

**Term Test A version 1**

(1) [5 points] You have 20 gallons of a 45 percent antifreeze solution. How many gallons of a 57 percent antifreeze solution needs to be added to make a 51 percent antifreeze solution?

(2) [5 points] Two train stations  $A$  and  $B$  are 310 kilometres apart. The first train leaves  $A$  at  $v_{008}[0]$  going towards  $B$ . The second train leaves  $B$  at  $v_{009}[0]$  going towards  $A$ . The velocity of the first train is  $v_{010}[0]$  less than the velocity of the second train. At  $v_{011}[0]$  the trains are still  $v_{012}[0]$  kilometres apart. Calculate the speed of the two trains and when they will meet. Use  $v \cdot t = s$  (velocity times time equals distance).

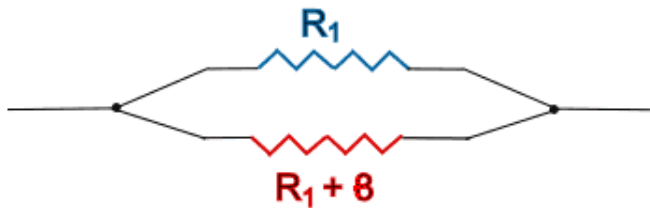
(3) [5 points] Solve the equation.

$$\frac{3+x}{2} - \frac{2x-7}{3} = 3$$

(4) [5 points] Solution X is a 27 percent salt solution and Solution Y is a 20 percent salt solution. How much of each is needed to make 42 gallons of a 25 percent salt solution?

(5) [5 points] The formula to work out the total resistance  $R_T$  given two resistors  $R_1$  and  $R_2$  in parallel as in the diagram is

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$



The total resistance has been measured at 3 ohms, and one of the resistors is known to be 8 ohms more than the other. Ohm is the unit for resistance, and only a positive number of ohms makes sense. Calculate  $R_1$ .