Problem 31

X: number of employees reaching high performance level

$X \sim \text{Binomial}(n = 20, p = .02)$

Want $p(X > x) \leq .01$

Equivalently: $p(X \leq x) \geq .99$

↳ $p(X=0) + p(X=1) + \ldots + p(X=x)$

$p(X=0) = \binom{20}{0}(.02)^0(.98)^{20} = .668$

$p(X=1) = \binom{20}{1}(.02)^1(.98)^{19} = .272$

$p(X=2) = \binom{20}{2}(.02)^2(.98)^{18} = .053$

x	$p(X=x)$	$p(X \leq x)$	
0	.668	.668	
1	.272	.94	
2	.053	.993	so $x = 2$

$2 \cdot C = 120{,}000$

$C = 60{,}000$

D