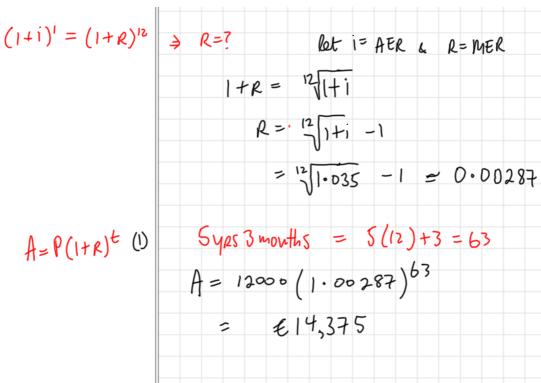
- 9. €12 000 is invested at an AER of 3.5%. Find the value of the investment after
 - (i) 5 years 3 months
- (ii) 8 years 2 months
- (iii) 10 years 6 months.



Example 4

The local GAA club runs a draw. You win first prize and you are offered

- (a) €15000 now or
- (b) €18000 in four years time. 7

Which prize should you choose

to have the greatest value? Assume a discount rate of 4%.

 $A = P(1+R)^{t}$ $P = \frac{A}{(1+R)^{t}}$

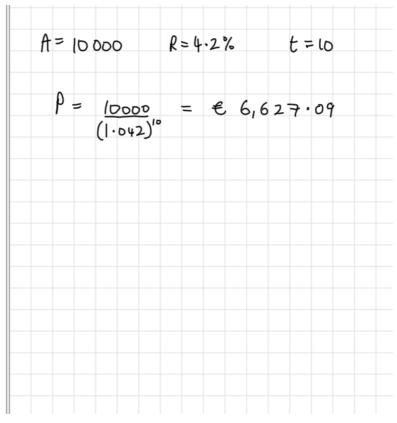
When calculating present value, the rate i% is often referred to as the "discount rate".

Present value =
$$\frac{\text{Future value}}{(1+i)^t}$$

$$P = \frac{18000}{(1\cdot04)^4} = £ 15,386$$

10. If a bank offers a discount rate of 4.2%, find the present value of €10 000 due to be paid in 10 years time.

 $A = P(1+R)^{t}$ $\Rightarrow \rho = \frac{A}{(1+R)^t}$



Example 5

In how many years would €5000 increase in value to €6500 if invested at an AER of 3.5%?

$$A = P(1+R)^{t}$$

$$\frac{A}{\rho} = (1+R)^{k}$$

$$A = P(1+R)^{t}$$

$$A = 6500$$

$$R = 3.5\%$$

$$A = (1+R)^{t}$$

$$A = 6500$$

$$R = 3.5\%$$

$$A = (1.035)^{t}$$

$$A = 6500$$

$$A = (1.035)^{t}$$

$$A = 6500$$

$$A = (1.035)^{t}$$

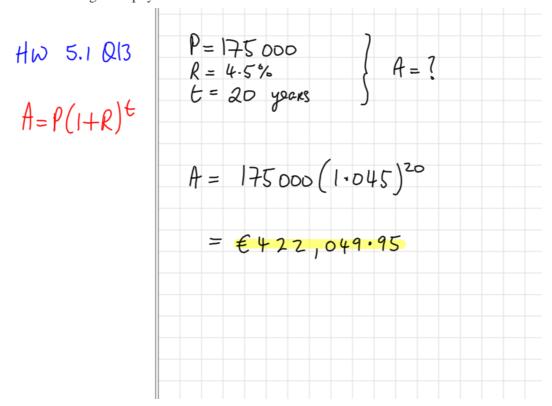
$$A = 6500$$

$$A = 1.035$$

$$A = 1.03$$

13. I plan to borrow €175 000 to buy a house.

If the bank charges an AER of 4.5%, what would this loan amount to in 20 years, assuming no repayments?



14. Using (a) trial and error and (b) logs, find how many years it will take €1130 to have a future value of €3000 if invested at 5% per annum compound interest.

Hw 5.2 Q14
$$A = 3000 \text{ } \begin{cases} t = 7 \\ R = 5\% \end{cases}$$

$$A = P(1+R)^{t}$$

$$\Rightarrow (1+R)^{t} = \frac{A}{P}$$

$$1.05^{t} = \frac{3000}{1130}$$

$$1.05^{t} = 2.655$$

$$1 = \log_{b} a$$

$$t = \log_{b} 2.655 = 20 \text{ years}$$

$$n = \log_{b} a$$