b)

we know that, sum of suares of errors, **SSE=∑(Yi-Yi^)^2 ;i-1,2,3,…,n**

For equation **1) y^=2.8+1.6x**

|  |  |  |  |
| --- | --- | --- | --- |
| X | Y | Yi^ | (Yi-yi^)^2 |
| 1 | 5 | 4.4 | 0.36 |
| 2 | 5 | 6 | 1 |
| 3 | 8 | 7.6 | 0.16 |
| 4 | 9 | 9.2 | 0.04 |
| 5 | 11 | 10.8 | 0.04 |
|  |  | Total | 1.6 |

**SSE=1.6**

**2) y^=3.6+0.5x**

|  |  |  |  |
| --- | --- | --- | --- |
| X | Y | Yi^ | (Yi-yi^)^2 |
| 1 | 5 | 4.1 | 0.81 |
| 2 | 5 | 4.6 | 0.16 |
| 3 | 8 | 5.1 | 8.41 |
| 4 | 9 | 5.6 | 11.56 |
| 5 | 11 | 6.1 | 24.01 |
|  |  | Total | 44.95 |

**SSE=44.95**

**3) y^=3.4+0.5x**

|  |  |  |  |
| --- | --- | --- | --- |
| X | Y | Yi^ | (Yi-yi^)^2 |
| 1 | 5 | 3.9 | 1.21 |
| 2 | 5 | 4.4 | 0.36 |
| 3 | 8 | 4.9 | 9.61 |
| 4 | 9 | 5.4 | 12.96 |
| 5 | 11 | 5.9 | 26.01 |
|  |  | Total | 50.15 |

**SSE=50.15**

**ANS)**

**The sum of squares error for the equation y^=2.8+1.6x is 1.60**

**The sum of squares error for the equation y^=3.6+0.5x is 44.95**

**The sum of squares error for the equation y^=3.4+0.5x is 50.15**

C) The “best ” fit of these data is

**Ans) A) The equation y^=2.8+1.6\*X provides the best fit because it has the lowest sum of squares error. This criteria is called the method of least squares.**