Questions from Homework

Word Problems

- **Read Problem Carefully**
- Determine the appropriate formula
- Write down what you are given
- Solve

For a compact car the cost of maintenance and repairs increased by \$85 each year. If in the first year the amount was \$120, how much was the maintenance at the end of year five?

- **Read Problem Carefully**
- Determine the appropriate formula ⟷ $t_n = a + (n-1)d$
- Write down what you are given
- Solve

Given:

a = \$120

d = \$85

$t_5 = 120 + (5-1)(85)$

$t_5 = 120 + 4(85)$

$t_5 = 120 + 340$

$t_5 = \$460$

The cost of maintenance at the end of year 5 was \$460.

A house worth \$70 000 sold for \$105 000 3 years later. Find the *annual rate of increase* if the value of the house increased geometrically.

- **Read Problem Carefully**
- Determine the appropriate formula ⟷ $t_n = ar^{n-1}$
- Write down what you are given
- Solve

Given:

a = 70 000

n = 4

t_4 = 105 000

r = ?

$105000 = 70000r^{4-1}$

$\frac{105000}{70000} = \frac{70000r^3}{70000}$

$1.5 = r^3$

$1.1447 = r$

* Annual Rate of Increase

$1.1447 - 1$

$= 0.1447 \times 100$

$= 14.47\%$

∴ The annual rate of increase is 14.47%

An emergency measures organization uses a fan-out system to alert staff. The executive officer who initiates the action makes 3 calls. Each of these people in turn makes three calls, and so on. How many people are aware of the situation after the 6th level if the executive officer is considered the first level?

- **Read Problem Carefully**
- Determine the appropriate formula ⟷ $S_n = \frac{a(r^n - 1)}{r - 1}$
- Write down what you are given
- Solve

Given:

a = 1

r = 3

n = 6

$$S_6 = \frac{1(3^6 - 1)}{3 - 1}$$

$$= \frac{1(729 - 1)}{2}$$

$$= \frac{728}{2}$$

$$= 364$$

364 people are aware of the situation.

Homework

① $n = 33$ $\quad t_n = a + (n-1)d$

$a = 0$ $\quad 288 = 0 + (33-1)d$

$t_n = 288$ $\quad 288 = 32d$

$d = ?$ $\quad 9 = d$

A small electronics firm needs to sell a certain number of circuit boards in order to make a profit. If the company sells only one circuit board (the prototype) it loses $350. For each additional circuit board sold, the loss decreases by $25. How many circuit boards must be sold in order to break even?

- **Read Problem Carefully**
- Determine the appropriate formula ⟷ [redacted]
- Write down what you are given
- Solve

Given:

[redacted]