Tutorial

Thursday, March 23, 2017 12:43 PM

example: A company insures students' belongings against theft. If the belongings are stolen (probability of theft is 0.5%), the company will pay out $5000.

a) What premium should the company charge if they want to make $100 per student?

b) what is the standard deviation of the company's earnings per student?

	x	$p(x)$
no theft	m	0.995
theft	$m - 5000$	0.005

$$\mu = E(x) = \sum x\, p(x)$$

$$100 = 0.995\, m + 0.005\,(m - 5000)$$

$$= m - 25$$

$$m = \$125$$

b) $$\sigma^2 = \sum x^2 p(x) - \mu^2$$

$$= (125)^2 (0.995) + (125 - 5000)^2 0.005 - 100^2$$

$$= 124375$$

$$\sigma = 352.668$$

= $353

Thrifty's is considering opening a new store in Saanich. Their statistician thinks that the probability that the store will make $150 000 per month is 60%, while the probability that they'll make $75 000 per month is 40%. Thrifty's will only open the store if their expected earnings are greater than $125,000 per month. Should they open the store?

x	p(x)
150 000	0.6
75 000	0.4

$$\mu = E(x) = \sum x\,p(x)$$
$$= 150\,000(0.6) + 75000(0.4)$$
$$= 120000$$

NO