8. The length, y cm, of a metal bar at $t°$ C is given by

$$y = a + bt,$$

where a and b are constants.

When $t = 150$, $y = 200.36$. When $t = 400$, $y = 200.96$.

(a) Calculate the values of a and b.

(b) What does the value of a represent?

9. **(a)** Solve the inequality $5t - 8 < 16 + 3t$.

(b) Find all the integers which satisfy both $4x - 5 > 7x + 10$ and $x \geqslant -8$.

10. **(a)** Solve the inequality $-8 < 3x + 7 < 9$.

(b) Write down the greatest integer and the smallest integer which satisfy $-8 < 3x + 7 < 9$.

11. The total mass of two chemicals A and B is 40 g. The mass of A is 4 g more than twice the mass of B.

(a) Find the mass of A and the mass of B.

(b) When these two chemicals react, a gas is given off. If the mass of the gas is 9% of the total mass of the two chemicals, find the mass of the gas.

12. The total hourly wage of 3 technicians, Robert, Sulaiman and Tiong Heng, is \$74. Robert's hourly wage is 20% more than Sulaiman's. Tiong Heng's hourly wage is \$4 more than half of Robert's hourly wage. Suppose Sulaiman's hourly wage is \$$x$.

(a) Express, in terms of x, the hourly wage of

(i) Robert, **(ii)** Tiong Heng.

(b) Calculate the hourly wage of each of these technicians.

(c) If Robert's daily wage is more than \$280, find the minimum number of hours that he works in a day. Express your answer as an integer.

13. The total cost of 3 mangoes and 5 apples is \$7. The total cost of 6 mangoes and 2 apples is \$10.

(a) Find the cost of a mango and the cost of an apple.

(b) Mrs Ho wants to spend \$20 on fruits. She buys some mangoes and 10 apples. What is the maximum number of mangoes that she can buy?

14. The price \$$P$ of a square photo frame of side x cm is given by

$$P = ax + bx^2,$$

where a and b are constants.

When $x = 20$, $P = 34$. When $x = 30$, $P = 66$.

(a) Calculate the values of a and b.

(b) The price of a square photo frame is \$50. Find the length of its side correct to 1 decimal place.