

# Exam 2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Raw Score: \_\_\_\_\_ ; your grade: \_\_\_\_\_ / \_\_\_\_\_ = \_\_\_\_\_% Circle one: MWF MW TR

**The rules:** All problems are worth 2 points unless otherwise noted. Use Pencil. **Show all work NEATLY on this exam** for full credit, **simplify/reduce** and **box all your answers**. You may only use scratch paper I provide, but none of the work on the scratch paper will be graded, you must neatly copy the pertinent work onto your exam. No notes or other materials are allowed other than Napier’s bones if you have them, no electronic devices of any type, please turn your phone off. You may not talk, text, call or consult with anyone/thing during the exam. If you have any questions please do not hesitate to come to the front and ask me. If you read these instructions draw your best llama here: (even if it’s a bloated looking cow with pointy ears)

All problems are worth 2 pts each unless otherwise noted

True or False. **Circle whether the statement is true or false for one point and justify why for the rest of the points.**

1. T/F  $(3+4)+5=3+(4+5)$  is an example of the commutative property of addition.
2. T/F  $2 \cdot 1 = 2$  is an example of the property of the multiplicative identity.
3. T/F The associative property of addition states that the way you order your addition does not affect the sum.
4. T/F Every integer is in the set of whole numbers.
5. T/F A positive and a negative number always make a negative number.
6. T/F  $(5 - 3)^2 = 5^2 - 3^2$
7. T/F  $-4^2 = 16$
8. T/F  $(-4)^2 = 16$

9. (4pts) Identify the base and exponent of:

a)  $-4^2$

b)  $(-4)^2$

|        |            |
|--------|------------|
| Base = | Exponent = |
| Base = | Exponent = |

10. If you were a llama, what noise would you make (there is no wrong answer)?

11. State the definition of the distributive property.

12. State the definition of the absolute value of a number.

13. Find the 19<sup>th</sup> prime number. (I provided you a sieve to the right)

|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
|    | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20  |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30  |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

14. Subtraction can be thought of as adding \_\_\_\_\_.

15. Fill in the correct number in the parentheses to make this a true equality.

$$5 - (-10) = 5 + ( \quad )$$

16. Fill in the missing ones digit so that the number is divisible by 6: 777773\_\_\_\_\_

17. Circle which of the following numbers are divisible by 4 561313, 876542, 99992, 555552, 625312

18. Find 2 numbers greater than 2000 which are divisible by 9 \_\_\_\_\_ & \_\_\_\_\_

19. Find 2 numbers greater than 2000 which are divisible by 8 \_\_\_\_\_ & \_\_\_\_\_

20. Find 2 numbers greater than 2000 which are divisible by 5 \_\_\_\_\_ & \_\_\_\_\_

21. (3pts) Insert in each box with: < (less than) or > (greater than) or = (equal to) so the resulting inequality is a true statement.

a)  $-5$    $-13$       b)  $126$    $-127$       c)  $-(-219)$    $|-219|$

22. State the order of operations as discussed in class.

23. Prove/show why  $4 \cdot -3$  is negative twelve. (hint: you can use a number line walk or repeated addition)

Find the prime factorization of the following and write your answer in **exponential form** on the line provided.

24. 72

25. 180

26. 675

72 = \_\_\_\_\_

180 = \_\_\_\_\_

675 = \_\_\_\_\_

Find the Least Common Multiple of the pairs of numbers:

27. LCM(8,14) = \_\_\_\_\_

28. LCM(12,15) = \_\_\_\_\_

29. LCM(4,9,15) = \_\_\_\_\_

Evaluate each expression.

SHOW YOUR WORK BELOW THE PROBLEM, BUT PUT YOUR FINAL ANSWER ON THE BLANK PROVIDED.

30.  $35 \div 5 \cdot 7 = \underline{\hspace{2cm}}$

41.  $(10 + 2)^2 = \underline{\hspace{2cm}}$

31.  $-3(-4)(-11) = \underline{\hspace{2cm}}$

42.  $\frac{1-3}{3-1} = \underline{\hspace{2cm}}$

32.  $-9|-12| = \underline{\hspace{2cm}}$

43.  $(-1)^{2987}(0)^2(-12)^{25} - (-1)^{142}(111) = \underline{\hspace{2cm}}$

33.  $53 - 15(12) = \underline{\hspace{2cm}}$

44.  $\frac{-25 \cdot 21 \cdot 12}{-35 \cdot 12} = \underline{\hspace{2cm}}$

34.  $-13 - 25 - (13)3 = \underline{\hspace{2cm}}$

45.  $\frac{(4^3-2)+7}{-5(2+4)-7} = \underline{\hspace{2cm}}$

35.  $|-7 - 7(8)| = \underline{\hspace{2cm}}$

36.  $-\left|-\left|-\left|-\left|36 - 8\right|\right|\right|\right| = \underline{\hspace{2cm}}$

46.  $\frac{81-9^2}{-3-(-3)} = \underline{\hspace{2cm}}$

37.  $\frac{0}{-9} = \underline{\hspace{2cm}}$

47.  $5 - 3 + 2 = \underline{\hspace{2cm}}$

38.  $\frac{-7}{0} = \underline{\hspace{2cm}}$

48.  $8 + \frac{1}{16} - 2^2 \div 64 - 4^3 + 2 \div 4 = \underline{\hspace{2cm}}$

39.  $-8^2 = \underline{\hspace{2cm}}$

49.  $(-1)^{2987}(5) - (-1)^{282}(15) = \underline{\hspace{2cm}}$

40.  $(-8)^2 = \underline{\hspace{2cm}}$

Alternate Base Problems:

50. Express the number of objects in the picture as a number in base 3.



= \_\_\_\_\_ (in base 3)

51. Express the base three number 210 in base ten. Ans: \_\_\_\_\_

52. Add these base three numbers in base three

|   |
|---|
| $\begin{array}{r} 111 \\ +22 \\ \hline \end{array}$ |
|---|

53. Multiply these base three numbers in base three

|   |
|---|
| $\begin{array}{r} 111 \\ \times 22 \\ \hline \end{array}$ |
|---|

54. Add these base five numbers in base five

|   |
|---|
| $\begin{array}{r} 44 \\ +4 \\ \hline \end{array}$ |
|---|

Extra Credit: Only correct answers with correct solutions will be given any extra points.

EC 1: The Fibonacci sequence is a known sequence of numbers that can often be found in nature. The first eight numbers in the sequence are:

1,1,2,3,5,8,13,21, ...

The next two numbers are \_\_\_\_\_ & \_\_\_\_\_

EC 2: Find the sum of the first 11 whole numbers. Ans: \_\_\_\_\_

EC 3: Fill in the missing numbers in the boxes so that the fraction will equal the given decimal:

0.222222... =  $\frac{\quad}{\quad}$