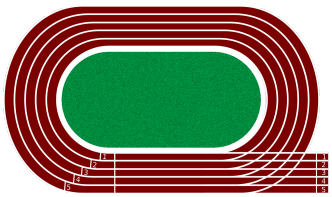


Problem of the Week
Problem A and Solution
Cross Training

Problem

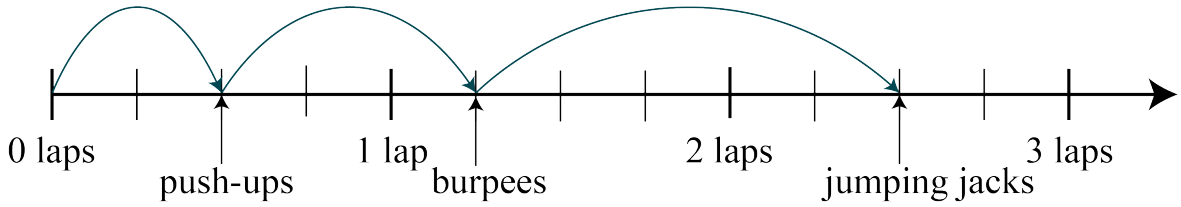
Jelena is training at the track at her school. She does interval training, which means that she runs for some distance then stops to do other exercises. Each time around the track is called a lap. This is her training plan:

- Run half of the way around the track, stop and do 10 push-ups.
- Run three quarters of the way around the track, stop and do 5 burpees.
- Run one and a quarter of the way around the track, stop and do 15 jumping jacks.

How many laps of the track has Jelena completed after doing the jumping jacks?

Solution

One way to solve this problem is to use a timeline broken up into quarter laps.



From this, we determine that after completing the jumping jacks, Jelena has completed 2 and a half laps of the track.

Another way to determine the answer is to add fractions together. To add fractions, we need the fractions written with a common denominator. We know that $\frac{1}{2} = \frac{2}{4}$ and that $1 = \frac{4}{4}$, so we can add to get

$$\frac{2}{4} + \frac{3}{4} + \frac{4}{4} + \frac{1}{4} = \frac{10}{4} = 2\frac{1}{2}$$

Teacher's Notes

Using a *number line* can help with adding fractions, especially when the sum produces a *mixed fraction*.

A number line often includes arrows at one or both ends to indicate that positive and negative numbers continue to increase in magnitude indefinitely in each direction. In particular, an arrow pointing to the right indicates that there are an *infinite* number of positive integers. There are also an infinite number of values between any two marked points on the number line. For example, there are an infinite number of values between two consecutive positive integers. Some of those values are *rational* numbers that can be represented by fractions in the form:

$$\frac{a}{b}, \text{ where } a \text{ and } b \text{ are integers, and } b \text{ is not } 0$$

There are other values, such as $\sqrt{2}$, that cannot be represented in this form. They are known as *irrational* numbers.