NAME_____

DATE_____

MATH 162 ONLINE QUIZ 1

In Exercises 1-12, determine whether the reasoning is an example of deductive or inductive reasoning.

1. If the mechanic says that it will take seven days to repair your car, then it will actually take ten days. The mechanic says, "I figure it'll take a week to fix it, ma'am." Then you can expect it to be ready ten days from now.

2. If you take your vitamins, you'll feel a lot better. You take your vitamins. Therefore, you'll feel a lot better.

3. It has rained every day for the past six days, and it is raining today as well. So it will also rain tomorrow.

4. Carrie's first three children were boys. If she has another baby, it will be a boy.

5. Finley had 85 baseball cards. His mom gave him 20 more for his birthday. Therefore, he now has 105 of them.

6. If the same number is subtracted from both sides of a true equation, the new equation is also true. I know that $9 + 18 = 27$. Therefore, $(9 + 18) - 13 = 27 - 13$.

7. If you build it, they will come. You build it. Therefore, they will come.

8. All men are mortal. Socrates is a man. Therefore, Socrates is mortal.

9. It is a fact that every student who ever attended Delgado University was accepted into graduate school. Because I am attending Delgado, I can expect to be accepted to graduate school, too.

10. For the past 97 years, a rare plant has bloomed in Cohimbia each summer, alternating between yellow and green flowers. Last summer, it bloomed with green flowers, so this summer it will bloom with yellow flowers.

11. In the sequence $5, 10, 15, 20, 6\text{-}5, \ldots$, the most probable next number is 30.

12. Lady Gaga's last four single releases have reached the Top Ten in the pop charts, so her current release will also reach the Top Ten

Determine the most probable next term in each of the following lists of numbers.

15. 6, 9, 12, 15, 18

17. 3, 12, 48, 192, 768

19. 3, 6, 9, 15, 24, 39

21. $1, 3, 5, 7, 9$
$2, 4, 6, \$, 10$

For each sequence, determine if it is an arithmetic *sequence, a* geometric *sequence, or* neither. *If it is either arithmetic or geometric, give the next term in the sequence.*

1. 6, 16, 26, 36, 46, ...

2. 8, 16, 24, 32, 40, ...

3. 5, 15, 45, 135, 405, ...

4. 2,12, 72,432,2592, ..

5. 1, 8, 27, 81, 243, ...

6. 2, 8, 18, 32, 50,..

7. 256, 128, 64, 32, 16, ...

8. 4096, 1024, 256, 64, 16, ..

9. 1, 3, 4, 7, 11, ...

10. 0, 1, 1, 2, 3, ...

11. 12, 14, 16, 18, 20, ...

12. 10, 50, 90, 130, 170, ...

Use the method of successive differences to determine th *next number in each sequence.*

13. 1, 4, 11, 22, 37, 56, ...

14. 3, 14, 31, 54, 83, 118, ...

15. 6, 20, 50, 102, 182, 296, ...

16. 1, 11, 35, 79, 149, 251, ...

In Exercises 23, 3 , several equations are given illustrating a suspected number pattern. Determine what the next equation would be, and verify that it is indeed a true statement.

23. $(1 \times 9) - 1 = 8$
$(21 \times 9) - 1 = 188$
$(321 \times 9Y - 1 = 2888$

24. $(1 \times 8) + 1 = 9$ (12
$\times 8) + 2 = 98$ (1Z3
$\times 8) + 3 = 987$

25. $999{,}999 \times 2 = 1{,}999{,}998$
$999{,}999 \times 3 = 2{,}999{,}997$

26. $101 \times 101 = 10{,}201$
$10{,}101 \times 10{,}101 = 102{,}030{,}201$

27. $3^2 - 1^2 = 2^3$
$62 - 32 = 33$
$10^2 - 6^2 = 4^3$
$15^2 - 10^2 = 5^3$

28. $1 = 1^2$
$1 + 2 + 1 = 2^2$
$1 + 2 + 3 + 2 + 1 = 3^2$
$1 + 2 + 3 + 4 + 3 + 2 + 1 = 4^2$

29. $2^2 - 1^2 = 2 + 1$
$3^2 - 2^2 = 3 + 2.$
$4^2 - 3^2 = 4 + 3$