Tutorial Set 27- Solving Linear Equations with Two Unknown Using the Substitution Method

Example 1:

$X + Y = 2$

$X – Y = 0$

From the last equation we see that $Y = X$

Substitute in the first equation to get $2X = 2$ so $X = Y = 1$

So $X = 1$ and $Y = 1$

Example 2:

$X + 2Y = 10$

$3X + Y = 15$

From the second equation, $Y = 15 – 3X$

Substitute in the first equation to get $X + 2(15 -3X) = 10$

$X + 30 – 6X = -5X + 30 = 10$

$-5X = -20$

$X = 4$

$Y = 15 -3(4) = 15 – 12$

$Y = 3$

Work the following problems, solving for X and Y.

1. $2X + 3Y = 15$

   $X + 4Y = 5$

2. $2X – Y = 3$

   $3X + Y = 7$

3. $3X + 4Y = 15$

   $2X + 3Y = 11$

4. $X – 3Y = -12$

   $2X + 3Y = 36$

Tutorial Set 28- Solving Linear Equations with Two Unknown Using the Elimination Method

Example 1:

$X + Y = 2$

$X – Y = 0$

Eliminate Y by adding the two equations to get

$2X = 2$ so $X = 1$

From the last equation we see that $Y = X$

Substitute in the first equation to get $1 + Y = 2$ or $Y = 1$

Example 2:

Eq1 $X + 2Y = 10$

Eq2 $3X + Y = 15$

Multiply Eq2 by 2 to get

Eq3 $6X + 2Y = 30$

Subtract Eq1 from Eq3 to eliminate Y and get

Eq4 $5X = 20$ so $X = 4$

Substitute in Eq1 to get $4 + 2Y = 10$

$2Y = 6$ so $Y = 3$

$X + 30 – 6X = -5X + 30 = 10$

Work the following problems using the elimination method to solve for X and Y.

1. $2X + 3Y = 15$

   $X + 4Y = 5$

2. $2X – Y = 3$

   $3X + Y = 7$

3. $3X + 4Y$ 15

   $2X + 3Y = 11$

4. $2X - 3Y = -12$

$2X + 3Y = 36$

Tutorial Set 29- Solving Age Related Linear Equations with Two Unknown - Part 1

Example:

Sue is five years younger than Brian, In seven years, the sum of their ages will be 49. Find their ages.

Let X be Sue's age and let Y be Brian's age. Then

$X = Y - 5$ or

Eq1. $X - Y = -5$

$X + 7 + Y + 7 = 49$ or $X + y + 14 = 49$; $X + Y = 49 - 14$

Eq2. $X + Y = 35$

Add Eq1 and Eq2 to get

Eq3. $2X = 30$ so

$X = 15$; $Y = X + 5$

$Y = 20$

Work the following problems

1. Karen is 6 years older than Jake. Five years from now, the sum of their ages will be 52. Find their ages.

2. Mary is 10 years older than Paul. Eight years ago, Mary was three times Paul's age. What are their ages now?

3. Jim is three times as old as Andre. Eight years from now, Jim will be twice as old as Andre. Find their ages.

4. Kim is 6 years more than twice Timothy's age. Two years ago, Kim was three times as old as Timothy. Find their ages.

Tutorial Set 30- Solving Age Related Linear Equations with Two Unknown - Part 2

Work the following problems.

1. Twice Jake's age minus Leroy's age equal to 3. Three times Jake's age plus Leroy's age is equal to 7. Find Jake's and Leroy's ages.

2. Twice Paul's age plus three times Peter's age is equal to 15. Paul's age plus four times Peter's age is equal to 5. Find their ages.

3. Three times Mike's age plus four time Jim's age equal to 15. Twice Mike's age plus three times Jim's age is equal to 11. Find their ages.

4. Three times Bill's age plus 2 time Jakes's age =14. Four times Bill's age plus 5 times Jake's age is 21. Find Bill's and Jake's ages.

Tutorial Set 31- Solving Speed Related Linear Equations with Two Unknown

Solve the following problems. (Remember that distance is equal to speed multiplied by the time.)

1. Bill left traveling to Atlanta at 60 miles per hour. Floyd left 30 minutes (or ½ hour) later traveling at 75 miles per hour. How long will it take Floyd to catch Bill? How far will they have traveled?

2. John is in a jet airplane traveling at 1,000 miles per hour. An enemy plane is 4 mile behind him and fires a rocket at him traveling at 4,000 miles per hour. How long will it be before the rocket intercepts John?