1. Ero and Jamal set off at the same time on a $30-\mathrm{km}$ walk for charity. Ero, who has trained all year for this event, walks $1.4 \mathrm{~km} / \mathrm{h}$ faster than Jamal, but sees a friend on the route and stops to talk for 20 min . Even with this delay, Ero finishes the walk 2 h ahead of Jamal. How fast was each person walking, and how long did it take for each person to finish the walk?
2. On the $42-\mathrm{km}$ go-cart course at Sportsworld, Arshia drives $0.4 \mathrm{~km} / \mathrm{h}$ faster than Sarah, but she has engine trouble part way around the course and has to stop to get the go-cart fixed. This stop costs Arshia one-half hour, and so she arrives 15 min after Sarah at the end of the course. How fast did each girl drive and how long did each girl take to finish the course? Answer to one decimal place.
3. Rowing at $8 \mathrm{~km} / \mathrm{h}$, in still water, Rima and Bhanu take 16 h to row 39 km down a river and 39 km back. Find the speed of the current to two decimal places.
4. A river flows at $2 \mathrm{~km} / \mathrm{h}$, and John takes 6 h to row 16 km up the river and 16 km back. How fast did he row?
5. Jaime bought a case of concert T-shirts for $\$ 450$. She kept two for herself and sold the rest for $\$ 560$, making a profit of $\$ 10$ on each shirt sold. How many shirts were in the case?
6. Stuart agrees to a house-painting job for $\$ 900$. He takes 4 days longer than expected, and he has earned $\$ 18.75$ less per day than expected. In how many days did he expect to complete the house?
7. A grade 11 class, on a field trip to Montreal, had lunch in a restaurant. The bill came to $\$ 239.25$. Four students had birthdays that day, and it was agreed that these four should not have to pay for lunch. The other students had to pay $\$ 1$ more than if all the students had paid. How many students had lunch?
8. Ero and Jamal set off at the same time on a $30-\mathrm{km}$ walk for charity. Ero, who has trained all year for this event, walks $1.4 \mathrm{~km} / \mathrm{h}$ faster than Jamal, but sees a friend on the route and stops to talk for 20 min . Even with this delay, Ero finishes the walk 2 h ahead of Jamal. How fast was each person walking, and how long did it take for each person to finish the walk?
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15. $t_{\text {Jamal }}=\frac{30}{v} \quad t_{\text {Ero }}=\frac{30}{v+1.4}+\frac{20}{60}$
but $t_{\text {Ero }}$ is also $t_{\text {Jamal }}-2$ so $\frac{30}{v+1.4}+\frac{20}{60}=\frac{30}{v}-2$
16. $\frac{39}{8+v_{\text {current }}}+\frac{39}{8-v_{\text {current }}}=16 \quad v_{\text {current }}=6.67 \mathrm{~km} / \mathrm{h}$

Jamal walked at $3.6 \mathrm{~km} / \mathrm{h}$ and Ero walked at $5 \mathrm{~km} / \mathrm{h}$. Jamal's total walking time was 8 h 20 min . Ero's total walking time was 6 h , but he took 6 h 20 min to complete the route because he stopped for 20 min during the walk
2. $t_{\text {Sarrah }}=\frac{42}{v} \quad t_{\text {Arshia }}=\frac{42}{v+0.4}+0.5$
but $t_{\text {Arshia }}=t_{\text {Sarah }}+0.25$ so $\frac{42}{v+0.4}+0.5=\frac{42}{v}+0.25$
Arshia's speed: $8.0 \mathrm{~km} / \mathrm{h}$;
Sarah's speed: $8.4 \mathrm{~km} / \mathrm{h}$;
Arshia's time:5.5 h;
Sarah's time: 5.25 h
4. $\frac{16}{v_{\text {John }}-2}+\frac{16}{v_{\text {John }}+2}=6 \quad v_{\text {John }}=3.74 \mathrm{~km} / \mathrm{h}$
5. for each shirt sold: $p=r-c$
$10=\frac{560}{x-2}-\frac{450}{x} \quad x=18$ shirts
6. dailyRev ${ }_{\text {actual }}=\frac{900}{t+4}$ dailyRev expected $=\frac{900}{t}$
$d_{\text {ailyRev }}^{\text {actual }}=$ dailyRev $_{\text {expected }}-18.75 \quad t=12$ days
7. equalBill $=\frac{239.25}{x} \quad$ birthdayBill $=\frac{239.25}{x-4}$
birthdayBill $=$ equalBill $+1 \quad x=33$ students

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2. $t_{\text {Sarah }}=\frac{42}{v} \quad t_{\text {Arshia }}=\frac{42}{v+0.4}+0.5$
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Arshia's speed: $8.0 \mathrm{~km} / \mathrm{h}$;
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$$
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$$

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$$
\text { dailyRev }_{\text {actual }}=\text { dailyRev }_{\text {expected }}-18.75 \quad t=12 \text { days }
$$

7. equalBill $=\frac{239.25}{x} \quad$ birthdayBill $=\frac{239.25}{x-4}$

$$
\text { birthdayBill }=\text { equalBill }+1 \quad x=33 \text { students }
$$

