Lesson 8.5 Math Lab: Assess Your Understanding, page 737

1. These are the numbers in row 10 of Pascal's triangle. Use these numbers to generate the numbers in row 11.

1	9	36	84	126	126	84	36	9	1

1   1 + 9 = 10   9 + 36 = 45   36 + 84 = 120   84 + 126 = 210
126 + 126 = 252 126 + 84 = 210   84 + 36 = 120
36 + 9 = 45   9 + 1 = 10   1
So, the numbers in row 11 are: 1, 10, 45, 120, 210, 252, 210, 120, 45, 10, 1

2. Use the completed Pascal's triangle on page 735 to evaluate each expression. Use a calculator to verify your answers.

a) $_4C_1$

2nd number in row 5 is 4.
$_4C_1 = 4$

b) $_7C_2$

3rd number in row 8 is 21.
$_7C_2 = 21$

c) $_6C_3$

4th number in row 7 is 20.
$_6C_3 = 20$

d) $_5C_0$

1st number in row 6 is 1.
$_5C_0 = 1$

3. Use combinations to determine the numbers in row 13 of Pascal's triangle.

Use $_{12}C_r$ and a calculator.
$_{12}C_0 = 1$, $_{12}C_1 = 12$, $_{12}C_2 = 66$, $_{12}C_3 = 220$,
$_{12}C_4 = 495$, $_{12}C_5 = 792$, $_{12}C_6 = 924$, $_{12}C_7 = 792$,
$_{12}C_8 = 495$, $_{12}C_9 = 220$, $_{12}C_{10} = 66$, $_{12}C_{11} = 12$, $_{12}C_{12} = 1$
So, the numbers in row 13 are:
1, 12, 66, 220, 495, 792, 924, 792, 495, 220, 66, 12, 1

4. Determine the value of each number in Pascal's triangle.

a) the second number in row 20

$n = 19$ and $r = 1$ $_{19}C_1 = 19$

b) the fourth number in row 24

$n = 23$ and $r = 3$ $_{23}C_3 = 1771$