Additional Rule 2: When two events, A and B, are non-mutually exclusive, the probability that A or B will occur is:

P(A or B) = P(A) + P(B) - P(A and B)

In the rule above, P(A and B) refers to the overlap of the two events. Let's apply this rule to some other experiments.

Experiment 5: In a math class of 30 students, 17 are boys and 13 are girls. On a unit test, 4 boys and 5 girls made an A grade. If a student is chosen at random from the class, what is the probability of choosing a girl or an A student?

Probabilities: P(girl or A) = P(girl) + P(A) - P(girl and A)

$= \frac{13}{30} + \frac{9}{30} - \frac{5}{30}$

$= \frac{17}{30}$

Example1: what is the probability to select a piece that is round or orange?

P(round or orange) = P(round) + P(orange) – P(round and orange)

= _____ + _____ - _____ = _____

Example 2: a dice is rolled, what is the probability to roll a multiple of 3 or an even number?

P(multiple of 3 or even) = P(multiple of 3) + P(even) – P(multiple of 3 and even)

= ____ + _____ - _____ = _____ = _____

Example3: in a group of graduate students total of 8 students, 5 of which are females and the remaining 3 are males. There are 4 international girls and 2 international males.

Find the probability of selecting a male or an international student.

P(male or international) = P(male) + P(international) – P(male and international)

= _____ + _____ - _____ = _____