Review for Final Exam Form B

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1. Order of operations!!

$$18 + 3 \times 2 \div 6$$

According to the order of operations, since there are NO parentheses and NO exponents here, the first step is to Multiply or Divide from Left to Right. This means to multiply 3 times 2. [NOTE: DO NOT try to ADD first!! That would be WRONG, but it would give you the WRONG multiple choice answer of c) 7!!]

$$18 + 6 \div 6$$

The next step is to DIVIDE $18 + 6 \div 6$

[NOTE: DO NOT try to ADD $18 + 6$!! That would be WRONG, but it would give you one of the WRONG multiple choice answer of d) 4!!]

$$18 + 1$$

$$19$$

The correct answer is A.

2. Order of operations!!

$$(6 - 2)^2 \div 4$$

According to the order of operations, the first step is to do what is within the parentheses!

$$4^2 \div 4$$

The second step is to do the exponents:

$$16 \div 4$$

$$4$$

The correct answer is B.

3. **Absolute Value!!** $|15|+|-3|-|17|$

Absolute value means to take the magnitude of the number. The absolute value of a positive number is that positive number. The absolute value of a negative number would be the POSITIVE number associated with it. In the problem below,

$|15| = 15$, $|-3| = 3$, and $|17| = 17$.

$$|15|+|-3|-|17|$$
$$15 + 3 - 17$$

Finally, add and subtract, from left to right!

$$18 - 17$$
$$1$$

The correct answer is B.

6. $3(5a+1) = 2(a-4)$

Multiply out the parentheses.

$$15a+3 = 2a-8$$

To get all the "a" terms on the left side, you must subtract 2a from each side.

$$15a+3 = 2a-8$$
$$-2a \quad -2a$$
$$13a+3 = -8$$

In order to get all the number terms on the right side, subtract 3 from each side.

$$13a+3 = -8$$
$$-3 \quad -3$$
$$13a = -11$$

Finally, divide both sides by 13.

$$\frac{13a}{13} = -\frac{11}{13}$$
$$a = -\frac{11}{13}$$

The correct answer is D.

8. Solve for W: $P = 2L + 2W$

Subtract 2L from each side of the equation to get the W term alone on the right.

$$\begin{array}{r} P = 2L + 2W \\ \underline{-2L \quad -2L} \\ P - 2L = 2W \end{array}$$

Now, to solve for W, you must undo multiplication by 2. Divide both sides by 2.

$$\frac{P - 2L}{2} = \frac{2W}{2}$$

Don't divide out the 2L, since this is a term. Never divide out terms!!

$$\frac{P - 2L}{2} = \frac{2W}{2}$$

$$\frac{P - 2L}{2} = W$$

The correct answer is A.

9. $2x + 1 < 3x + 4$

Get the x terms on the left side by subtracting 3x from each side.

$$\begin{array}{r} 2x + 1 < 3x + 4 \\ \underline{-3x \quad -3x} \\ -x + 1 < 4 \end{array}$$

Get the number terms on the right side by subtracting 1 from each side.

$$\begin{array}{r} -x + 1 < 4 \\ \underline{\quad -1 \quad -1} \\ -x < 3 \end{array}$$

Finally, divide both sides by -1 (don't forget to REVERSE the inequality sign!)

$$\frac{-x}{-1} < \frac{3}{-1}$$

$$x > -3$$

The correct answer is D.

31. **Simplify:** $\dfrac{x-2}{x^2-4}$

Before you begin, remember that you NEVER divide out terms. The first step must be to factor, in this case, the denominator.

$$\frac{x-2}{(x-2)(x+2)}$$

Now divide out the factors of (x-2) in the numerator and denominator:

$$\frac{\cancel{x-2}}{\cancel{(x-2)}(x+2)}$$

Since no factors remain in the numerator, remember that there will always be a factor of 1 left. You MUST write the fraction with a numerator of 1.

$$\frac{1}{(x+2)} \text{ or } \frac{1}{x+2}$$

NOTE: Forgetting the numerator is a MAJOR error that is frequently made by students! Every math teacher in the country knows this, and on a multiple choice test, the incorrect answer of $x+2$ will ALWAYS be one of the WRONG choices. Be advised! DON'T FALL FOR IT!!

The correct answer is B.

32. Simplify: $\dfrac{2x^2+x-15}{4x^2-16x+15}$

As in the previous problem, before you begin, remember that you NEVER divide out terms. The first step must be to factor, in this case, the numerator and denominator. This factoring is harder than the first problem, so you might need to refer to Section 2.06 for additional explanation and examples.

The First times First begins like this:

$$\frac{(2x\quad)(x\quad)}{(2x\quad)(2x\quad)}$$

The Last times Last is probably "3 times 5" or "5 times 3"in both the numerator and denominator. Order will NOT make any difference in the denominator. (Why?) Use trial and error:

$$\frac{(2x\quad 5)(x\quad 3)}{(2x\quad 5)(2x\quad 3)} \text{ or } \frac{(2x\quad 3)(x\quad 5)}{(2x\quad 5)(2x\quad 3)}$$

The middle term in the numerator must subtract to give you "+1x". In the numerator, the signs will be "opposite". In the denominator, both sides are negative!

$$\frac{(2x-5)(x+3)}{(2x-5)(2x-3)}$$

Now divide out the factors of (2x-5) in the numerator and denominator:

$$\frac{\cancel{(2x-5)}(x+3)}{\cancel{(2x-5)}(2x-3)}$$

The final answer is: $\dfrac{(x+3)}{(2x-3)}$ or $\dfrac{x+3}{2x-3}$.

The correct answer is A.

34. Solve: $3a^2 + 14a + 8 = 0$

The problem here is to solve a Quadratic Equation by factoring. However, the REAL problem for most students is the factoring, since in this case, it requires what I call "ADVANCED TRINOMIAL FACTORING." You may need more help with this factoring than solving a Quadratic Equation!!

$$3a^2 + 14a + 8 = 0$$

Start with F = $3a^2$: $(3a \quad)(a \quad) = 0$

Next, look at the L = 8: $(3a \quad 4)(a \quad 2) = 0$ or $(3a \quad 2)(a \quad 4) = 0$

The signs are both positive: $(3a + 4)(a + 2) = 0$ or $(3a + 2)(a + 4) = 0$

You need to find OI term that adds up to 14a: $(3a + 2)(a + 4) = 0$

Now, set each factor equal to zero:

$(3a + 2) = 0$ or $(a + 4) = 0$

$3a = -2$ or $a = -4$

$\frac{3a}{3} = \frac{-2}{3}$

$a = \frac{-2}{3}$ or $a = -4$

The correct answer is A.

39. **Find the y intercept:** $x+3y=7$.

The y intercept is ALWAYS the point where the graph crosses the y axis, and at this point, x=0. So, let x=0, and solve for y.

$$x+3y=7$$

$$0+3y=7$$

$$3y=7$$

$$y=\frac{7}{3}$$

Therefore the correct answer is A. $\left(0,\ \frac{7}{3}\right)$

40. **Find the graph that matches** $y=3x+2$

Solution: See the graph on the bottom of page 314!!

The correct answer is D.