

Equations

<p>An <i>equation</i> has:</p> <ul style="list-style-type: none"> • an equal sign “=” and • an expression on both sides of the equal sign. <p>Some equations are <i>true</i>, but others are <i>false</i>. $10 = 9$ is a false equation. $6 + 6 = 12$ is a true equation.</p>	<p>Examples of equations:</p> $2(a + 6) = y \qquad 14 = 9 + 5$ $9 = 8 + 8 \qquad 0 = 0 \qquad \frac{x + y}{2} = 5$ <p>(a false equation)</p> $5^2 - x = 2x + 7$
<p>What do we do with equations?</p> <p>If the equation has a variable (a letter) in it, then this is the <i>unknown</i>. We can try to <i>solve</i> the equation. This means finding the values of the unknown that make the equation true.</p> <p>$6 + x = 60$ has the unknown x. If x is 54, then the equation is true: $6 + 54 = 60$. (If we give some other value for x, say 67, we get a false equation. $6 + 67 = 60$ is a false equation.)</p> <p>We say $x = 54$ is the <i>solution</i> or the <i>root</i> of the equation.</p>	

1. Label each as an equation or an expression.

- a. $2x - 3 = 8 + x$ b. $y^2 - 9$ c. $4 + 2 = 6$ d. $\frac{1}{2}x^4 - 5$ e. $\frac{T + 2D}{C}$

2. Write the statements as equations. Use a letter for the unknown (the “secret number” or “a number”). Then solve the equations.

- a. When you add 4 and a secret number, you get 10.

Equation: $4 + x = 10$

Solution: $x = 6$

- b. When a secret number is subtracted from 100, the difference is 35.

Equation: _____

Solution: _____

- c. The product of 3 and a number is 63.

Equation: _____

Solution: _____

- d. When you divide a number by 7, the result is 12.

Equation: _____

Solution: _____

- e. The quotient of 60 and a secret number is equal to 12.

Equation: _____

Solution: _____