

Final Exam Review Notes

Exponents: multiply the number times itself

$$4^3 = 4 \cdot 4 \cdot 4 = 64$$

- When the exponent is 0 (24^0) your answer will **ALWAYS** be 1
- When your exponent is 1 (16^1) Your answer will be your base number – in this case 16

BPEMDAS – order of operations

1. Brackets []
2. Parentheses ()
3. Exponents 5^2
4. Multiplication/Division – which ever comes first in the problem
5. Addition/Subtraction – which ever comes first in the problem

$$2(5 + 8) - (7 + 8)$$

$$2(13) - (15)$$

$$26 - 15$$

$$11$$

Fractions:

Least Common Multiple (LCM) – finding a multiple that both the numerator and the denominator can multiply into – this is how you find your **common denominator**.

$$7: 7, 14, 21, 28, 35, 42, 49, 56, 63$$

$$3: 3, 6, 9, 12, 15, 18, 21, 24, 27$$

The LCM is – 21

Greatest Common Factor (GCF) – finding a factor that can be divided out of both the numerator or the denominator – use this when you are **REDUCING**.

$$\frac{6}{24}$$

$$6: 1, 6, 2, 3$$

$$24: 1, 24, 2, 12, 3, 8, 4, 6$$

$$\text{GCF}=6$$

$$\text{Reduce: } \frac{6 \div 6}{24 \div 6} = \frac{1}{4}$$

Addition and subtraction – denominators **MUST** be the same – you **CANNOT** add or subtract them **UNLESS** the denominators are the same.

Common Denominator – just add/or subtract $\frac{3}{7} + \frac{2}{7} = \frac{5}{7}$

Uncommon Denominator – find an equivalent denominator (common multiple) **FIRST**, then add or subtract: $\frac{9}{10} - \frac{1}{5}$ = common multiple will be 10, convert your fraction $\frac{1}{5}$ by multiplying 2 to both the numerator and the denominator.

$$\frac{9}{10} - \frac{1 \cdot 2}{5 \cdot 2} =$$
$$\frac{9}{10} - \frac{2}{10} = \frac{7}{10}$$

Multiplication: multiply across

$$\frac{3}{4} \cdot \frac{4}{7} = \frac{12}{28} = \frac{3}{7}$$

Multiplication with whole numbers:

$$6 \cdot \frac{1}{2}$$

1. Make the whole number into a fraction by putting a 1 under it, then multiply.

Divide: take your second fraction and flip it (reciprocal) – then multiply across

$$\frac{1}{2} \div \frac{4}{5} = \frac{1}{2} \cdot \frac{5}{4} = \frac{5}{8}$$

Mixed Numbers: Whole number with a fraction

$$5\frac{1}{2}$$

Improper Fraction: numerator is larger than the denominator

$$\frac{11}{2}$$

Mixed number to Improper Fraction:

1. Multiply the denominator with the whole number,
2. then add the numerator to the number you got after you multiplied.
3. Your denominator stays the same.

$$5\frac{1}{2}$$

1. First step multiply $2 \cdot 5 = 10$
2. Second step – add $10 + 1$

$$\frac{11}{2}$$

Improper Fraction to Mixed number:

1. Divide the numerator with the denominator – on a calculator you will get a whole number with a decimal.
2. Take your whole number and multiply it with your denominator
3. Subtract that answer with to your numerator to get your new numerator.

$$\frac{25}{3}$$

1. First step – divide the numerator with the denominator: $25 \div 3 = 8.33333333$
2. Second Step – take the whole number – and multiply it with the denominator - $8 \cdot 3 = 24$
3. Third step – subtract that answer from the numerator, that answer becomes the new numerator your denominator stays the same. - $25 - 24 = 1$
4. Answer: $8\frac{1}{3}$

Expressions and Equations

Variable: letter replaces a number

Expressions: problems with no = sign $5 - t + 8x$

Equations – problems where a number is replaced by a variable $y + 5 = 9$

When working with equations or expressions with variable, only like terms can be combined.

$7y + 7 - 2y - 6$ (Combine the y terms and the numbers without a variable)

$$5y + 1$$

$$7x + 5x - 2y$$

$$12x - 2y$$

Ratios: comparing two numbers or quantities by using division

1:6, 1 to 6; $\frac{1}{6}$