MATH 211 COURSE SCORES, WINTER 2010

Scores for: _____

ATTENDANCE AND VOLUNTEERING RECORD ***mark the days you attend and mark V on the days you volunteer**									
Week 1		**Week 2**		**Week 3**		**Week 4**		**Week 5**	
M		M		*MLK Day*		M		M	
T		T		T		T		T	
W		W		W		W		W	
F		*Cancel*		F		F		F	
Week 6		**Week 7**		**Week 8**		**Week 9**		**Week 10**	
M		M		M		M		M	
T		T		T		T		T	
W		W		W		W		W	
F		F		F		F		F	

GRADED HOMEWORK—50%							
Email		**General**		2.2.2		3.4.2	
Online 1		1.1.1		2.3.1		3.4.3	
Online 2		1.1.2		2.3.2		4.1.1	
Online 3		1.2.1		3.1.1		4.1.2	
Online 4		1.2.2		3.1.2		4.2.1	
Book R		1.3.1		3.2.1		4.2.2	
PowWM		1.3.2		3.2.2		5.1.1	
POW 1		2.1.1		3.3.1		5.1.2	
POW 2		2.1.2		3.3.2		EC1	
POW 3		Sets		3.3.3		EC2	
POW 4		2.2.1		3.4.1			

TOTAL	**/_____**	**PERCENT**	**%**	**% X 50**	**/50%**

EXAMS, TOTALS and PROJECTED COURSE GRADE					
EX 1-10		HW-50		**PROJECTED COURSE GRADE**	
EX 2-10		Total	/80	**Desired Range**	
EX 3-10		Pre-final %	Total / 80 = _____	**Needed on Final (20)**	
EC				**Needed % on Final**	

COURSE GRADE SCORE RANGES							
93 –100	A	87 – 89	B+	77 – 79	C+	60 – 69	D
90 – 92	A-	83 – 86	B	73 – 76	C	Below 60	F
		80 – 82	B-	70 – 72	C-		

POLYA'S FOUR STEP PROBLEM SOLVING PROCESS
Understand
Devise a Plan
Carry out Plan
Look Back
PROBLEM SOLVING STRATEGIES (exmples)
Making a Drawing
Guessing and Checking
Making a Table
Using a Model
Working Backwards

Patterns in Nature / Number Patterns
Pascal's Triangle
Arithmetic Sequences
Examples D & E
Common Differences
Geometric Sequences
Example F
Common Ratio
Triangular Numbers
Example G
Finite Differences
Examples H & I

Variable
Algebraic Expressions & Evaluating Expressions
Discussion & Example A
Exercise #1
Equations
Solving Equations
Properties of Equalities

Solving Inequalities
Properties of Inequalities

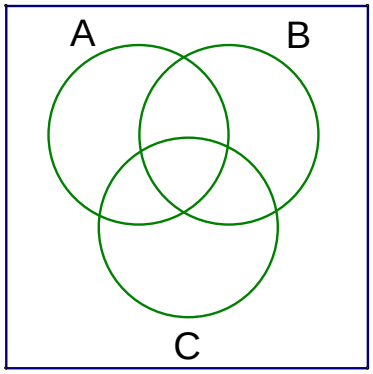
Set (Describe Set in Words)
Set Elements (List Elements in Set)
Venn Diagrams
Disjoint Sets
Empty Sets
Subset
Proper Subset
Not a Subset

Equal Sets, Not-Equal Sets
1:1 Correspondence, Equivalent Sets
Finite Sets, Infinite Sets
SET OPERATIONS
Intersection (and)
Union (or)
Complement (not A, ~A, A')
Universal Set

Math 211 Sets Practice Worksheet

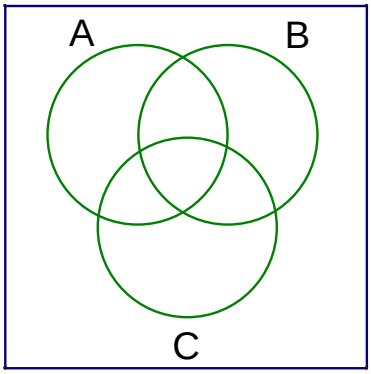
1. Shade the region of the Venn diagram indicated by the following sets.

