Andrea and heather are driving their tractors as fast as they can in opposite directions. Now Andrea is driving a john Deere tractor at a whopping 36 miles per hour. Her friend, Heather, is racing away from her on an international tractor at 24 miles per hour. How long will it take them to be 30 miles apart?

Solution:

Velocity of the moving objects with respect to other moving or stationary object is called "relative velocity" and this motion is called "relative motion".
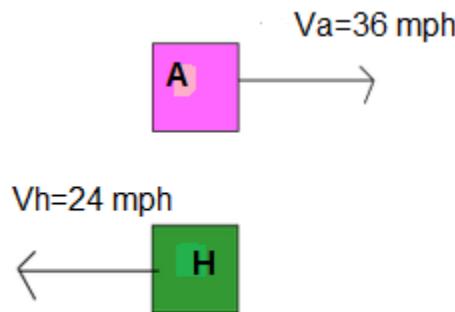
$$v_{relative} = v_a + v_h = 36 + 24 = 60 \text{ mph}$$

The time of motion is

$$t = \frac{v_{relative}}{d} = \frac{60}{30} = 2 \text{ hours}$$

Answer: $t = 2$ hours