**Lower Elementary:**

*Question:* A shark eats 10 fish on Monday, 9 fish on Tuesday, 8 fish on Wednesday, and so on. If the pattern continues, how many fish does the shark eat over the course of 1 whole week?

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**Upper Elementary:**

*Question:* A giant pacific octopus weighs 55 kilograms. A blue-ringed octopus weighs 125 grams. How many blue-ringed octopuses weigh the same amount as a giant pacific octopus?

**Middle School:**

*Question:* An anemone catches 10 kilograms of food over the course of a week and consumes 62.5% of it. A school of clownfish that lives with the anemones eat 3/8 of the anemone’s uneaten prey. What percentage of the anemone’s food goes uneaten?

**Algebra and Up:**

*Question:* Some species of pufferfish draw circles in the sandy seafloor to communicate. If a pufferfish draws a circle whose diameter is 12 times the length of the fish’s body, then how many times the length of the fish is the circumference of the circle?

**Lower Elementary:**

*Question:* A shark eats 10 fish on Monday, 9 fish on Tuesday, 8 fish on Wednesday, and so on. If the pattern continues, how many fish does the shark eat over the course of 1 whole week?

*Answer:* 49 fish

*Solution:* The pattern is that the shark eats one fewer fish each day. So, since there are 7 days in a week, the shark eats 10 + 9 + 8 + 7 + 6 + 5 + 4 = 49 fish.

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**Upper Elementary:**

*Question:* A giant pacific octopus weighs 55 kilograms. A blue-ringed octopus weighs 125 grams. How many blue-ringed octopuses weigh the same amount as a giant pacific octopus?

*Answer:* 440 blue-ringed octopuses

*Solution:* A kilogram is 1000 grams, so it takes 1000 ÷ 125 = 8 blue-ringed octopuses to make up a kilogram. So, 8 × 55 = 440 blue-ringed octopuses weigh the same as a 55-kilogram giant pacific octopus.

**Middle School:**

*Question:* An anemone catches 10 kilograms of food over the course of a week and consumes 62.5% of it. A school of clownfish that lives with the anemones eat 3/8 of the anemone’s uneaten prey. What percentage of the anemone’s food goes uneaten?

*Answer:* 23.4375%­­

*Solution:* Since 62.5% of the anemone’s prey is eaten, that means 100% – 62.5% = 37.5% of it is not eaten. The clownfish eat 3/8 of the leftovers, so they leave 1 – 3/8 = 5/8 uneaten. So, since 5/8 = 62.5%, we need to find 62.5% of 37.5%. We do that by multiplying 0.625 × 0.375 = 0.234375 = 23.4375%.

**Algebra and Up:**

*Question:* Some species of pufferfish draw circles in the sandy seafloor to communicate. If a pufferfish draws a circle whose diameter is 12 times the length of the fish’s body, then how many times the length of the fish is the circumference of the circle?

*Answer:* 12π

*Solution:* The circumference of a circle is its diameter multiplied by π. If we say that ***P*** is the length of the pufferfish, then we can then say that the diameter is 12***P***, so the circumference is 12***P***π. If we divide out the length of the pufferfish, we find that the circumference is 12π times the length of the pufferfish.