Suppose an investor deposits $27,000 into an account for which interest is compounded monthly. Find the amount of money in the account after 6 years using the following interest rates.

1. If $r = 3\%$, then the investment is worth ☐ after 6 years.
2. If $r = 5\%$, then the investment is worth ☐ after 6 years.
3. If $r = 6.5\%$, then the investment is worth ☐ after 6 years.
4. If $r = 8\%$, then the investment is worth ☐ after 6 years.

$A = P\left(1 + \frac{r}{n}\right)^{nt}$

$A = ?$

P = principal : 27000

r = rate : 0.03

$n = 12$ (monthly)

$t = 6$ years

(1) $A = P\left(1 + \frac{r}{n}\right)^{nt}$

$A = (27000)\left(1 + \frac{(0.03)}{(12)}\right)^{(12)(6)}$

$A = 27000\left(\frac{12}{12} + \frac{0.03}{12}\right)^{72}$

$A = 27000\left(\frac{12.03}{12}\right)^{72}$

$A \approx \$32,317.608$

$A \approx \$32.317,61$

(2) $\$36423.48$

(3) $\$39836.53$

(4) $\$43564.56$

Suppose an investor deposits $20,000 into a savings account for 3 years at 8.5% interest. Find the total amount of money in the account if the interest is:

1. Compounded annually, then the investment is worth ☐ after 3 years.
2. Compounded quarterly, then the investment is worth ☐ after 3 years.
3. Compounded monthly, then the investment is worth ☐ after 3 years.
4. Compounded weekly, then the investment is worth ☐ after 3 years.
5. Compounded daily, then the investment is worth ☐ after 3 years.

$A = ?$

$P = \$20000$

$r = 8.5\% \rightarrow 0.085$

$n =$ changes with every question

$t = 3$

(1) $n = 1$

$A = P\left(1 + \frac{r}{n}\right)^{nt}$

$A = 20000\left(1 + \frac{0.085}{(1)}\right)^{(1)(3)}$

$A = 20000\,(1.085)^3$

$A = \$25,545.78$

(2) $n = 4$ $A = \$25,740.37$

(3) $n = 12$ $A = \$25,786.04$

(4) $n = 52$ $A = \$25,803.86$

(5) $n = 365$ $A = \$25,808.47$

* The more often you compound, the more for your deposit → the more to pay back on loan also.