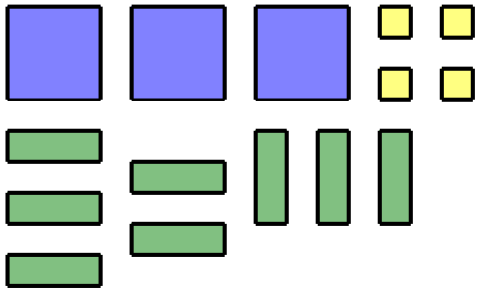
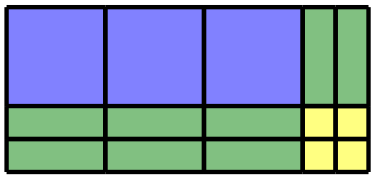
Mat 103 Quiz 3 Practice

Name: _____

Please show all your work to ensure full credit.

1. Fill in the blanks below…
   a. _____ is a multiple of 40.
   b. _____ is a factor of 40.
   c. _____ is a multiple of $x + 1$
   d. _____ is a multiple of x
   e. _____ is a factor of $x(x + 1)$
   f. Another term for common denominator is _____
2. List two multiples of 20.
3. Write 20 as product of prime factors.
4. List two multiples of $2a^2b^5$.
5. Of the two mathematical expressions listed below, which one is a multiple, and which one is a factor of $14(2x - 3)$
   a. $28(x + 1)(2x - 3)$
   b. $7(2x - 3)$
6. Rewrite the polynomials below as at product by factoring out the greatest common factor.
   a. $(x - 3)(2x - 1) + (x - 3)(x + 2)$
   b. $(2x - 5)(3x + 1) - (3x + 1)(x - 1)$
   c. $(a - b)(2a + b) - (b - a)(3a - 4b)$
   d. $3x^4(x + 1)^4 - 15x^5(x + 1)^3$
7. Factor by grouping each polynomial below.
   a. $ab - ac - bc + b^2$
   b. $-3t^2 + 5t - 6t + 10$

8. Use algebra tiles to factor the examples in the questions below. *Make sure you draw the rectangle representing your final answer. Use the sample problem to guide your answer.*

Polynomial	**Algebra Tiles**	**Rearranged tiles**
a. $3x^2 + 8x + 4$		 $3x^2 + 8x + 4 = (3x + 2)(x + 2)$
b. $2x^2 + 7x + 3$		

9. Factor by grouping each polynomial below.

$5s^2 - 3s + 10s - 6$

10. Factor the following polynomials when possible.

a. $16a^2 - 9b^2$

b. $16a^2 + 9b^2$

c. $8a^2 - 50b^2$

d. $8a^3 - 27b^3$

e. $8a^3 + 27b^3$

f. $6x^2 + 11x + 3$

g. $5x^2 - 14x - 3$

11. Perform the following operations and then simplify your answer so that the final answer is in the lowest terms.

h. $\frac{2x-5}{(x-3)(2x-1)} - \frac{3+x}{(2x-1)(3x+1)}$

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i. $\frac{3x+2}{(2x+3)(3x+1)} + \frac{4-x}{(2x+3)(3x-1)}$

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j. $\dfrac{3x+2}{(2x+3)(3x+1)} - \dfrac{4-x}{(2x+3)(3x-1)}$

k. $\dfrac{16a^2-9b^2}{8a^2+10ab+3b^2} \div \dfrac{-6a^2+13ab-6b^2}{6a^2-ab-2b^2}$

l. $\dfrac{x^2-1}{x^3-1} \times \dfrac{x^2+x+1}{3x^2+4x+1}$