**Some Common Statistics Distributions**

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| Name of Distribution | Conditions | Parameters | Equation | Graph | Typical Example |
| Binomial | * Discrete data
* Stated (or fixed) number of trials
* Only two outcomes; pass or fail
* Probability constant throughout
* Independence
 | $$X\~B\left(n,p\right)$$ | $$P\left(X=x\right)=\genfrac{}{}{0pt}{}{n}{x}p^{x}q^{n-x}$$ |  | Find probability of obtaining at least 4 sixes when throwing a die 6 times. |
| Normal | * Continuous data
* Symmetrical distribution
 | $$X\~N\left(μ,σ^{2}\right)$$ | $$P\left(X=x\right)=\frac{1}{\sqrt{2πσ}}e^{-\frac{\left(x-μ\right)^{2}}{2σ^{2}}}$$ |  | If mean height is 1.8m with variance of 0.04m, find probability that someone is less than 1.7m tall. |
| Poisson | * Probability constant throughout
* Independence
* Two events can’t occur at once
 | $$X\~Po\left(λ\right)$$ | $$P\left(X=x\right)=e^{-λ}\frac{λ^{x}}{x!}$$ |  | If average number of lions seen on a 1-day safari is 5, find probabilities of seeing exactly 6 lions and less than 4 lions on the next safari. |
| Geometric | * Probability constant throughout
* Independence
* Only two outcomes; pass or fail
 | $$X\~G\left(p\right)$$ | $$P\left(X=x\right)=pq^{n-1}$$ |  | Find probability of passing driving test on 3rd attempt, assuming probability of passing is 1/3 each time. How about $P\left(X\geq 3\right)$? |
| Uniform (Rectangular) | * Discrete data
* Probability constant throughout
* Independence
 | [a, b] | $$P\left(X=x\right)=\frac{1}{b-a}$$ |  | Prove that $E\left(X\right)=\frac{1}{2}\left(a+b\right)$ and that $Var\left(X\right)=\frac{1}{12}\left(b-a\right)^{2}$ |
| Student’sT-Squared | * Continuous data
* Non-Symmetrical distribution
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