

*A.S.23: Calculate the probability of a series of independent events, a series of dependent events, two mutually exclusive events, two events that are not mutually exclusive.*

1. 080430a, P.I. A.S.23

Selena and Tracey play on a softball team. Selena has 8 hits out of 20 times at bat, and Tracey has 6 hits out of 16 times at bat. Based on their past performance, what is the probability that both girls will get a hit next time at bat?

[A]  $\frac{31}{40}$  [B]  $\frac{48}{320}$  [C] 1 [D]  $\frac{14}{36}$

2. 060305a, P.I. A.S.23

Bob and Laquisha have volunteered to serve on the Junior Prom Committee. The names of twenty volunteers, including Bob and Laquisha, are put into a bowl. If two names are randomly drawn from the bowl without replacement, what is the probability that Bob's name will be drawn first and Laquisha's name will be drawn second?

[A]  $\frac{2}{20!}$  [B]  $\frac{1}{20} \cdot \frac{1}{19}$   
[C]  $\frac{2}{20}$  [D]  $\frac{1}{20} \cdot \frac{1}{20}$

3. 010525a, P.I. A.S.23

A student council has seven officers, of which five are girls and two are boys. If two officers are chosen at random to attend a meeting with the principal, what is the probability that the first officer chosen is a girl and the second is a boy?

[A]  $\frac{7}{13}$  [B]  $\frac{10}{42}$  [C]  $\frac{2}{7}$  [D]  $\frac{7}{14}$

4. 060529a, P.I. A.S.23

The probability that the Cubs win their first game is  $\frac{1}{3}$ . The probability that the Cubs win their second game is  $\frac{3}{7}$ . What is the probability that the Cubs win both games?

[A]  $\frac{2}{5}$  [B]  $\frac{6}{7}$  [C]  $\frac{16}{21}$  [D]  $\frac{1}{7}$

5. 060821a, P.I. A.S.23

The probability that Jinelle's bus is on time is  $\frac{2}{3}$ , and the probability that Mr. Corney is driving the bus is  $\frac{4}{5}$ . What is the probability that on any given day Jinelle's bus is on time and Mr. Corney is the driver?

[A]  $\frac{2}{15}$  [B]  $\frac{10}{12}$  [C]  $\frac{8}{15}$  [D]  $\frac{6}{8}$

6. 080127a, P.I. A.S.23

There are four students, all of different heights, who are to be randomly arranged in a line. What is the probability that the tallest student will be first in line and the shortest student will be last in line?

7. 060130a, P.I. A.S.23

Mr. Yee has 10 boys and 15 girls in his mathematics class. If he chooses two students at random to work on the blackboard, what is the probability that both students chosen are girls?

[1] B \_\_\_\_\_

[2] B \_\_\_\_\_

[3] B \_\_\_\_\_

[4] D \_\_\_\_\_

[5] C \_\_\_\_\_

[3]  $\frac{2}{24}$  or an equivalent answer, and an

appropriate explanation is given or appropriate work is shown, such as a tree diagram, sample space, or permutations.

[2] Appropriate work is shown, but one computational error is made.

or [2] Appropriate work is shown, but only a numerator or a denominator is determined correctly.

or [2]  $\frac{2}{24}$  or an equivalent answer, but only

work for either the numerator or the denominator is shown.

[1] The probability of the tallest or the probability of the shortest student being in the proper position is correct, such as .

or [1] Only a tree diagram, sample space, or permutations are shown.

or [1]  $\frac{2}{24}$  or an equivalent answer, but no

work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure.

[3]  $\frac{7}{20}$  or an equivalent answer, and

appropriate work is shown, such as  $\frac{15}{25} \cdot \frac{14}{24}$

or  $\frac{{}_{15}C_2}{{}_{25}C_2}$ .

[2]  $\frac{15}{25} \cdot \frac{14}{24}$  or  $\frac{{}_{15}C_2}{{}_{25}C_2}$  is shown, but one

computational error is made or no further work is shown.

or [2]  ${}_{15}C_2$  and  ${}_{25}C_2$  are computed correctly, but no further work is shown.

or [2] Appropriate work is shown, but one computational error is made.

[1] The correct probabilities are found, but they are added instead of multiplied.

or [1] Only one of the two parts of the probability is correct.

or [1] Appropriate work is shown, but more than one error is made.

or [1]  $\frac{7}{20}$  or an equivalent answer, but no

work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.