Matematicko-logická soutěž - řešení

Školní rok 2019/20 - prosinec 2019

Úloha č. 1

From the record of boys´ trip we can find easily that during the first part (1 hour 24 min) they finished 20 km. Their speed was 14.3 km/h.

Then there was a 36 min break because the covered distance didn´t change. On their way back they managed to cover 20 km in 0.8 hour (48 min) and their speed was 25 km/h.

Taking into account the whole covered distance and average speed we can assume that in the first part of the trip they rode mostly uphill while on their way back downhill. Average speed 13.3 km/h can be then obtained from the total time (3 hours) and length (40 km). If we don´t count the break, the average speed of the ride itself will be 18.2 km/h.

Úloha č. 2

Toto je klasická úloha, která vede k soustavě rovnic:

$$\begin{aligned} š+č+m&=26\\ b+č+m&=26\\ b+š+m&=24\\ b+č+š&=32 \end{aligned}$$, soustavu řešíme libovolnou metodou.

Na sušáku bylo na počátku 10 šedých, deset bílých, čtyři modré a 12 černých ponožek. Celmu 36 kusů ponožek, které Michalovi vydrží na 18 dní.

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$$A=\frac{\frac{\frac{121}{11}+17}{2}+\frac{10\cdot(\frac{10}{2}+1)}{5+\frac{3}{3}}}{\frac{5\cdot(\frac{42}{7}+3)}{3}+\frac{\frac{45}{3}+19}{2}}=\frac{3}{4}$$, zatímco $$B=\frac{\frac{\frac{8}{3}\cdot 27}{\frac{34}{17}+4}+\frac{(1+\frac{21}{3})\cdot(\frac{16}{4}+5)}{5-\frac{10}{5}}}{\frac{4+11\cdot 4}{\frac{13-6}{7}+3}+\frac{(\frac{45}{5}+1)+2\cdot 10}{2}}=\frac{4}{3}$$, tudíž $A<B$