23. Let cycle's speed = x km/hr
wind's speed = y km/hr

According to first condition,

$$\frac{12}{x-y} = 3 \quad \left[\text{time} = \frac{\text{Distance}}{\text{Speed against wind}}\right]$$

$$\therefore 12 = 3x - 3y$$

$$\therefore 4 = x - y \quad \text{---(I)} \quad [\text{Dividing by } 4]$$

According to 2nd condition,

$$\frac{12}{x+y} = 1$$

$$\therefore x + y = 12 \quad \text{---(II)}$$

Adding I and II, we get,

$$2x = 16$$

$$\therefore x = 8 \text{ km/hr}$$

Substituting $x = 8$ km/hr in (II) we get,

$$8 + y = 12 \; ; \; \therefore y = 4 \text{ km/hr}$$

$\therefore$ Cycle's speed = 8 km/hr and wind's Speed = 4 km/hr

Teacher's Sign. :