

14. The time on any of these clocks is a straight-line function of that on another, with slopes $\neq 1$ and y -intercepts $\neq 0$. From the data in the figure we deduce

$$\begin{aligned} t_C &= \frac{2}{7}t_B + \frac{594}{7} \\ t_B &= \frac{33}{40}t_A - \frac{662}{5} . \end{aligned}$$

These are used in obtaining the following results.

- (a) We find

$$t'_B - t_B = \frac{33}{40}(t'_A - t_A) = 495 \text{ s}$$

when $t'_A - t_A = 600 \text{ s}$.

- (b) We obtain

$$t'_C - t_C = \frac{2}{7}(t'_B - t_B) = \frac{2}{7}(495) = 141 \text{ s} .$$

- (c) Clock B reads $t_B = (33/40)(400) - (662/5) \approx 198 \text{ s}$ when clock A reads $t_A = 400 \text{ s}$.

- (d) From $t_C = 15 = (2/7)t_B + (594/7)$, we get $t_B \approx -245 \text{ s}$.