants together cost \$151.50. If the coat costs \$4.50 more than twice the price of the pants how much did the coat cost?
- 12) The length of a rectangle is seven feet less than twice the width. If the perimeter is fifty-eight feet, what is the length?
- 13) The sum of two numbers is ninety. If one number is sixteen greater than the other, what are the numbers?
- 14) A piggy bank contained four more dimes than quarters, five more nickels than dimes, and three times as many half-dollars as quarters. The total value of the coins was \$6.55. How many dimes were there in the bank?

Solve the following. Show your work!

- 1) Laurie is three years older than Brad. In seven years the sum of their ages will be sixty-one. How old is Laurie now?
- 2) Tammy has \$4.40 in dimes and nickels. If she has eight more dimes than nickels, how many dimes does she have?
- 3) Jim is twice as old as Jana. In four years the sum of their ages will be thirty-five. How old is Jana now?
- 4) Three-fifths of a certain number is forty-two. Find the number.
- 5) A garage has twelve gallons of antifreeze which is 30% alcohol and twenty gallons which is 70% alcohol. How many gallons of each mixture must be used to obtain ten gallons which is 60% alcohol?
- 6) In a purse are nickels, dimes, and quarters amounting to \$1.85. there are twice as many dimes as quarters, and the number of nickels is two less than twice the number of dimes. Determine the number of dimes in the purse.
- 7) How many liters of an 80% acid solution must be added to fifteen liters of a 20% acid solution to obtain a mixture which is 30% acid?
- 8) A mixture of forty pounds of candy worth \$2.40 per pound is to be made up by using cremes worth \$3.40 per pound and caramels worth \$1.80 per pound. How many pounds of each should be used in the mixture?
- 9) The first of three numbers exceeds twice the second number by four, while the third number is twice the first. If the sum of the three numbers is fifty-four, find the numbers.
- 10) A certain number is three less than another number and their sum is forty-nine. Find the numbers.
- 11) Find the length of a rectangle in which one side is four feet longer than an adjacent side. The rectangle has a perimeter of seventy-two feet.
- 12) A man has three gallons of antifreeze which tests 50% alcohol. How many gallons of water must be added to obtain a solution that is 30% alcohol?
- 13) A chemist has five liters of 25% SULPHURIC ACID. He would like to obtain a solution of 35% acid by adding a solution of 75% acid to his original solution. How much of the more concentrated acid must be added to achieve the desired concentration?
- 14) A seed dealer mixed grass seed selling at \$1.20 a pound with clover seed selling at \$1.60 per pound. If he wanted a mixture of 90 pounds to sell at \$1.24 a pound, how many pounds of each did he use in the mixture?

Solve the following. Show your work!

- 1) Terri is now one-half the age of David. In seven years, the sum of their ages will be fifty-three. How old is David now?

- 2) The perimeter of a rectangle measures fifty-two centimeters. The length measures ten centimeters more than twice the width. What are the dimensions of the figure?

- 3) A board eighteen feet in length is cut into two pieces. The one piece is nine inches longer than twice the length of the other piece. Find the length of the shorter piece.

- 4) How many liters of a 60% acid solution must be added to thirty liters of a 20% acid solution to obtain a mixture which is 30% acid?

- 5) A pair of trousers and a tie together cost \$28.90. If the trousers cost \$3.40 more than five times the cost of the tie, how much does the tie cost?

- 6) Jim is at present twice as old as his sister. In eight years he will be one and one-half times as old as she will be then. Determine their present ages.

- 7) In a bank are nickels, dimes, and quarters amounting to \$2.05. There are twice as many dimes as quarters, and the number of nickels is two more than twice the number of dimes. Determine the number of dimes in the bank.

- 8) One number is fourteen less than another number and their sum is fifty-two. What are the numbers?
- 9) Jane is now twice the age of Tom. In six years, the sum of their ages will be eighty-four. How old is Jane now?
- 10) The perimeter of a rectangle measures thirty-two centimeters. Then length measures seven centimeters more than twice the width. What are the dimensions of the rectangle?
- 11) A square and a rectangle have the same perimeter. The rectangle's dimensions are length twenty-seven cm; width twelve cm. How long is a side of the square?
- 12) What are the measures of two supplementary angles if the measure of one is five times that of the other?
- 13) What are the measures of two complementary angles if the measure of one is 37° more than the other?
- 14) Ron has \$9.00 in nickels and dimes. He has twice as many dimes as he has nickels. How many coins of each kind does he have?
- 15) The sum of four consecutive even integers is 276. What are the integers?

- 1) (Extra Credit) In $\triangle ABC$, the measure of $\angle A$ is twice the measure of $\angle B$ and three times that of $\angle C$. Determine the measure of each angle in $\triangle ABC$.

- 2) A jar full of pennies and nickels contains three times as many nickels as pennies. The total amount of money in the jar is \$5.60. How many coins of each kind are there in the jar?

- 3) How long is a rectangular plot if its length is eight feet shorter than three times its width, and its perimeter is sixty-eight feet?

- 4) How many pounds of milk, testing 4% butterfat, must be mixed with sixty pounds of cream, testing 26% butterfat, to produce a cream testing 20% butterfat?

- 5) A man is six years older than his wife is. If the sum of their ages is sixty-eight how old is the man?

- 6) A man is six years older than his wife is. In eight years, the sum of their ages will be sixty-eight. How old are the man and wife now?

- 7) Twenty years ago a man was twice as old as his wife was. What is the present age of the man if the sum of their ages now is fifty-five?

- 8) A man is three times as old as his son. The difference of their ages is thirty-two years. Find their ages.
- 9) (Extra Credit) Todd has a jar full of nickels. If he removes fifty nickels and replaces them with seventy dimes, he will have one and one-half times the original amount. How much money does Todd have in the jar?
- 10) The perimeter of a rectangle measures eighty centimeters. The length measures eight centimeters less than twice the width. What are the dimensions of the rectangles?
- 11) Terri is now one-half the age of David. In nine years, the sum of their ages will be fifty-four. How old is David now?
- 12) A piggy bank contains five more dimes than quarters, nine more nickels than dimes, and twice as many half-dollars as quarters. The total value of the coins is \$5.40. How many dimes are there in the bank?
- 13) Tammy has \$2.30 in dimes and nickels. If she has twenty-nine coins, how many dimes does she have?
- 14) The perimeter of an isosceles triangle is 105 inches. If one leg is six inches shorter than the based, determine the length of each side of the triangle.