**Lesson 4** **Pascal’s Triangle and Newton’s Binomial**

**Patterns**:

1. Always start and end with 1
2. Each number is the sum of the two numbers appearing directly above it
3. The sum of the coefficients in one row is \_\_\_\_\_.
4. The number of terms in one row is one more than the power of the binomial
5. First number = last number, second number = second last number etc.
6. Expand the following expressions:
7. $(a+b)^{0}$ =
8. $(a+b)^{1}$ =
9. $(a+b)^{2}$ =
10. $(a+b)^{3}$ =
11. $(a+b)^{4}$ =

When expanding a binomial, it is easier to use the coefficients written as combinations:

 $(a+b)^{7}$=

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| **Newton’s Binomial:** $(a+b)^{n}$ =There are terms in this expansion.Term: $T\_{k+1} =$ |

1. Expand $(2x-5)^{5}$ =
2. Expand $(2x-)^{4}$ =
3. Determine the 5th term of the expansion of $(3x-2)^{8}$.
4. Determine the middle term of $ (-3y)^{10}$.
5. Which term of $(x^{2}-\frac{1}{x} )^{6}$ is a constant?
6. Determine the coefficient of the term which contains $x^{8}$ in the expansion of $(2x^{2}-x )^{6}$.