Directions: NO CALCULATOR. Write neatly and show your work and steps. Answers without appropriate work shown will receive NO credit. Attach your neat and organized solution sheets behind this cover sheet. Make sure each solution is properly labeled. **Be sure to write your answer in simplest form.**

1. Use the rules for order of operations to simplify as much as possible. Show each step in the simplification.

(a)
$$\frac{(3-5)+(4)(-3)}{(-3)(2)+(-11+5)}$$
 (b) $\frac{(2-7)+(4)(-2)}{(-7)(2)+(-9+8)}$

2. Perform the indicated operations and write your answers in lowest terms.

(a)	$12 x 2 \frac{2}{3}$	(b) $\frac{3}{8} - 1\frac{1}{5}$	(c) $\left(\frac{5}{6}\right) \div \left(\frac{15}{24}\right)$
(d)	$\left(2\frac{5}{8}\right) \div \left(\frac{7}{24}\right)$	(e) $5\frac{5}{6}-13\frac{1}{4}$	(f) $13\frac{3}{4} + 25\frac{5}{6}$

- 3. Perform the indicated operations.
 - (a) 2.03 + 4.18 0.976 (b) $7.5 \div 0.25$ (c) 2.07 + 7.28 0.897 (d) (3.51)(0.027)
- 4. Evaluate and simplify to lowest terms:

(a)
$$\frac{5x-2y}{2xy}$$
 for x = 2 and y = -3 (b) $\frac{3x-y^2}{2xy}$ for x = 2 and y = -3

- 5. If coffee sells for \$6.50 per pound, much will 7.2 pounds of coffee cost?
- 6. Simplify the following by combining like terms.

(a)
$$2(5x-3)-3(4x-5)$$
 (b) $3x-(6-5x)+3$ (c) $-3(2x-5)-2(2x-5)$ (d) $4x-(8-4x)$

- 7. Simplify completely.
 - (a) $5-(-3)^2$ (b) -3^4 (c) $17-5^2$ (d) $(-3)^4$ (e) $(9-3)^2$
- 8. Solve.
 - (a) 7b-2=-9 (b) 7(2x-5)=2x-11 (c) 3y-8=-11 (d) 2x+6=5(3x-4)
- 9. If the ratio of cups of raisins to cups of peanuts in a snack mix is 3 to 8, and the snack mix calls for 12 cups of raisins, how many cups of peanuts are needed?
- 10. How much will a \$56 pair of shoes cost if the sales tax is 6%? How much would the shoes cost if there were a 20% discount taken before the tax was added?
- 11. a(b + c) = ab + ac is an example of the _____ property of numbers.

ANSWERS for Mesa College - Math 38 Challenge Exam SAMPLES

Remember: No calculators of any form; and all answers should be completely simplified.

1a) $\frac{7}{6}$ or $1\frac{1}{6}$	1b) $\frac{13}{15}$	-						
2a) 32	2b) $\frac{-33}{40}$	2c) $1\frac{1}{3}$ 2d) 9	2e) –	$-7\frac{5}{12}$	2f) $39\frac{7}{12}$			
3a) 5.234	3b) 30		3c) 8.453	3	d) 0.09477			
4a) $\frac{-4}{3}$ or -1	$\frac{1}{3}$	4b) $\frac{1}{4}$						
5) 7.2 lbs of coffee will cost \$46.80.								
6a) 9–2x	6b) 8x	- 3	6c) 25 - 10x		6d) 8x - 8			
7a) -4	7b) -817c) -8	7d) 81	7e) 3	6				
8a) b=-1	8b) x = 2	8c) y = -1						
9) 32 cups of peanuts are needed.								
10a) shoes + tax = \$59.36 10b) shoes - discount + tax = \$47.49.								

11. This is an example of the "Distributive Property"

Don't forget to also study the Associative Properties (of addition and multiplication); the Commutative Properties (or addition and multiplication); the concepts of 'opposites' and reciprocals.