

Answer to a HW question (Oct. 13, 2008)

Shipping Time: Shipping carpets from Istanbul to US.

The shipping time for each carpet in days are

31 31 42 39 42 43 34 30 28 36 37 35 40

Q: At least how much % of the delivery time would be between 26 and 46 days?

a. Use Chebychev's theorem

Answer:

Step 1: derive mean, Mean = 36 days

Step 2: derive standard deviation

$$\sigma = \text{sq.rt.} \left( \frac{(31-36)^2 + (31-36)^2 + (42-36)^2 + (39-36)^2 + (42-36)^2 + (43-36)^2 + (34-36)^2 + (30-36)^2 + (28-36)^2 + (36-36)^2 + (37-36)^2 + (35-36)^2 + (40-36)^2}{13-1} \right) = \text{sq.rt.}(25.2) = 5.$$

Step 3: Derive k.  $[36 + 5k] = 46 \Rightarrow k = 2$ . ( $[36-5k]=26 \Rightarrow k = 2$ )

Step 4: Apply Chebychev's theorem  $[1-1/4]*100 = 75\%$ .

b. What empirical rule say about the % of the delivery time to be between 26 and 46 days?

$k = 2 \Rightarrow 95\%$  of the delivery time will be between 26 and 46 days.