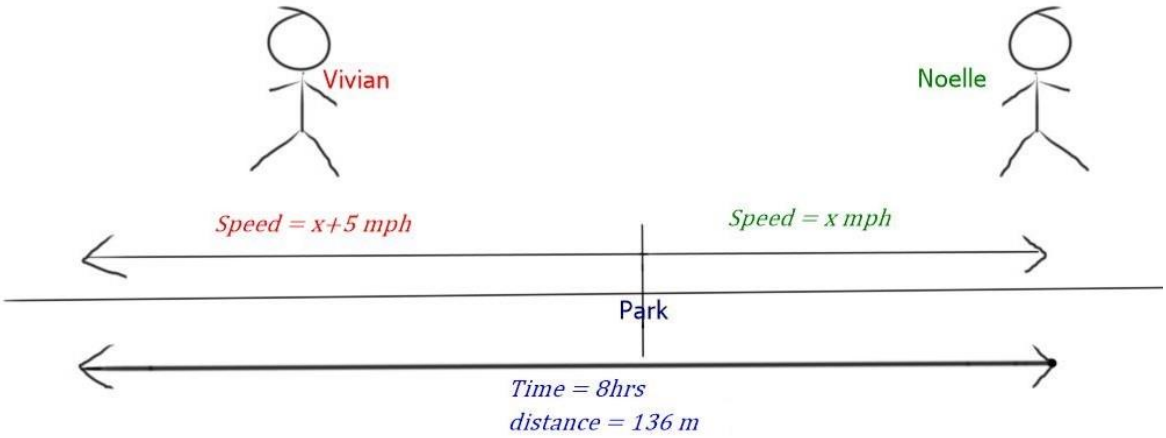
ALGEBRAIC WORD EQUATION



From the illustration above, we can see that the two were moving in opposite directions with different speeds. They both took 8 hours to cover 136 miles.

Finding their combined speed,

$$speed = \frac{dis\tan ce}{time}$$

$$speed = \frac{136}{8}$$

$$speed = 17mph$$

Their combined speed is therefore 17mph

Since they're in relative motion while moving in opposite directions, their relative speed is achieved by adding the speeds of Vivian and Noelle.

Therefore, $x + x + 5 = 17$

We have to find the value of x so as to know Noelle's speed

$$x + x + 5 = 17$$

$$2x + 5 = 17$$

$$2x = 17 - 5$$

$$2x = 12$$

$$x = 6$$

We also have to find Vivian's speed which is

$$x + 5$$
$$6 + 5$$
$$= 11$$

Vivian's speed = 11 mph

Noelle's speed = 6 mph