Question 1.

1. ŷ = θ0+θ1  
    = 0.4 + 0.8(1)  
   ŷ(1) = 1.2  
     
   *E*(θ) = (y- ŷ)2  
    =(1-1.2)2   
   *E*(θ) =
2. ŷ = θ0+θ1  
    = 0.4 + 0.8(2)  
   ŷ(2) = 2  
     
   *E*(θ) = (y- ŷ)2  
    = (3-2)2   
   *E*(θ) = 1
3. ŷ = θ0+θ1  
    = 0.4 + 0.8(3)  
   ŷ(3) = 2.8  
     
   *E*(θ) = (y- ŷ)2  
    = (2-2.8)2   
   *E*(θ) =   
     
   ŷ = θ0+θ1  
    = 0.4 + 0.8(4)  
   ŷ(4) = 3.6  
     
   *E*(θ) = (y- ŷ)2  
    = (3-3.6)2   
   *E*(θ) =   
     
   ŷ = θ0+θ1  
    = 0.4 + 0.8(5)  
   ŷ(5) = 4.4  
     
   *E*(θ) = (y- ŷ)2  
    = (5-4.8)2   
   *E*(θ) =   
     
     
   *E*(θ) = ½ ( + 1 + + + ) = 1.04

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
| ŷ = | 1 | 2 | 3 | 4 | 5 |
| y | 1 | 3 | 2 | 3 | 5 |

*E*(θ) = ½

*E*(θ) = 1.5

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
| ŷ = 1+2 | 3 | 5 | 7 | 9 | 11 |
| y | 1 | 3 | 2 | 3 | 5 |

*E*(θ) = ½

*E*(θ) = 52.5

Chart

Description automatically generated

ŷ = 0.4+0.8

*E*(θ) = 1.04

Chart, scatter chart

Description automatically generated

ŷ =

*E*(θ) = 1.5

Chart

Description automatically generated

ŷ = 1+2

*E*(θ) = 52.5

1. The best model is ŷ = 0.4+0.8.  
   ŷ(6) = 0.4 + 0.8(6)  
   ŷ(6) = 5.2