# EXAM P QUESTIONS OF THE WEEK

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## Week of August 7/06

A loss random variable $X$ is uniformly distributed on the interval $[0\,,\,1000]$.
An insurance policy on the loss pays the following amount:
(i) 0 if the loss is below 200 ,
(ii) one-half of the loss in excess of 200 if the loss is between 200 and 500 , and
(iii) 150 plus one-quarter of the loss in excess of 500 if the loss is at least 500.

$Y$ is the amount paid by the insurer when a loss occurs. Find the coefficient of variation of $Y$.

**The solution can be found below.**

## Week of August 7/06 - Solution

The coefficient of variation of $Y$ is $\frac{\sqrt{Var(Y)}}{E(Y)}$ .

$E(Y) = \int_{200}^{500} \frac{1}{2}(x-200)(.001)\,dx + \int_{500}^{1000}[150 + \frac{1}{4}(x-500)](.001)\,dx$
$= \frac{45}{2} + \frac{425}{4} = \frac{515}{4}$ .

$E(Y^2) = \int_{200}^{500} [\frac{1}{2}(x-200)]^2(.001)\,dx + \int_{500}^{1000}[150 + \frac{1}{4}(x-500)]^2(.001)\,dx$
$= 2250 + \frac{139{,}375}{6} = \frac{152{,}875}{6}$ .

$Var(Y) = \frac{152{,}875}{6} - (\frac{515}{4})^2 = \frac{427{,}325}{48} = 8902.6$ .

The coefficient of variation is $\frac{\sqrt{8902.6}}{128.75} = .733$ .