Constraints (all variables >0, integer)

$$C_F \Delta F + C_T \Delta T \geq 25$$
$$C_F + C_T \geq 10$$
$$\Delta F + \Delta T \geq 10$$
$$\Delta F_a + \Delta T_a \geq 10$$

There are a total of four constraints. Because the problem requirement is the minimum cost, so we take the smallest possible value for the variables.

First, assume that each variable is 5 (meets all constraints).

The total cost is 8406.16377390925.

It can be found through the program that as long as the integer sum of C_F and C_T or ΔF and ΔT are 10, then their total cost remains unchanged (8406.16377390925).

The values of ΔF_a and ΔT_a have little effect on the total cost (so we temporarily take the value of 5 for the calculation).

When $\Delta F\_a = 1$, $\Delta T\_a = 9$, Total cost = 8487.300858899096.

When $\Delta F\_a = 9$, $\Delta T\_a = 1$, Total cost = 8406.16377390925.

Next, change two sets of variables simultaneously.

```
self.C_F = 9

self.Delta_F = 1

self.C_T = 1

self.Delta_T = 9
```

1)When $C\_F = 9$, $C\_T = 1$, $\Delta F = 1$, $\Delta T = 9$, Total cost = 4022.1874426518975.

```
self.C_F = 1

self.Delta_F = 1

self.C_T = 9
```

```
        self.Delta_T = 9
```

2)When C_F = 1, C_T = 9, ΔF = 1, ΔT = 9, Total cost = 12871.27719015647.

```
        self.C_F = 9

        self.Delta_F = 9

        self.C_T = 1

        self.Delta_T = 1
```

3)When C_F = 9, C_T = 1, ΔF = 9, ΔT = 1, Total cost = 12871.27719015647.

```
        self.C_F = 1

        self.Delta_F = 9

        self.C_T = 9

        self.Delta_T = 1
```

4) When C_F = 1, C_T = 9, ΔF = 9, ΔT = 1, Total cost = 4022.1874426518975.

1) and 4) are the cheapest so far.

For 1),

When ΔF_a = 1, ΔT_a = 9, Total cost = 4062.755985146822.

When ΔF_a = 9, ΔT_a = 1, Total cost = 3981.6189001569737.

For 4),

When ΔF_a = 1, ΔT_a = 9, Total cost = 4062.755985146822.

When ΔF_a = 9, ΔT_a = 1, Total cost = 3981.6189001569737.

Therefore, when C_F = 9, C_T = 1, ΔF = 1, ΔT = 9, ΔF_a = 9, ΔT_a = 1, or when C_F = 1, C_T = 9, ΔF = 9, ΔT = 1, ΔF_a = 9, ΔT_a = 1, the total cost is the least.