% Number of coin tosses

n = 4;

% Probability of heads in a fair coin

p = 0.5;

% Possible outcomes (0 to 4 heads)

x = 0:n;

% Compute Binomial probabilities

prob = binopdf(x, n, p);

% (i) Probability of getting exactly 2 heads

P\_X\_2 = prob(3); % Since MATLAB indexing starts at 1

% (ii) Probability of getting at least 2 heads (X >= 2)

P\_X\_ge\_2 = sum(prob(3:5)); % Summing P(X=2), P(X=3), and P(X=4)

% (iii) Probability of getting at most 2 heads (X <= 2)

P\_X\_le\_2 = sum(prob(1:3)); % Summing P(X=0), P(X=1), and P(X=2)

% Display results

fprintf('P(X=2) = %f\n', P\_X\_2);

fprintf('P(X>=2) = %f\n', P\_X\_ge\_2);

fprintf('P(X<=2) = %f\n', P\_X\_le\_2);