**Lower Elementary:**

*Question:* Cecil has had his cat since July 2012. What anniversary did Cecil celebrate this year?

**Upper Elementary:**

*Question:* Dana visits the dog park every 3 days. Carlos visits the dog park every 4 days. If both Dana and Carlos visit the dog park on Monday, what will the day of the week be when both Dana and Carlos visit the dog park?

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**Middle School:**

*Question:* A community radio show can be heard up to 40 miles from the radio station. What is the area that the radio station’s signal reaches?

**Algebra and Up:**

*Question:* John Peters and Steve Carlsberg can plant a dozen peach tree saplings in 18 minutes when they work together. John Peters can plant a dozen peach tree saplings in half an hour when he works alone. How long would it take for Steve Carlsberg to plant a dozen peach tree saplings by himself?

**Lower Elementary:**

*Question:* Cecil has had his cat since July 2012. What anniversary did Cecil celebrate this year?

*Answer:* 6th anniversary

*Solution:* To find out which anniversary they celebrated, we need to know how many years passed from July 2012 to July 2018. If we count up from 2012 to 2018, we get 6. Cecil and his cat celebrated their 6th anniversary this year.

**Upper Elementary:**

*Question:* Dana visits the dog park every 3 days. Carlos visits the dog park every 4 days. If both Dana and Carlos visit the dog park on Monday, what will the day of the week be when both Dana and Carlos visit the dog park?

*Answer:* Saturday

*Solution:* One way to solve this problem is to find the least common multiple of 3- and 4-day periods. Since the smallest number that both 3 and 4 go into is 12, the next day that both Dana and Carlos will visit the dog park will be 12 days after Monday, and 12 days after Monday is Saturday.

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**Middle School:**

*Question:* A community radio show can be heard up to 40 miles from the radio station. What is the area that the radio station’s signal reaches?

*Answer:* 1,600π square miles

*Solution:* Since the radio signal reaches the same distance away from the same point in all directions, the area that the signal reaches is a circle. So, its area is π times its radius squared. The radius is 40 miles, so the area is π × 402 = 1,600π square miles, which is approximately 5,024 square miles.

**Algebra and Up:**

*Question:* John Peters and Steve Carlsberg can plant a dozen peach tree saplings in 18 minutes when they work together. John Peters can plant a dozen peach tree saplings in half an hour when he works alone. How long would it take for Steve Carlsberg to plant a dozen peach tree saplings by himself?

*Answer:* 45 minutes

*Solution:* To solve this problem, we can think of a dozen peach tree saplings/18 minutes as the sum of John Peters’s and Steve Carlsberg’s work rates. Since we know that John Peters can plant a dozen peach trees in half an hour, we can subtract his work rate from the total to find Steve Carlsberg’s rate.

a dozen peach tree saplings/18 minutes – a dozen peach tree saplings/30 minutes =

5 dozen peach tree saplings/90 minutes – 3 dozen peach tree saplings/90 minutes =

2 dozen peach tree saplings/90 minutes = a dozen peach tree saplings/45 minutes