

## Chapter 3 Section 5

### Solving Equation with fractions

In section 1.4 you solved equations using the addition, subtraction, and division properties of equations. In those cases, the coefficient of unknown variables (such as  $x$ ) were whole number. However, in some situations, you need to solve for unknowns with coefficients that are fractions rather than whole numbers, as in the following example :

Solve for  $X$  when given equation is  $X/5 = 2$

Note:  $X/5$  is the same as  $1/5 X$ .

- ❖ Steps for solving equations with fraction:

Step 1: You must set a clear idea in your mind: Your purpose is to keep only the unknown number  $X$  on the left hand side of the equation while finding an appropriate way to move all other items to the right hand side (This rule applies for all this type of questions whether the question is simple or complicated).

Step 2: Because you have a positive  $1/5$  on the left hand side, you have to eliminate it by multiplying by 5 on both sides to make the coefficient of  $X$  a "1". For example:

To solve  $X/5 = 2$ ,

First, multiply by 5 on both sides:  $5(X/5) = 2(5)$

Second, simplify both sides and get:  $X = 10$  so, 10 is your answer.

- ❖ Checking your answer on the exam, all you need to do is plug your answer ( $X = 10$ ) into the original equation ( $X/5 = 2$ ) to see if the value in the left hand side is equal to the value on the right hand side. If the values on both sides are equal, it indicates that you have a correct answer.

$$10/5 = 2$$

$$2 = 2$$

- ❖ Applications for word problems:

"Negative five-sixths is equal to ten-thirds of a number. Find the number."

Suppose the number will be equal to  $X$

Translate the sentence into an equation by breaking down the whole sentence into parts.

Translate " negative five-sixth" into  $-5/6$

Translate " is" into  $=$

Set up your equation:  $-5/6 = 10/3 (X)$

Solve the equation by multiple 6 on both sides. You get  $-5 = 20X$ , then

$$X = -1/4$$