**Pre-College Math S2 Review Packet Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Study Guide:* *Be sure you are able to do problems in each topic below*

**Unit 4:**

* Solve systems by graphing
* Solve systems by substitution
* Solve systems by elimination method (or addition method)
* Solve systems of inequalities by graphing a shaded region

**Unit 5:**

* Apply exponent rules to simplify expressions
* Use scientific notation
* Add & subtract polynomial expressions
* Multiply polynomial expressions (by distributing and by using FOIL)

**Unit 6:**

* Factor by using GCF
* Factor trinomials
* Factor using special patterns (difference of perfect squares pattern)

**Pascal’s Triangle:**

* Recognize patterns in Pascal’s triangle
* Find the sum of the elements in any row (using a formula)
* Write binomial expansions using Pascal’s triangle

**Fractals, Tesselations, Fibonacci Sequence, Golden Ratio:**

* Find any number in the Fibonacci Sequence (not just up to 13)
* Know and apply the Golden Ratio

**Sem2 Review #1**

**For #1 – 15: Simplify the expressions. Write the answers in exponential form using positive exponents.**

1) 52∙59  2) (-3)12(-3)4 3)

4) 5) 6)

7) 8) 9) -5-2

10) (-5)-2 11) 12)

13) 14) 15)

**For #16 – 18:** Simplify the expressions. Write your answers in descending powers of the variable. \

16)

17)

18)

19) Simplify:

**For #20 – 21:** Write each number in scientific notation.

20) 2,208,000,000

21) 0.00000000702

**For #22 – 23:** Write each number without exponents.

22) 3.08 x 105

23) 2.5 x 10-5

24) A successful company sold $62,000,000,000 of technology last year. Write this value in scientific notation.

25) Divide:

26) Multiply:

**For #27 – 33:** Find each product.

27) 28)

29) 30)

31) 32) Multiply:

33) Multiply:

**Sem2 Review #2**

**For #1 – 12:** Factor each polynomial. If it cannot be factored, write “prime.”

1) 2) 3)

4) 5) 6)

7) 8) 9)

10) 11) 12)

13) Simplify: 14) Simplify:

15) Simplify: 16) Simplify:

17) Simplify: 18) Simplify:

19) Factor

A. B. C. D.

20) Factor

A. B. C. D.

**Sem2 Review #3**

1. Is the ordered pair (-2, -9) a solution to the following system?

**For the following systems, solve by any method. (Graphs are provided if needed)**

**

2.

**3.

**4.

**For the following systems, solve by any method. (Graphs are provided if needed)**

****

5.

**** 6.

**For #7-9, solve the systems of inequalities by graphing**

**7.**

|  |  |
| --- | --- |
| 8**.**  **14 by 14 axes** | 9.  **14 by 14 axes** |

**10)** At an ice cream shop, one customer pays $7 for 2 sundaes and 2 milkshakes. A second customer pays $11 for 2 sundaes and 4 milkshakes. How much does one sundae cost? How much does one milkshake cost?

**11)** Jonathan, a second grader, counted the money in his piggy bank. He had only quarters and dimes. When he added up his money, he had 39 coins worth a total of $7.50. How many coins of each kind did he have?