

**PROBLEM-OF-THE-DAY: ALGEBRA 1****WEEK:** August 27 to August 31**DAY:** Thursday

**RISD Objective:** Given a set of circumstances, students will calculate the probability of an event.

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**PROBLEM #9**

There are 10 blue marbles, 8 red marbles, 7 green marbles, 6 yellow marbles, and 2 black marbles in a bag. If one marble is drawn at random, what is the probability that it is . . .

- a) blue?
- b) yellow?
- c) red or green?
- d) blue or black?
- e) not yellow?

**Explain your work.**

## MODEL SOLUTION #9

To find probability, you take the number of favorable outcomes and divide by total number of outcomes. In this case, I need to find the total number of marbles:  $10 + 8 + 7 + 6 + 2 = 33$  total marbles. I will use that as the denominator of each fraction.

a) Since there are 10 blue marbles, the probability is  $\frac{10}{33}$ .

b) Since there are 6 yellow marbles, the probability is  $\frac{6}{33}$ , which reduces to  $\frac{2}{11}$ .

c) Since there are 8 red and 7 green marbles, the number of favorable outcomes is 15. So, the probability is  $\frac{15}{33}$ , which reduces to  $\frac{5}{11}$ .

d) Since there are 10 blue and 2 black marbles, the number of favorable outcomes is 12. So, the probability is  $\frac{12}{33}$ , which reduces to  $\frac{4}{11}$ .

e) If there are 6 yellow marbles, there are  $33 - 6 = 27$  marbles which are not yellow. So, the probability is  $\frac{27}{33}$ , which reduces to  $\frac{9}{11}$ .