**Lower Elementary:**

*Question:* Zachary sold books at a yard sale for 15¢ each and toys for $1.00 each. If he sells 6 books and 3 toys, how much money does Zachary make altogether?

**Upper Elementary:**

*Question:* Eight students are performing songs for their music class recital. Each song is 5 minutes long. If each music student performs 1 song and all 8 students must be done performing by 9:15 pm, then what is the latest time they can start the recital?

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**Middle School:**

*Question:* A 9-foot tree casts a 6-foot shadow. A songbird casts a 2-inch shadow. A squirrel is twice as tall as the songbird. How tall is the squirrel?

**Algebra and Up:**

*Question:* The profit earned by a cat-sitting company, measured in thousands of dollars, is modeled by the function *f*(***t***) = ***t***2 – 8***t*** + 16, wherein ***t*** is measured in months and ***t*** = 1 is January. During which month does the cat-sitting company earn the least amount of money? How much do they earn?

**Lower Elementary:**

*Question:* Zachary sold books at a yard sale for 15¢ each and toys for $1.00 each. If he sells 6 books and 3 toys, how much money does Zachary make altogether?

*Answer:* Zachary makes $3.90.

*Solution:* Zachary earned 15¢, 6 times for the books. That’s 15, 30, 45, 60, 75, 90¢ for all 6 of the books. He earned $1.00, 3 times for the toys. That’s $3.00 for all 3 of the toys. So, altogether, Zachary earned $0.90 + $3.00 = $3.90.

**Upper Elementary:**

*Question:* Eight students are performing songs for their music class recital. Each song is 5 minutes long. If each music student performs 1 song and all 8 students must be done performing by 9:15 pm, then what is the latest time they can start the recital?

*Answer:* The latest they can start is 8:35 pm.

*Solution:* The amount of time it takes for all of the students to finish their songs is 8 × 5 = 40 minutes. Since they have to finish the recital by 9:15 pm, we count back 40 minutes before 9:15 pm to 8:35 pm.

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**Middle School:**

*Question:* A 9-foot tree casts a 6-foot shadow. A songbird casts a 2-inch shadow. A squirrel is twice as tall as the songbird. How tall is the squirrel?

*Answer:* The squirrel is 6 inches tall.

*Solution:* The length of the tree’s shadow is two-thirds the height of the tree. So, the length of the songbird’s shadow is two-thirds its height; 2 inches is two-thirds of 3 inches, so the songbird must be 3 inches tall. That means that the squirrel is 6 inches tall because 6 inches is twice as tall as 3 inches.

**Algebra and Up:**

*Question:* The profit earned by a cat-sitting company, measured in thousands of dollars, is modeled by the function *f*(***t***) = ***t***2 – 8***t*** + 16, wherein ***t*** is measured in months and ***t*** = 1 is January. During which month does the cat-sitting company earn the least amount of money? How much do they earn?

*Answer:* They earned $0.00 in April.

*Solution:* This function is a parabola that opens upward, so the lowest value is at the vertex. To find the month, we find –***b***/2***a*** = –(–8)/(2 × 1) = 8/2 = 4. So the vertex is at ***t*** = 4, which represents the month of April. To find how much they earned, we set ***t*** = 4 and solve: 42 – 8(4) + 16 = 16 – 32 + 16 = 0. So, the cat-sitting business earned $0.00 in April.