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**Discuss and give at least 5 examples for the following topics:**

**Modulo** or (**Remainder Operator**) Modulo operator is also known as **Remainder operator** and denoted by percentage sign (%). It's one of the most basic operator and very useful to create logic in programming, available in almost every single programming language.

1.  $10\%3 = 1$

2.  $17\%5 = 2$

3.  $25\%5 = 0$

4.  $13\%5 = 3$

5.  $36\%8 = 4$

**Identities** - The **identity** function in math is one in which the output of the function is equal to its input. In **Java**, Function is a functional interface whose **identity** method returns a Function that always returns its input arguments.

1.  $(a + b)^2 = a^2 + 2ab + b^2$

2.  $(a - b)^2 = a^2 - 2ab + b^2$

3.  $a^2 - b^2 = (a + b)(a - b)$

4.  $(x + a)(x + b) = x^2 + (a + b)x + ab$

5.  $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

**Learning Activity 4 -Problem Solving:Floor, Ceiling and Modulo Functions. Compute for the resulting value:**

a.  $\lfloor -5.3 \rfloor = \text{floor} = 5$   
 $\lceil -5.3 \rceil = \text{ceiling} = 6$

b.  $\lfloor 6.14 \rfloor = \text{floor} = 6$   
 $\lceil 6.14 \rceil = \text{ceiling} = 7$

c.  $8 \bmod 7 = 1$

d.  $3 \bmod -4 = -1$

e.  $-5 \bmod 2 = 3$

f.  $10 \bmod 11 = -1$

g.  $\lceil (15 \bmod -9) + \lfloor 4.3 \rfloor \rceil = -10.3$