METHOD OF MOMENTS

A simple three step procedure. Let's cover a few examples.

Example $Y_1, \ldots, Y_n$ are iid $U(0, \theta)$

1. Moment: $E(Y_1) =$
2. Solve for $\theta =$
3. Substitute: $\hat{\theta} =$

Example $Z_1, \ldots, Z_n$ are iid $N(\mu, \sigma^2)$

1. Moment: $E(Z_1) =$
2. Solve for $\mu =$
3. Substitute: $\hat{\mu} =$

Example $U_1, \ldots, U_n$ are iid $Gamma(2, \lambda)$

1. Moment: $E(U_1) =$
2. Solve for $\lambda =$
3. Substitute: $\hat{\lambda} =$

Example $X_1, \ldots, X_n$ are iid $Gamma(\alpha, \lambda)$

1. 2 Moments: $E(X_1) =$

   $E(X_1^2) =$

2. Solve for $\alpha =$ and

   $\lambda =$

3. Substitute: $\hat{\alpha} =$

   $\hat{\lambda} =$

Alternative MOM for the case where $X_1, \ldots, X_n$ are iid $Poisson(\lambda)$

1. 2^{nd} Moment: $E(X_1^2) =$

2. Solve for $\lambda =$

3. Substitute: $\hat{\lambda} =$