2020 College Bowl Grades 9–10
Round 5

Question

There are 3 blue M&M's and 12 green M&M's left in Alissa's package. She pulls out a green one and then puts it back. What is the probability that she pulls out a blue M&M when she tries again?

Answer

$\frac{1}{5}$.

Follow-up

Now every M&M Alissa pulls out she eats. Expressed as a fraction in lowest terms, what is the probability that, after pulling out 3, none of the blue M&M's is left?

Answer

$\frac{1}{455}$.

Question

A rectangle measures two inches by three inches. How long is its diagonal?

Answer

$\sqrt{13}$ inches.

<u>Emcee</u>: It is not necessary to say *inches*.

Follow-up

An equilateral triangle and a regular hexagon have equal perimeters. What is the ratio of the area of the triangle to the area of the hexagon?

Answer

$\frac{2}{3}$.

Question

A triangle has sides 3, 4, and 5. What is the trigonometric sine of the smallest angle?

Answer

$\frac{3}{5}$.

Follow-up

The two shortest sides of a right triangle have lengths $\sqrt{3}$ and 2. What is the trigonometric sine of the smallest angle?

Answer

$\sqrt{\frac{3}{7}}$.

Question

If you flip a coin, what is the probability of getting five heads in a row?

Answer

$\frac{1}{32}$.

Follow-up

There are four cowboys in a saloon. At midnight, each cowboy randomly chooses one of the other three cowboys and buys him a drink. Expressed as a fraction in lowest terms, what is the probability that exactly two cowboys had drinks bought for them?

Answer

$\frac{8}{27}$.