

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

$$E : x + 7$$

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

$$E(x=2) : 2 + 7$$

$$= 9$$

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

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

$$= 57$$

## Equality

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

Substitute all occurrences of  $x$  by  $y$ .

If evaluation  $E(x)$  and evaluation  $E(y)$

are same then  $x = y$ .

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

$$x = y$$

$$E1: 8 + 5 = 13$$

$$E2: 8 * 4 = 32$$

$$E3: 8 - 3 = 5$$

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

$$E1: (5+3) + 5 = 5 + 3 + 5 = 15$$

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

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

$$8 = 5 + 3$$

Numbers. Tables Arithmetic.

Solve the equation

$$? \times 3 = ?$$

$$\boxed{21} = 21$$

মুন্ত = দ্বিতীয় সংখ্যা

সমান = পক্ষের সমান

$$5 + 3 = 8$$

$$8 = 8$$

~~সমীকৃত~~

$$\begin{array}{c} \bigcirc = \bigcirc \\ \boxed{\square} = \boxed{\square} \end{array}$$

$$5 + 5 = 2 + 6$$

$$x + 5 = 10$$

$$E(x=1)$$

$$1 + 5 = 10$$

$$\boxed{6 = 10}$$

False

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

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 eqn.

समीक्षण बहुत दूर  
समीक्षण तथा अलग दूर:

$$\sum \quad \prod$$

$$\text{Solve: } x+5 = 10$$

Solution:

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

$$\checkmark x = 10-5$$

(u)  
(u)

$$\boxed{x = 5} \dots -$$

Euclid

$$\boxed{a = b}$$

$$a+c = b+c$$

$$a-c = b-c$$

$$a*c = b*c$$

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

$$a+a = b$$

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

$$a+0 = b-a$$

$$a = b-a$$

## Fermat's Last Theorem:

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

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

$$n=1$$

$$5+3=8$$

$$10+3=13$$

$$\overset{1}{5} + \overset{1}{3} = \overset{1}{8}$$

$$\overset{1}{10} + \overset{1}{3} = \overset{1}{13}$$


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$$n=2$$

$$3^2 + 4^2 = 5^2 \quad | \quad 8^2 + 6^2 = 10^2$$

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

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

Predicate:

Condition applied on variable.

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

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Q(computer) : BandWidth(computer)  $\geq$  (mb/s)

'Domain of predicate'

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

$D_Q = \{ \text{computers in CPUA} \}$ .

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

$D_P$

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

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

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

Set S is a set of all elements  $D_P$

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

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

$S$  is a  $\{ \frac{n \in D_P}{\text{all } n \text{ in } D_P} \text{ such that } \underbrace{P(n) \equiv \text{True}}_{\text{which satisfy condition P.}} \}$   
Set of

Set of squares of all even numbers  
in 1 and 50

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

$D_Q$   $\equiv$  set of natural numbers.

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

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

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

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