

GRADE 12 BIOLOGY
UNIT C – EVOLUTION
EXPONENTIAL GROWTH

Name: _____
 Date: _____

Your Uncle Leo offers you a job for three weeks (21 Days) in the summer. He offers to pay you in either one of two possible pay plans:

Get out a calculator!

Pay Plan A: \$10.00 per day

Pay Plan B: One cent pay for the first day (\$0.01); then double that to two cents (\$0.02) pay for day 2; then double day two pay again to get four cents (\$0.04) pay for the third day of pay; etc..... till the end of all 21 days.

Which pay plan will you select ? Decide, ...then let's explore the plans.

Let's see how the plans work out:

| Pay Plan A | | |
|------------|-----------|-----------|
| Day | Daily Pay | Total Pay |
| 1 | \$10 | \$10 |
| 2 | \$10 | \$20 |
| 3 | \$10 | \$30 |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
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| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |

| Pay Plan B | | |
|------------|-----------|-----------|
| Day | Daily Pay | Total Pay |
| 1 | \$0.01 | \$0.01 |
| 2 | \$0.02 | \$0.03 |
| 3 | \$0.04 | \$0.07 |
| 4 | \$0.08 | |
| 5 | | |
| 6 | | |
| 7 | | |
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| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |

Did you notice any patterns?

If you are feeling brave here are some formulae that might have helped speed things up.

You can calculate the **daily pay** for any particular day, n , for Plan B from:

$$P_n = 0.01 * 2^{n-1}$$

You can calculate **the total sum** of all the daily pays from:

$$S_n = 0.01*(2^n - 1)$$

EXPONENTIAL GROWTH!

