

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Compounding Interest practice

- 1) Gina deposited \$1500 in an account that pays 4% interest compounded quarterly. What will the balance be in 2 years?

$$1500\left(1 + \frac{.04}{4}\right)^{4 \cdot 2} = \$1624.29$$

- 2) The Garcias have \$12,000 in a savings account. The bank pays 3.5% interest on savings accounts, compounded monthly. Find the total balance after three years.

$$12000\left(1 + \frac{.035}{12}\right)^{12 \cdot 3} = \$13,326.49$$

- 3) In the previous problem what if the Garcias had left their money in their account for five years?

$$12000\left(1 + \frac{.035}{12}\right)^{12 \cdot 5} = \$14,291.31$$

- 4) Kami has \$5,000 she is going to invest and has two different options

Savings account	Money Market account
<ul style="list-style-type: none"> <li>• 3.15% interest rate</li> <li>• Compounded monthly</li> </ul>	<ul style="list-style-type: none"> <li>• 3.98% interest rate</li> <li>• Compounded semi-annually</li> </ul>

Determine Kami's account balance after the following years

	Savings account	Money Market account
5 years	$5000\left(1 + \frac{.0315}{12}\right)^{12 \cdot 5}$ $\$5851.70$	$5000\left(1 + \frac{.0398}{2}\right)^{2 \cdot 5}$ $\$6089.00$
10 years	$5000\left(1 + \frac{.0315}{12}\right)^{12 \cdot 10}$ $\$6848.47$	$5000\left(1 + \frac{.0398}{2}\right)^{2 \cdot 10}$ $\$7415.18$
20 years	$5000\left(1 + \frac{.0315}{12}\right)^{12 \cdot 20}$ $\$9380.31$	$5000\left(1 + \frac{.0398}{2}\right)^{2 \cdot 20}$ $\$10,996.99$

- 5) Which account has a higher interest rate?

THE MONEY MARKET ACCOUNT

- 6) Which account has the greater compounding period?

THE SAVINGS ACCOUNT

- 7) What is more important for making money, a higher interest rate or a higher compounding period?

HIGHER INTEREST RATE!

## Explicit Sequences

Find the explicit formula.

1) 27, 227, 427, 627, ...

$$a_n = -173 + 200n$$

2) 24, 124, 224, 324, ...

$$a_n = -76 + 100n$$

3) -1, -6, -36, -216, ...

$$a_n = -6^{n-1}$$

4) 4, 24, 144, 864, ...

$$a_n = 4 \cdot 6^{n-1}$$

5) 34, 24, 14, 4, ...

$$a_n = 44 - 10n$$

6) -39, -32, -25, -18, ...

$$a_n = -46 + 7n$$

7) -2, 4, -8, 16, ...

$$a_n = -2 \cdot (-2)^{n-1}$$

8) -3, -15, -75, -375, ...

$$a_n = -3 \cdot 5^{n-1}$$

9) 27, 17, 7, -3, ...

$$a_n = 37 - 10n$$

10) -8, -3, 2, 7, ...

$$a_n = -13 + 5n$$

11) -2, 6, -18, 54, ...

$$a_n = -2 \cdot (-3)^{n-1}$$

12) 1, 2, 4, 8, ...

$$a_n = 2^{n-1}$$

Find the 10th term

13) 2, 32, 62, 92, ...

$$a_n = -28 + 30n \quad 272$$

14) -24, -27, -30, -33, ...

$$a_n = -21 - 3n \quad -51$$

15) -2, 10, -50, 250, ...

$$a_n = -2 \cdot (-5)^{n-1} \quad 3,906,250$$

16) -1, -6, -36, -216, ...

$$a_n = -6^{n-1} \quad -10,077,696$$

17) 40, 48, 56, 64, ...

$$a_n = 32 + 8n \quad 112$$

18) 38, -162, -362, -562, ...

$$a_n = 238 - 200n \quad -1,762$$

19) -3, -18, -108, -648, ...

$$a_n = -3 \cdot 6^{n-1} \quad -30,233,088$$

20) 1, 5, 25, 125, ...

$$a_n = 5^{n-1} \quad 1,953,125$$