## General Algebra 2 Worksheet \#3 Unit 10 Selected Solutions

For a particular arithmetic sequence $a_{1}=5$ and $d=3$. Answer the following questions.
3. What is the explicit formula for the sequence?

$$
a_{n}=a_{1}+(n-1) d=5+(n-1) 3=5+3 n-3
$$

4. What is the $\mathbf{5 0}^{\text {th }}$ term in the sequence?

$$
\mathbf{a}_{50}=152
$$

$$
a_{50}=3(50)+2
$$

For a particular geometric sequence $a_{1}=3$ and $r=2$. Answer the following questions.
11. What is the explicit formula for this sequence?

$$
a_{n}=3(2)^{(n-1)}
$$

$$
\mathbf{a}_{\mathrm{n}}=\mathbf{a}_{1}(\mathbf{r})^{(\mathrm{n}-1)}=3(2)^{(\mathrm{n}-1)}
$$

12. What is the $10^{\text {th }}$ term in the sequence?

$$
a_{10}=1536
$$

$$
a_{10}=3(2)^{9}
$$

Use an appropriate formula to solve each of the following problems.
17. A particular job has a starting salary of $\$ 15,000$ per year with a guaranteed raise of $\$ 340$ per year. What will be the salary for the $15^{\text {th }}$ year?

The salary will be $\$ 19,760$.
$\begin{array}{lll}\mathbf{a}_{1}=\mathbf{1 5 , 0 0 0} & \text { Arithmetic Sequence } & a_{15}=a_{1}+\mathbf{1 4 d} \\ \mathbf{a}_{2}=\mathbf{1 5 , 3 4 0} & \mathbf{a}_{1}=\mathbf{1 5 , 0 0 0} & \mathbf{a}_{15}=\mathbf{1 5 , 0 0 0}+(\mathbf{1 4 ) ( 3 4 0 )} \\ \mathbf{a}_{3}=\mathbf{1 5 , 6 8 0} & \mathbf{d}=\mathbf{3 4 0} & \mathbf{a}_{15}=\mathbf{1 9 , 7 6 0}\end{array}$
$a_{n}=$ the salary for the $n^{\text {th }}$ year.
19. A particular job has a starting salary of $\$ 15,000$ per year with a guaranteed $2 \%$ raise per year. What will be the salary for the $15^{\text {th }}$ year?

The salary will be about $\$ 19,792$.
$\mathrm{a}_{1}=15,000$
Geometric Sequence
$a_{2}=15,300 \quad a_{1}=15,000$
$\mathbf{a}_{15}=\mathbf{a}_{1}{ }^{14}$
$a_{3}=15,606 \quad r=1.02$
$a_{15}=15,000(1.02)^{14}$
$a_{n}=$ the salary for the $n^{\text {th }}$ year.
21. A ball is dropped from a height of 200 inches onto a concrete floor. On each bounce
the ball rebounds to $60 \%$ of its previous height. How high will the ball bounce after it hits
21. A ball is dropped from a height of 200 inches onto a concrete floor. On each bounce
the ball rebounds to $60 \%$ of its previous height. How high will the ball bounce after it hits the floor for the $\mathbf{8}^{\text {th }}$ time?

The height will be about 3.36 inches.
$a_{1}=120$
Geometric Sequence
$a_{15} \approx \$ 19,792.18$
$a_{2}=72 \quad a_{1}=120 \quad a_{8}=120(0.6)^{7}$
$a_{3}=43.2 \quad r=0.6$
$a_{8} \approx 3.36$
$a_{n}=$ the height the ball bounces up after it hits the floor for the $\mathbf{n}^{\text {th }}$ time.

