**Lower Elementary:**

*Question:* Marty is running late for school. Right now, it’s 8:25 am. It takes him 18 minutes to skateboard to school. If class starts at 8:30 am, how many minutes late will Marty be?

**Upper Elementary:**

*Question:* A clock tower stopped working when it was struck by lightning on November 12, 1955. How many days have passed since the clock tower worked? Use today’s date.

(Hint: There have been 16 leap years since 1955. There are 30 days in November, 31 days in December and January, and 28 days in February.)



**Middle School:**

*Question:*  A time machine requires 1.21 gigawatts of electricity to travel through time. A car battery generates about 12,000 watts to start a car. How many car batteries would be needed to send the time machine through time?

(Hint: A gigawatt is a billion watts.)

**Algebra and Up:**

*Question:* Acceleration is calculated by dividing the change in velocity by elapsed time. Doc needs to know whether he has enough time for his Delorean to reach 40 meters per second in *t* seconds if it starts from a standstill. Write an inequality for *t* in terms of *a*, the acceleration of the Delorean, that Doc can use to see if he has enough time to reach 40 meters per second.

**Lower Elementary:**

*Question:* Marty is running late for school. Right now, it’s 8:25 am. It takes him 18 minutes to skateboard to school. If class starts at 8:30 am, how many minutes late will Marty be?

*Answer:* 13 minutes

*Solution:* Marty has 30 – 25 = 5 minutes before class starts. If it takes him 18 minutes to get there, he will be 18 – 5 = 13 minutes late for class. Alternatively, this problem can be solved by adding 18 minutes to 8:25 am first, then finding the elapsed time between 8:30 am and 8:25 + 0:18 = 8:43 am, which is 13 minutes.

**Upper Elementary:**

*Question:* A clock tower stopped working when it was struck by lightning on November 12, 1955. How many days have passed since the clock tower worked? Use today’s date.

(Hint: There have been 16 leap years since 1955. There are 30 days in November, 31 days in December and January, and 28 days in February.)

*Answer:* Answers vary. The answer on Monday, March 26, is 22,780 days.

*Solution:* There were 2017 – 1955 = 62 years between 1955 and 2018, which is equal to 62 × 365 = 22,630 days. If we add the remaining 30 – 12 = 18 days in November 1955, the 31 days in December 1955, 16 leap days, the 31 days in January 2018, the 28 days in February 2018, and however many days have passed in March, we get our answer.



**Middle School:**

*Question:*  A time machine requires 1.21 gigawatts of electricity to travel through time. A car battery generates about 12,000 watts to start a car. How many car batteries would be needed to send the time machine through time?

(Hint: A gigawatt is a billion watts.)

*Answer:* 100,834 car batteries

*Solution:* 1.21 gigawatts is equal to 1.21 × 1,000,000,000 = 1,210,000,000 watts. Dividing 1,210,000,000 by 12,000 is tricky, but we can divide both numbers by 1,000 first to make the problem easier: 1,210,000 ÷ 12 = 100,8331/3. Since batteries aren’t sold in thirds, we round up. The time machine would need 100,834 car batteries to travel through time.

**Algebra and Up:**

*Question:* Acceleration is calculated by dividing the change in velocity by elapsed time. Doc needs to know whether he has enough time for his Delorean to reach 40 meters per second in *t* seconds if it starts from a standstill. Write an inequality for *t* in terms of *a*, the acceleration of the Delorean, that Doc can use to see if he has enough time to reach 40 meters per second.

*Answer:* *t* ≥ 40/*a*

*Solution:* First, let’s write an equation based on the first sentence: *a* = Δ*v*/Δ*t*. We know that the change in velocity needs to be 40 meters per second and *t* is the elapsed time, so we can plug those values into the equation: *a* = 40/*t*. Next, we know we want the equation in terms of *a*, so we solve for *t*: *t* = 40/*a*. Finally, we need this to be an inequality. Since 40/*a* is the least amount of time for the Delorean to accelerate, the inequality should be *t* ≥ 40/*a*.