It takes the big candle 5 hours to burn down, and it takes the smaller candle 4 hours.

At 9.30pm, the big candle has burnt $\frac{3h30}{5h00}$ =

$\frac{3.5}{5}$ = $\frac{7}{10}$ so it has $\frac{3}{10}$ of its time left to burn, so its $\frac{3}{10}$ of its original length.

The small candle has burnt $\frac{2h00}{4h00}$ = $\frac{2}{4}$ =

$\frac{1}{2}$ so it has $\frac{1}{2}$ of its time left to burn, so its

$\frac{1}{2}$ of its original length.

Since the candles are at the same height at 9.30pm, $\frac{3}{10}$ of the large candle is the

same height as $\frac{1}{2}$ of the small candle.

Writing *l* for the height of the large candle and *s* for the height of the small candle,

we get:

$$\frac{3}{10}\,l = \frac{1}{2}\,s$$

Therefore $l = \frac{10}{6}\,s$.

$$l = \frac{5}{3}\,s.$$

or $$l = 1\frac{2}{3}\,s.$$

This means the difference in heights is $l - s = \frac{2}{3}\,s$. But we already know the difference in heights is 4cm, so $\frac{2}{3}\,s$ = 4cm, or s = 6cm.

Therefore the small candle is 6cm tall, and this makes the large candle 6+4 = 10cm tall.