## Geometric Sequences Worksheet

Determine whether each of the following sequences is arithmetic, geometric, or neither. Explain your decisions.

1) $-4,1,6,11, \ldots$
2) $2,8,32,128, \ldots$
3) $1.5,4.5,13.5,40.5, \ldots$

For each of the following geometric sequences, find the common ratio. Then write the explicit formula for the sequence.
4) $10,20,40,80, \ldots$
5) $7,-7,7,-7, \ldots$
6) $3,-12,48,-192, \ldots$
7) $162,108,72,48, \ldots \quad$ 8) $100,50,25,12.5, \ldots$
9) Show work: What is the $14^{\text {th }}$ term of the geometric sequence: $3,9,27,81, \ldots$
10) Show work: What is the $11^{\text {th }}$ term of the geometric sequence: $-2,10,-50,250, \ldots$
11) Lidia's parents have offered her two different options to earn her allowance for a 9-week period over the summer. She can either get paid $\$ 30$ each week, or $\$ 1$ the first week, $\$ 2$ the second week, $\$ 4$ the third week, and so on.
a) Clearly explain if the second option forms a geometric sequence or not.
b) Show work and explain which option Lidia should choose.
12) Gabe and Erik are finding the $9^{\text {th }}$ term of the geometric sequence $-5,10,-20, \ldots$ Is either of them correct? Explain.

$$
\begin{aligned}
& \text { Gabe } \\
& r= \frac{10}{-5}=-2 \\
& a_{9}=-5(-2)^{9-1} \\
&=-5(512) \\
&=-2560
\end{aligned}
$$

$$
\begin{gathered}
\text { Erik } \\
r=\frac{10}{-5}=-2 \\
\mathrm{a}_{9}=-5(-2)^{9-1} \\
=-5(-256) \\
=1280
\end{gathered}
$$

