

Question # 10994

The probability of having a head cold is 5% and 1000 people are checked at random what is the probability that at least 60 people have head colds? .

Solution. Clearly the number of people X out of 1000 having cold has

Bernoulli distribution $Bin(0.05, 1000)$, hence $P(X > 60) = P\left(\frac{X - 0.05 \cdot 1000}{\sqrt{1000 \cdot 0.05 \cdot 0.95}} >$

$$\frac{60 - 0.05 \cdot 1000}{\sqrt{1000 \cdot 0.05 \cdot 0.95}}\right) \approx 1 - \Phi\left(\frac{60 - 0.05 \cdot 1000}{\sqrt{1000 \cdot 0.05 \cdot 0.95}}\right) \approx 0.22$$

Answer 0.22 .