(A5) The idea is to convert 12! seconds into years. Then, we would know Ara's age.

$$12!\text{ seconds} = \frac{12 \times 11! \times 5}{5}\text{ seconds}$$

$$= \frac{60 \times 11!}{5} \times \frac{1}{60}\text{ minutes}$$

$$= \frac{11!}{5}\text{ minutes}$$

$$= \frac{11! \times 60}{60 \times 5} \times \frac{1}{60}\text{ hour}$$

$$= \frac{11!}{2 \times 3 \times 5 \times 10}\text{ hour.}$$

$$= \frac{11!}{2 \times 3 \times 5 \times 10} \times \frac{1}{24}\text{ day}$$

$$= \frac{11!}{2 \times 3 \times 5 \times 10 \times 4 \times 6}\text{ day}$$

$$= \frac{11!}{1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 10}\text{ day}$$

$$= \frac{11!}{6! \times 10}\text{ day}$$

$$= \frac{11 \times 10 \times 9 \times 8 \times 7 \times 6!}{6! \times 10}\text{ day}$$

$$= 11 \times 9 \times 8 \times 7\text{ day}$$

$$= 11 \times 9 \times 8 \times 7 \times \frac{1}{365}\text{ years}$$

$$= 11 \times 9 \times 8 \times 7 \times \frac{1}{5 \times 73}\text{ years}$$

$$= \frac{77}{5} \times \frac{72}{73}\text{ years}$$

$$= 15\frac{2}{5} \times \frac{72}{73}\text{ years.}$$

$$= 15.4 \times \frac{72}{73}\text{ years}$$

Note that:

$15.4 \times \frac{72}{73} < 15.4 \times 1$

because $\frac{72}{73} < 1$

Since $72 < 73$

Thus, since

12! seconds $= 15.4 \times \frac{72}{73}$ years

So,

12! seconds < 15.4 years — (2)

and

Note also that:

$11088 = 72 \times 154 > 73 \times 150$

$11088 = 72 \times 154 > 150 \times 73 = 10950$

imply that.

$$\frac{72}{73} > \frac{150}{154} = \frac{15.0}{15.4}$$

So,

$$12!_{\text{seconds}} = 15.4 \times \frac{72}{73} > 15\text{ years}$$

i.e. 12! seconds > 15 years — (1)

(1) and (2) imply that $\longrightarrow$ 15 years $<$ Ara's age (12! seconds) $<$ 15.4 years

It follows that Ara is 15 years old.

Answer: 15 years old.