**Lower Elementary:**



*Question:* On his way to Sector 12, a space ranger crashes on a strange planet. The alien life forms on the planet have 2 eyes each. If the space ranger sees 12 eyes, then how many aliens are there?

**Upper Elementary:**



*Question:* A family drives 4 miles to get to a pizza restaurant. Their car can travel 32 miles per gallon of gasoline. How many cups of gasoline does it take to get to the pizza restaurant?

(Hint: There are 16 cups in a gallon.)

**Middle School:**



*Question:* An arcade game has a claw that drops into a pile of prizes. Players try to aim the claw to grab a toy. If 1 out of 10 attempts to grab a toy is successful, then what is the probability that a player will successfully grab 2 toys in a row?

**Algebra and Up:**



*Question:* Mrs. Davis is wrapping gifts. She has 8 gifts and 12 boxes. One of the gifts is a puppy that needs to go in a special box with holes in it so that it can breathe, but the rest of the gifts can go in any of the other boxes. How many combinations of gifts and boxes can Mrs. Davis use?

**Lower Elementary:**

*Question:* On his way to Sector 12, a space ranger crashes on a strange planet. The alien life forms on the planet have 2 eyes each. If the space ranger sees 12 eyes, then how many aliens are there?

*Answer:* 6 aliens

*Solution:* There are 2 eyes for each alien, so we can find how many aliens there are by counting by 2s until we get to 12. If there are 2, 4, 6, 8, 10, 12 eyes, then there must be 6 aliens because we counted 2, 6 times.

**Upper Elementary:**

*Question:* A family drives 4 miles to get to a pizza restaurant. Their car can travel 32 miles per gallon of gasoline. How many cups of gasoline does it take to get to the pizza restaurant?

(Hint: There are 16 cups in a gallon.)

*Answer:* 2 cups

*Solution:* Since the car can travel 32 miles per gallon of gasoline, 1 mile takes 1/32 of a gallon and 4 miles takes 4/32 = 1/8 of a gallon. A gallon is the same as 16 cups, so 1/8 of a gallon is 1/8 of 16 cups, which is 2 cups. So, it takes 2 cups of gasoline to get to the pizza restaurant.

**Middle School:**

*Question:* An arcade game has a claw that drops into a pile of prizes. Players try to aim the claw to grab a toy. If 1 out of 10 attempts to grab a toy is successful, then what is the probability that a player will successfully grab 2 toys in a row?

*Answer:* 1 out of 100

*Solution:* Since 1 out of every 10 attempts to grab a toy is successful, the probability that a player will be successful on both the first and second try is 1 out of 10. To find the probability of two successes in a row, we multiply the probability of the first success by the probability of the second success: 1/10 × 1/10 = 1/100, or 1 out of 100.

**Algebra and Up:**

*Question:* Mrs. Davis is wrapping gifts. She has 8 gifts and 12 boxes. One of the gifts is a puppy that needs to go in a special box with holes in it so that it can breathe, but the rest of the gifts can go in any of the other boxes. How many combinations of gifts and boxes can Mrs. Davis use?

*Answer:* 1,663,200 different combinations

*Solution:* Since the puppy has a specific box, there are 7 gifts and 11 boxes that can be matched in different ways. There are 11 box options for the second gift (after the puppy), 10 for the third, 9 for the fourth, 8 for the fifth, 7 for the sixth, 6 for the seventh, and 5 for the eighth. So, there are 1 × 11 × 10 × 9 × 8 × 7 × 6 × 5 = 1,663,200 different combinations of boxes Mrs. Davis can use.