Percentages & Work

1. Two stores sell discounted tickets to an amusement park. The first store discounted the tickets 30%, then an additional 50%. The second store discounted the tickets 80% once.

(a) If you are looking for the best deal, where should you buy your ticket?

\[
\begin{align*}
\text{Store 1} & : P_1 = 100\% P_0 - 30\% P_0 = 70\% P_0 \\
& \quad = 0.70 \times P_0 \\
& \quad = 0.70 \times 120 = 84 \\

\text{Store 2} & : P_2 = 100\% P_0 - 80\% P_0 = 20\% P_0 \\
& \quad = 0.20 \times P_0 \\
& \quad = 0.20 \times 120 = 24
\end{align*}
\]

Store 2 is a better deal.

(b) If the original price for one ticket was $120, how much will you pay for your ticket?

\[
\begin{align*}
P_2 &= 20\% P_0 \\
&= \left(\frac{1}{5}\right)(120) \\
&= 24
\end{align*}
\]

2. It takes 5 hours for a group of fourth graders to clean the Santa Monica beach. A group of tenth graders can do the same work in 4 hours. If the fourth graders work for two hours before the tenth graders join them, how long will it take the students to finish cleaning the beach together?

4th graders in 1 hour = \(\frac{1}{5}\) of beach

10th graders in 1 hour = \(\frac{1}{4}\) of beach

Together = \(\frac{1}{5} + \frac{1}{4}\) of beach

\[
\begin{align*}
\text{Part 1: 4th graders only} & \quad \frac{2}{5} \\
\text{Part 2: 10th + 4th graders} & \quad \frac{3}{5}
\end{align*}
\]

Let \(x\) = \(\text{total hours}\)

\[
\begin{align*}
\frac{9}{20} x &= \frac{2}{5} \\
x &= \frac{4}{3} = 1\text{hr 20min}
\end{align*}
\]