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? $a_n = 3n + 2$ $a_n = a_1 + (n - 1)d = 5 + (n - 1)3 = 5 + 3n - 3$ $a_{50} = 152$ 4. What is the 50th term in the sequence? $a_{50} = 152$

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

For a particular geometric sequence $a_1 = 3$ and r = 2. Answer the following questions.

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

- 11. What is the explicit formula for this sequence? $a_n = a_1(r)^{(n-1)} = 3(2)^{(n-1)}$
- 12. What is the 10th term in the sequence? $a_{10} = 3(2)^9$ $a_{10} = 3(2)^9$

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 15th year?

		<u>The salary will be \$19,760.</u>
$a_1 = 15,000$	Arithmetic Sequence	$a_{15} = a_1 + 14d$
$a_2 = 15,340$	a ₁ =15,000	$a_{15} = 15,000 + (14)(340)$
$a_3 = 15,680$	$\mathbf{d}=340$	$a_{15} = 19,760$
$a_n =$ the salary	for the n 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 15th year?

		<u>The salary will be about \$19,792.</u>
$a_1 = 15,000$	Geometric Sequence	$a_{15} = a_1 r^{14}$
$a_2 = 15,300$	a ₁ =15,000	$a_{15} = 15,000(1.02)^{14}$
$a_3 = 15,606$	r = 1.02	$a_{15} \approx \$19,792.18$
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 a_n = the salary for the nth 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 the floor for the 8th time?

		<u>The height will be about 3.36 inches.</u>
$a_1 = 120$	Geometric Sequence	$\mathbf{a}_8 = \mathbf{a}_1 \mathbf{r}^7$
a ₂ = 72	$a_1 = 120$	$a_8 = 120(0.6)^7$
$a_3 = 43.2$	r = 0.6	$a_8 \approx 3.36$

 a_n = the height the ball bounces up <u>after</u> it hits the floor for the nth time.