This book has permission to use the "N&K method of COLORS".

10) Question: In the function $f(x) = bx^2 + 15$, *"b" is a constant. If* "$f(3) = 33$", *find the value of* $f(5)$.

A) 65 changed
B) 70
C) 75
D) 80

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

Solution:

Given 1) $f(x) = bx^2 + 15$
2) $f(3) = 33$
Find $f(5) = ?$

Road Map of Solution:
First, Using the given statements, 1 & 2, find the value of "b".
Second, To find the value of $f(5)$; *substitute the value of "b" and "*$x = 5$*" in the given first statement.*

Given
1st statement $f(x) = bx^2 + 15$ ..... *equation # 1*
2nd statement $f(3) = 33$ ..... *equation # 2*

Solving eq # 1 for "$x = 3$*", we get*

$$f(x) = bx^2 + 15$$
$$f(x) = b(\blacksquare)^2 + 15$$
$$f(3) = b(\blacksquare)^2 + 15$$
$$f(3) = b(9) + 15$$

Substituting $f(3) = 33$ *in the equation above, we get,*

$$33 = b(9) + 15$$
$$-15 + \{33\} = \{b(9) + 15\} - 15$$
$$-15 + 33 = b(9) + \cancel{15} - \cancel{15}$$
$$18 = b(9) \quad \text{..... equation \# 3}$$

Multiplying both sides of the equation # 3 with $\frac{1}{9}$

$$\left(\frac{1}{9}\right) \times \{18\} = \{b(9)\} \times \left(\frac{1}{9}\right) \quad \text{..... equation \# 3b}$$
$$\left(\frac{1}{9}\right) \times \{\cancel{18}\} = \{b(\cancel{9})\} \times \left(\frac{1}{9}\right)$$
$$\left(\frac{1}{1}\right) \times \{2\} = \{b(1)\} \times \left(\frac{1}{1}\right)$$
$$(1) \times \{2\} = \{b(1)\} \times (1)$$
$$\{2\} = \{b\}$$
$$2 = b \quad \text{..... equation \# 3c}$$

From eq#s 1 & 3c, we get,

$$f(x) = bx^2 + 15$$
$$f(x) = (b)(x)^2 + 15$$
$$f(5) = (2)(5)^2 + 15$$
$$f(5) = (2)(25) + 15$$
$$f(5) = 50 + 15$$
$$f(5) = 65 \quad \text{..... Answer (A)}$$