**Lower Elementary:**

*Question:* Hailey spends 10 hours every month volunteering at an animal shelter. How many hours does Hailey spend volunteering in a whole year?

**Upper Elementary:**

*Question:* Machine A doubles a number. Machine B adds 2 to a number. Machine C subtracts 3 from a number. What will happen to the number 10 if we put it through all of the machines in alphabetical order?

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**Middle School:**

*Question:* Torvi is playing a game with a 20-sided die. What is the probability that she will roll a 20 on the die 3 times in a row?

**Algebra and Up:**

*Question:* Micah is trying to get the salt levels just right for his 20-gallon aquarium. His local pet store sells salinated water by the gallon in two different salinity levels—30 parts per thousand and 35 parts per thousand. How much of each does Micah need to pour into the tank to get the salt level in the tank to exactly 32 parts per thousand saltwater?

**Lower Elementary:**

*Question:* Hailey spends 10 hours every month volunteering at an animal shelter. How many hours does Hailey spend volunteering in a whole year?

*Answer:* 120 hours

*Solution:* There are 12 months in a year, so Hailey spends 10 × 12 = 120 hours in a whole year volunteering at an animal shelter.

**Upper Elementary:**

*Question:* Machine A doubles a number. Machine B adds 2 to a number. Machine C subtracts 3 from a number. What will happen to the number 10 if we put it through all of the machines in alphabetical order?

*Answer:* 19

*Solution:* If we put the number 10 into Machine A, it turns into 10 × 2 = 20. If 20 goes into Machine B, it turns into 20 + 2 = 22. If 22 goes through Machine C, it turns into 22 – 3 = 19. So, if we put the number 10 through all three machines in alphabetical order, we get 19.

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**Middle School:**

*Question:* Torvi is playing a game with a 20-sided die. What is the probability that she will roll a 20 on the die 3 times in a row?

*Answer:* 1/8,000

*Solution:* Each time Torvi rolls the die, the probability that she rolls a 20 is 1/20. To find out how probable it is for Torvi to roll a 20 on the die 3 times in a row, we multiply 1/20 × 1/20 × 1/20 = 1/8,000.

**Algebra and Up:**

*Question:* Micah is trying to get the salt levels just right for his 20-gallon aquarium. His local pet store sells salinated water by the gallon in two different salinity levels—30 parts per thousand and 35 parts per thousand. How much of each does Micah need to pour into the tank to get the salt level in the tank to exactly 32 parts per thousand saltwater?

*Answer:* 8 gallons of 35 ppt saltwater to get 20 gallons of 32 ppt saltwater

*Solution:* To solve this problem, we set up an equation in which ***x*** is the amount of 30 ppt saltwater, (20 – ***x***) is the amount of 35 ppt saltwater, and 20 is the total number of gallons in the tank: (***x*** gallons)(30 ppt) + (20 – ***x*** gallons)(35 ppt) = (20 gallons)(32 ppt). If we solve this equation for ***x***, we get 12 gallons. So, Micah needs to mix 12 gallons of 30 ppt saltwater with 8 gallons of 35 ppt saltwater to get 20 gallons of 32 ppt saltwater.