

7.RP Track Practice

Alignments to Content Standards: 7.RP.A 7.RP.A.1

Task

Angel and Jayden were at track practice. The track is $\frac{2}{5}$ kilometers around.

- Angel ran 1 lap in 2 minutes.
 - Jayden ran 3 laps in 5 minutes.
- a. How many minutes does it take Angel to run one kilometer? What about Jayden?
- b. How far does Angel run in one minute? What about Jayden?
- c. Who is running faster? Explain your reasoning.

IM Commentary

Parts (a) and (b) of the task ask students to find the unit rates that one can compute in this context. Part (b) does not specify whether the units should be laps or km, so answers can be expressed using either one.

The purpose of part (c) is to give students an opportunity to make use of the unit rates that they found in parts (a) and (b). While it is possible for students to solve part (c) in other ways, the solution shown represents the kind of reasoning with unit rates that 7th graders should be able to do. It is important to note that the answer can be determined using different unit rates as long as the reasoning behind it is correct.

[Edit this solution](#)

Solution

a. We can create a table that shows how far each person runs for a certain number of laps:

Number of laps	Number of km
1	$\frac{2}{5}$
2	$\frac{4}{5}$
3	$\frac{6}{5}$

We can see from the table that 1 km is exactly half way between 2 and 3 laps. So it will take 2.5 laps to run 1 km.

Since it takes Angel 2 minutes to run 1 lap, she will take

$$\frac{2.5 \text{ laps}}{1 \text{ km}} \cdot \frac{2 \text{ minutes}}{1 \text{ lap}} = \frac{5 \text{ minutes}}{1 \text{ km}}$$

So it takes Angel 5 minutes to run 1 km.

Since it takes Jayden 5 minutes to runs 3 laps, she runs 1 lap in $\frac{5}{3}$ minutes. Thus, it takes Jayden

$$\frac{2.5 \text{ laps}}{1 \text{ km}} \cdot \frac{5 \text{ minutes}}{3 \text{ laps}} = \frac{5}{2} \cdot \frac{5}{3} \text{ minutes/km} = \frac{25}{6} \text{ minutes/km} = 4\frac{1}{6} \text{ minutes/km.}$$

So it takes Jayden $4\frac{1}{6}$ minutes to run 1 km.

b. Angel runs 1 lap in 2 minutes so she runs $\frac{1}{2}$ lap in 1 minute. Since 1 lap is $\frac{2}{5}$ km, $\frac{1}{2}$ lap is $\frac{1}{5}$ km. So she also runs $\frac{1}{5}$ km in one minute.

Since Jayden runs 1 lap in $\frac{5}{3}$ minutes, she will run $\frac{3}{5}$ laps in 1 minute. Since Jayden runs 1 km in $\frac{25}{6}$ minutes, she will run $\frac{6}{25}$ km in 1 minute.

c. Jayden runs the same distance in less time than Angel (alternatively, Jayden runs farther in the same time than Angel), so Jayden is running faster than Angel.



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