Mean and variance: The table below shows how to calculate the mean and variance of each of the discrete distributions.

Distribution	*Parameters*	*Mean*	*Variance*
Uniform		Mean of x values	Variance of x values
Bernoulli	p	p	$p(1-p)$
Binomial	n = no of trials p	np	$np(1-p)$
Poisson	m	m	m
Geometric	p	$\frac{1}{p}$	$\frac{1-p}{p^2}$

The mean and variance of the negative Binomial and the hypergeometric distributions are rather more complex, and you will not need the formulae.

Cumulative distribution: I'm not very good at typing. The table below shows the probability distribution X for the number of errors I make in every 100 words

No of errors (x)	0	1	2	3	4
Probability ($X = x$)	0.1	0.24	0.38	0.17	0.11

From this I can construct the cumulative probability distribution which gives $P(X \leqslant x)$ for each value of x.

No of errors (x)	0	1	2	3	4
Probability ($X \leqslant x$)	0.1	0.34	0.72	0.89	1

We can now easily find the probability that there are fewer than three errors, and the probability that there are at least two errors. (0.72, 0.66). It is also possible, given a cumulative probability table, to work back to the probability distribution.

Cumulative probabilities for the Binomial and Poisson distributions are available on your GDC (see below). But be very careful with the wording of questions, especially differentiating between "at least" and "more than."

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1 in 8 people are left handed. What is the probability that, in a group of 12 randomly chosen people, at least 3 are left handed?

"At least 3" means "3 or more." Cumulative probabilities sum from zero upwards. So we require 1 – P(up to 2 left handers) = 1 – 0.818 = 0.182.

Consider how you would work out these probabilities:

- P(more than 3 are left handed)
- P(at least 10 are not left handed)

Using a calculator: On the TI-83 family, Binomial and Poisson distributions will be found in the DISTR menu. "binompdf" will calculate Binomial probabilities, "binomcdf" will calculate Binomial cumulative probabilities. Similarly for Poisson distributions. The syntax is:

- binompdf(n,p,x)
- binomcdf(n,p,x)
- poissonpdf(m,x)
- poissoncdf(m,x)

Thus, the calculation in the question above will be entered as shown on the screenshot, right.