

Strategy: Variable can be substituted  
by a constant value  
allowing the evaluation of  
expression.

$$E \circ x + 7$$

$$E(x) \circ x + 7$$

$$E(x=2) \circ 2 + 7 \\ = 9$$

$$E(x) : x + 7$$

$$E(x=50) : 50 + 7 \\ = 57$$

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Equality

Let  $E(x)$  be any expression containing  
variable ' $x$ '.

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Substitute all occurrences of  $x$  by  $y$ .  
If evaluation  $E(x)$  and evaluation  $E(y)$   
are same, then  $x = y$ .

$$\forall E: \frac{E(x) = E(y)}{x = y}$$

$$E1: 8 + 5 = 13$$

$$E2: 8 * 4 = 32$$

$$E3: 8 - 3 = 5$$

$$\underline{(5+3)}$$

$$E1: (5+3) + 5 \quad 5+3+5=13$$

$$E2: (5+3) * 4 \quad 5*4+3*4=20+12=32$$

$$E3: (5+3) - 3 \quad 5+3-3=5+0=5$$

$$8 = 5+3$$

Numbers. Tables Arithmetic.

Solve the equation

$$7 \times 3 = 21$$

$$\boxed{21 = 21}$$

भिन्न = वेगवेगळे

समान = एकसारखे

$$5 + 3 = 8$$

$$8 = 8$$

समीकरण

$$\bigcirc = \bigcirc$$

$$\square = \square$$

$$3 + 5 = 2 + 6$$

$$x + 5 = 10$$

$$E(x=1)$$

$$1 + 5 = 10$$

$$\boxed{6 = 10}$$

False

$$x + 5 = 10$$

let us assume

$$(x+5) = (10)$$

$$(x+5) - 5 = 10 - 5$$

$$x + 5 - 5 = 5$$

$$x + 0 = 5$$

$$\boxed{x = 5}$$

$$\boxed{x = 5}$$

$$\boxed{x + 5 = 10}$$

Solving the eq<sup>n</sup>.

સમીકરણની રીતે સોલ કરો:  
સમીકરણને સમાધાન કરો:

$$\sum \text{ (1)}$$

Solve:  $x + 5 = 10$

Solution:

$$\checkmark x + 5 = 10.$$

$$\checkmark x = 10 - 5$$

$$\checkmark \frac{(4)}{(4)} \quad \boxed{x = 5} \quad \dots$$

Euclid

$$\boxed{a = b}$$

$$a + c = b + c$$

$$a - c = b - c$$

$$a \times c = b \times c$$

$$\frac{a}{c} = \frac{b}{c} \quad \text{if } c \neq 0$$

$$a + a = b$$

$$x + a - a = b - a$$

$$x + 0 = b - a$$

$$x = b - a$$

## Fermat's Last Theorem:

$$x^n + y^n = z^n$$

if  $n > 2$  then this eq<sup>n</sup>  
does not have sol<sup>ns</sup> in integers.

$$n=1$$

$$5 + 3 = 8$$

$$10 + 3 = 13$$

$$5^1 + 3^1 = 8^1$$

$$10^1 + 3^1 = 13^1$$

$$n=2$$

$$3^2 + 4^2 = 5^2$$

$$8^2 + 6^2 = 10^2$$

$$x^3 + y^3 = z^3 \quad | \quad x^4 + y^4 = z^4.$$

$$\boxed{x^5 + y^5 = z^5}$$

Predicate:

Condition applied on variable.

$$P(x) \quad x + 7 > 10$$

$$P(x) : x + 7 > 10$$

$$Q(\text{computer}) : \text{Bandwidth}(\text{computer}) \geq (\text{reqd})$$

'Domain of predicate'

$$Q(\text{computer}) : \text{Band Width}(\text{computer}) \geq 50 \text{ Mbps}$$

$$D_Q = \{ \text{computers in CPWA} \}$$

$$P(x) : \text{Cond}(x)$$

$$D_P$$

Set  $S$  is set of all elements  
in  $D_P$  which satisfy predicate  $P$ .

$$P(n) : n \text{ is even.}$$

$$D_P = \{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \}$$

Set  $S$  is a set of all elements  $D_P$

$$\boxed{2, 4, 6, 8, 10}$$

$$S = \{ 2, 4, 6, 8, 10 \}$$

$$S = \{ n \in D_P \mid \text{such that } P(n) \equiv \text{True} \}$$

is a set of all  $n$  in  $D_P$  which satisfy condition  $P$ .

Set of squares of all even numbers  
in 1 and 50

Q(n):  $n \in \mathbb{N}$  and  $1 \leq n \leq 50$  and  $n \% 2 = 0$

$\mathbb{D}_Q \equiv$  Set of natural numbers.

$$S = \{ n^2 : Q(n) \equiv \text{True} \}$$

$2^2, 4^2, 6^2, 8^2, 10^2, 12^2, 14^2, 16^2, 18^2, 20^2, 22^2, 24^2, 26^2, 28^2, 30^2$

$32^2, 34^2, 36^2, 38^2, 40^2, 42^2, 44^2, 46^2, 48^2, 50^2$