

Exam 3

Name: _____

Date: _____

Raw Score: _____ so your grade: _____ / _____ = _____%

Circle one: MWF MW TR

The rules: Use Pencil. **Show all work NEATLY on this exam** for full credit, **simplify/reduce** and **place your answers in the spaces/boxes provided**. You may only use scratch paper I provide, but none of the work on the scratch paper will be graded so you must neatly copy the pertinent work onto your exam. No notes or other materials are allowed, 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. You may laugh, but only if it's because you are so prepared for this exam because of all the in class time you used wisely paid off and you feel sorry for the other suckers who get up at 6 am to show up to class and waste their time talking. You may cry, but only outside and because you realize you should have not wasted your time talking about stupid things in class when you should have been working on your studies and trying to learn. 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 picture of me here: (even if it's a devilishly handsome lad with ginormous muscles)

Alternate bases: (12 pts)

Add these base three numbers in base three

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

Multiply these base five numbers in base five

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

Add these base eight numbers in base eight

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

How many digits are in a base eight number system? _____ List them all here: _____

How many digits are in a base 16 number system? _____

1. Identify the base and exponent of:

a) $-\frac{4^2}{5}$

b) $(-\frac{4}{5})^2$

Base =

Exponent =

Base =

Exponent =

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

All problems and parts of problems are worth 3 pts each unless otherwise noted

1) Multiply. Write answers in lowest terms and as mixed numbers or whole numbers where possible.

a) $\frac{56}{72} \cdot \frac{3}{5}$

b) $\frac{4}{7} \cdot \frac{21}{8} \cdot \frac{9}{21} \cdot \frac{28}{3}$

c) $38 \cdot \frac{22}{19}$

d) $\frac{5}{12} \cdot \frac{24}{11} \cdot 55$

1a)

1b)

1c)

1d)

Simplify. That is, perform the indicated operation(s). Write answers in lowest terms and as mixed numbers (or whole numbers) where possible.

2) $\frac{8}{3/4}$

3) $\frac{6}{7} \div \frac{14}{10}$

4) $\frac{5}{34} \cdot \frac{25}{17}$

2)

3)

4)

5) $\frac{3}{7} \div \frac{4}{7} \cdot \frac{16}{9}$

6) $\frac{1}{41} \cdot \frac{41}{64} \cdot \frac{8}{3}$

7) $\frac{68}{47} + \frac{41}{47}$

5)

6)

7)

$$8) \quad \frac{1}{8} + \frac{1}{12} + \frac{5}{6}$$

$$9) \quad \frac{11}{12} - \frac{4}{9} - \frac{1}{18}$$

8)

9)

Simplify. That is, perform the indicated operation(s). Write answers in lowest terms and as mixed numbers (or whole numbers) where possible.

$$10) \quad 102 - 2\frac{5}{6}$$

$$11) \quad 102\frac{5}{6} - 2$$

$$12) \quad 32\frac{3}{4} + 11\frac{3}{5} + 4\frac{1}{2}$$

10)

11)

12)

First estimate the answer. Then simplify to find the exact answer. Write answers as mixed numbers IF possible.

$$13) \quad 7\frac{1}{8} \cdot 3\frac{5}{6}$$

$$14) \quad 7\frac{1}{8} \div 3\frac{5}{6}$$

$$15) \quad \begin{array}{r} 42\frac{1}{3} \\ + 89\frac{1}{2} \\ \hline \end{array}$$

Exact

Exact

Exact

16) Find the least common multiple (LCM) of each set of numbers.

a) 4, 6, and 9

b) $2 \cdot 3^3 \cdot 7$ and $2 \cdot 3 \cdot 7^2$

Do NOT multiply your answer here. Leave as a product.

LCM=

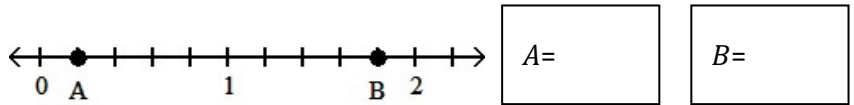
LCM=

17) Simplify the expression.

$-1^{1300} \cdot 3^3 =$

18) Identify the value of points A and B on the number line.

Express your answer as a correct fraction or mixed number as you like.



19) Write <, >, or = in each box to make a true statement.

$\frac{7}{18} \square \frac{1}{3}$

$\frac{4}{9} \square \frac{11}{24}$

$\left(\frac{1}{3}\right)^3 \square \left(\frac{1}{3}\right)^2$

$1\frac{4}{7} \square \frac{12}{7}$

Simplify each expression by using the order of operations. Show each step for credit!

20) $2\left(\frac{3}{8} + \frac{1}{6}\right) \cdot \frac{1}{2}$

21) $4\left(\frac{5}{4}\right)^2 - \left(\frac{3}{2}\right)^2$

22) $\frac{5}{8} \div \frac{1}{21} \cdot \frac{5}{21} + \frac{1}{4}$

20)

21)

22)

Simplify and then reduce your answer if possible.

23) $3 - 2 \cdot \frac{2}{5}$

24) $2\frac{2}{3} - \frac{2}{3}$

25) $\frac{2}{3} \cdot 3 - 2$

23)

24)

25)

26) A biology experiment required pouring $\frac{3}{8}$ gallon of a nutrient solution and $\frac{3}{5}$ gallon of pure water into a tank. At the end of the experiment, $\frac{1}{6}$ gallon of fluid had evaporated. How much fluid remained in the tank?

gallons

27) If you needed to fill a 5 gallon bucket with water, and the bucket would not fit under the faucet. Lets say you have to use a $\frac{1}{2}$ gallon milk carton to fill it, how many times would you need to fill the carton in order to fill the bucket?

Ans: _____

Now write a math expression that accurately describes how you could find the answer.

28) Divide. If the answer is undefined, abbreviate as "UND".

a) $1 \div 0 =$

b) $\frac{0}{0} =$

c) $0 \div 6 =$

d) $3 \overline{)0}$

e) $0 \overline{)3}$

Draw pictures that accurately describe the fractions and problems below. I am looking for drawings that reflect the meaning of each problem and how this picture leads shows what the correct answer is, just as we practiced in class. You will be graded on your ability to accurately convey this meaning in your pictures.

29) $\frac{7}{9}$

32) $\frac{1}{2} \cdot \frac{1}{3}$

30) $\frac{1}{5} \cdot 15$

33) $10 \div \frac{1}{2}$

31) $\frac{1}{2} + \frac{1}{3}$

34) $3\frac{1}{2} - 2\frac{1}{4}$

35)

What is a prime number? _____

Fill in the box: A prime number has exactly factors.

36) Find the

1st prime number: _____

20th prime number: _____

	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

37) If you were playing “factor me out” on the number sheet provided above, what would be the single best opening move you could make (what would be the best number to pick first)? _____

38) Find 2 numbers greater than 500 which are divisible by 6 _____ & _____

39) Find 2 numbers greater than 500 which are divisible by 9 _____ & _____

40) Find 2 numbers greater than 500 which are divisible by 8 _____ & _____

41) Find 2 numbers greater than 500 which are divisible by 5 _____ & _____

42) If you were playing “factor me out” on the number sheet provided above, what would be the **second best opening move** you could make (what is the **second best** number you could pick first)? _____

43) Fill in the blank with a **single digit** so that the number is divisible by 4. 854268741245 _____

44) Fill in the blank with a **single digit** so that the number is divisible by 5. 56842101 _____

45) Fill in the blank with a **single digit** so that the number is divisible by 6. 3939397 _____

46) Circle only the numbers which are divisible by 8. 46782134134, 54547512026, 564785215842