4.2 Basic Probability Rules Part 3

From yesterday's example, what would the probability be that you get a green or a red M&M?

P(green or red) = P(green) + P(red) = 0.198 + 0.131 = 0.329

Why does this formula work? Because the events "getting a green" and "getting a red" have no outcomes in common - that is, there are no M&M's that are both green and red. We say that these two events are **mutually exclusive**. As a result, this intuitive formula is known as the **addition rule for mutually exclusive events**.

Two events A and B are **mutually exclusive** if they have no outcomes in common and so can never occur together - that is P(A and B) = 0.

The **addition rule for mutually exclusive events** A and B says that
P(A or B) = P(A) + P(B)

Note that this rule only works for mutually exclusive events! We will develop a more general rule for finding P(A or B) that works for *any* two events in the next lesson.

Example: Randomly select a student who took the 2015 AP Statistics exam and record the student's score. Here is the probability model according to the College Board:

Score	1	2	3	4	5
Probability	0.233	0.183	0.235	0.224	0.125

Many people consider scores of 3, 4, or 5 as "passing scores" because many colleges award credit or placement to students who earn these scores.

a.) Find the probability that the chosen student scored less than a 3.

P(less than 3) = P(1) + P(2) = 0.233 + 0.183 = 0.416

b.) Find the probability that the chosen student earned a passing score.

P(passing) = P(3) + P(4) + P(5)
= 0.235 + 0.224 + 0.125
= 0.584