

Unit 6 : Solving Equations

- Algebraic expressions do **not** have an equal sign
- Algebraic equations **do** have an equal sign

We solve equations using ...

Algebra Tiles:

- variable tile (x)  Unit tile (+)  (-)  Zero Pair 

Example:

Balance Scales:

Equal sign means that the two sides are balanced. Remove weights till you are left with only unknowns on the side.

Example:

Algebra:

Use opposite operations!

- If it is addition, you subtract!
- If it is subtraction, you add!
- If it is multiplication, you divide!
- If it is division, you multiply!

Example:

1. Give two examples of an algebraic expression

2. Give two examples of an algebraic equation

3. Solve the following equations

a. $3n + 4 = 19$

b. $n + 7 = 13$

c. $15 - n = 4$

d. $5n - 9 = 16$

e. $4n = 24$

f. $\frac{n}{3} + 4 = 9$

g. $\frac{n}{9} - 10 = 0$

h. $\frac{n}{6} - 3 = -1$

4. You answered thirteen questions in class and you now only have 4 questions for homework. Write an equation for the number of questions that you had originally, solve the equation.

5. A 2-pan balance has two masses of 7g and 4g on the left hand side and an unknown mass and 5g mass on the right hand side. What is the unknown mass if the 2-pan balance is balanced?

6. A 2-pan balance has three masses of 12g, 5g and 3g on the left hand side and two unknown masses and 6g mass on the right hand side. What is the unknown mass if the 2-pan balance is balanced?
7. A 2-pan balance has four masses of 9g, 8g, 4g and an unknown mass on the left hand side. There are two unknown masses and a 12g mass on the right hand side. What is the unknown mass if the 2-pan balance is balanced?
8. Solve the following equations, represent the equation using algebra tiles
- a) $n - 7 = -3$
- b) $n + (-4) = 3$
- c) $m - 9 = 4$
- d) $2m - 7 = -5$
- e) $3n + 2 = 3$

9. Write, then solve, an equation to find each number.

a) twelve more than a number is twenty one

b) three times a number increased by five is twenty-six

c) a number divided by four decreased by seven is one

d) six less than a number is two

10. In x weeks and two days, summer holidays begin. School is out in 23 days. Find the value of x