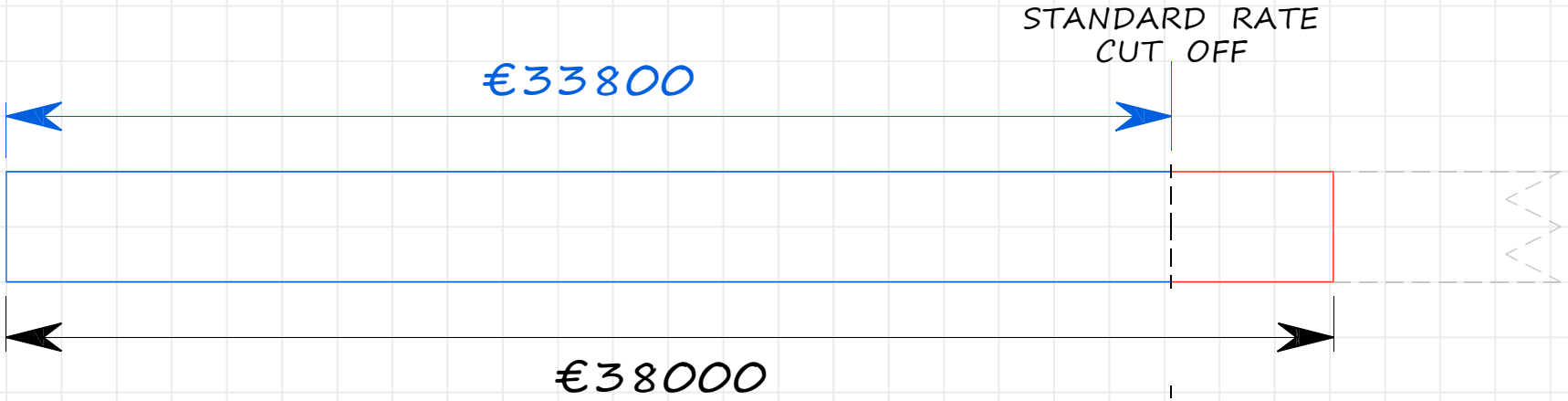
Question 3

Eleanor has a gross income of €38000 for the year. She has an annual tax of €3300. The standard cut off point is €33800. The standard rate of income tax is 20% and the higher rate is 40%

a) Find Eleanor's net income for the year.

First we must find Eleanor's Gross Tax. She earns more than the standard cut off so some of her income will be taxed at the standard rate (20%) and the rest at the higher rate (40%). The cut off is €33800 so this will be taxed 20% and the rest of her income, which is €4700, will be taxed at 40%. The image and calculations below shows how Eleanor's gross tax is calculated.



Tax at the standard rate:
€33800 × 0·2 = €6760

Tax at the higher rate:
€4200 × 0·4 = €1880

Gross Tax = Tax at Standard Rate + Tax at Higher Rate
= €6760 + €1880 = €8640

Once we have found her gross tax we can find her tax payable by subtracting her tax credit from her gross tax.

$$\text{Tax Payable} = \text{Gross Tax} - \text{Tax Credit}$$
$$= €8640 - €3300 = €5340$$

Finally her net income can now be calculated by subtracting her tax payable from her gross income.

$$\text{Net Income} = \text{Gross Income} - \text{Tax Payable}$$
$$= €38500 - €5340 = €33160$$

Eleanor receives a pay rise. As a result, her net income for the year is €34780.

b) Find Eleanor's new gross income for the year.

We have Eleanor's old gross income so to find her new gross income we need her gross pay rise. This is the pay rise before it is taxed. Eleanor makes more than that standard cut off so any pay rise would be taxed at 40%. We can find Eleanor's pay rise after tax by subtracting her old net income from her new net income.

$$\text{Eleanor's Net Pay Rise} = \text{New Net Income} - \text{Old Net Income}$$
$$= €34780 - €33160 = €1620$$

This net pay rise is equal to 60% of the gross pay rise because 40% was tax.

So

$$\text{Net Pay Rise} = \text{Gross Pay Rise}(0{\cdot}6)$$

If we rearranging this equation then we get the following equation.

$$\text{Gross Pay Rise} = \frac{\text{Net Pay Rise}}{0{\cdot}6}$$

We have the net pay rise so we can substitute it into this equation to find gross pay rise.

$$\text{Gross Pay Rise} = \frac{€1620}{0{\cdot}6}$$

$$= €2700$$

Then adding this gross pay rise to Eleanor's original gross income will give the new increased gross income.

$$\begin{aligned}\text{Eleanor's New Gross Income} &= \text{Original Gross Income} + \text{Gross Pay Rise}\\ &= €38000 + €2700\\ &= €40700\end{aligned}$$