14) Question: Find the value of $\frac{16^a}{4^b}$; if 2a-b=16

A) 2^{-8} *Change*   *?*
B) 2^8
C) 16^{-8}
D) 16^8

For speed, while solving something similar, only THINK the words in blue;
WRITE only the words in other COLORS.

Solution:
Given   1) 2a-b=16
Find   1) the value of $\frac{16^a}{4^b}$

Road Map of Solution:
First,   Solve the first given statement
Find the value of "a" in terms of "b" OR
Find the value of "b" in terms of "a"
Then,   Substitute the value from above into the "Find" statement.

$$2a \ -b \qquad = \quad 16$$
$$\{\ 2a\ -b\ \}\ +b \ = \quad 16\ +b$$
$$2a\ -b \qquad +b\ = \quad 16\ +b$$
$$2a \qquad\qquad = \quad 16\ +b$$
$$2a\ -16 \qquad = \quad 16\ +b\ -16$$
$$2a\ -16 \qquad = \quad 16\ +b\ -16$$
$$2a\ -16 \qquad = \qquad b \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \text{equation \# 1}$$

$\dfrac{16^a}{4^b}$

$\dfrac{16^a}{4^b}$

$\dfrac{16^a}{4^{[2a-16]}}$

$\dfrac{16^a}{4^{[(2)(a-8)]}}$ <u>*click here*</u> *to see examples on page 92*

$\dfrac{16^a}{4^{(2)(a-8)}}$

$\dfrac{16^a}{16^{(a-8)}}$

$\dfrac{16^a}{16^{(a)} \times 16^{(-8)}}$

$\dfrac{16^a}{16^a \times 16^{-8}}$

$\dfrac{16^a}{16^a \times 16^{-8}}$

$$\frac{1}{1 \left[\times \left(\frac{1}{16} \right)^8 \right)}$$

$$\frac{1}{\left(\frac{1}{16}^8 \right)}$$

$$\frac{16^8}{1}$$

16^8 .... *Answer (D)*