(i)



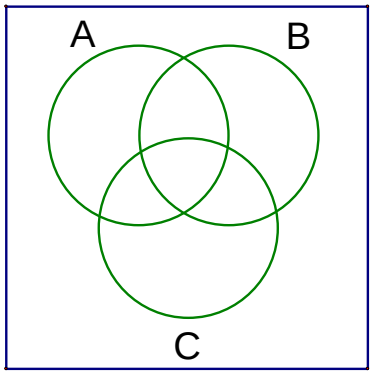
Shade: $(A' \cup B) \cap C$

(ii)



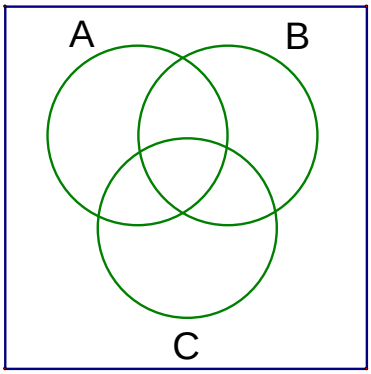
$(A \cap B)' \cup C$

(iii)



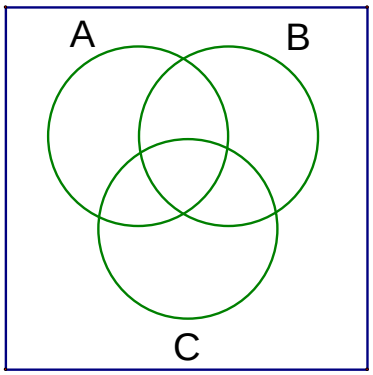
Shade: $A \cup (C' \cup B)$

(iv)



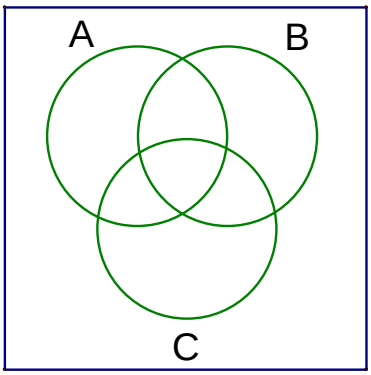
$(A \cap B') \cap C$

(v)



Shade: $A' \cup (C' \cap B)$

(vi)



$(A \cap B')' \cup C$

Math 211 Sets Practice Worksheet

2. List the elements in each of the following sets.

Let U = {0,1,2,3,4,5,6,7,8,9,10}; A = {0,1,2,3,5,8}; B={0,2,4,6}; C = {1,3,5,7}

i) $A \cup B$ =

ii) B' =

iii) $A \cap B'$ =

iv) $B \cup C$ =

v) $B \cup C'$ =

vi) $A' \cup C$ =

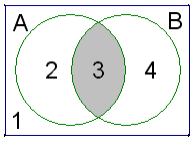
vii) $(A' \cap C) \cup B$ =

viii) $(A \cup B)'$ =

ix) $(A \cup C) \cap B$ =

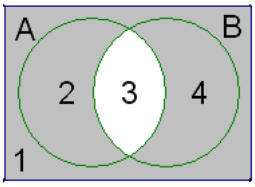
x) Write down a subset of A =

3. Refer to the diagram to answer the questions below. What set notation would you use to represent the following regions?

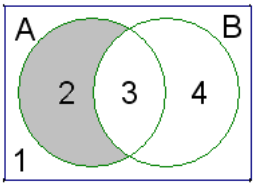


Example: Region 3 could be written as $A \cup B$

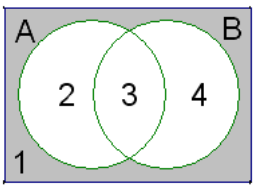
i) Regions 1, 2 and 4 are all shaded



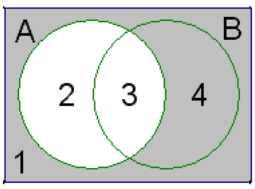
ii) Only Region 2 is shaded.



iii) Only Region 1 is shaded.



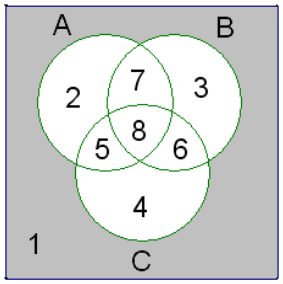
iv) Regions 1 and 4 are shaded.



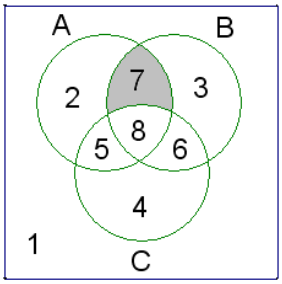
Math 211 Sets Practice Worksheet

4. Refer to the diagram to answer the questions below.

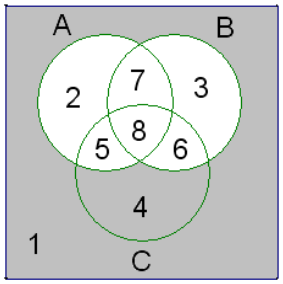
i) Only Region 1 is shaded.



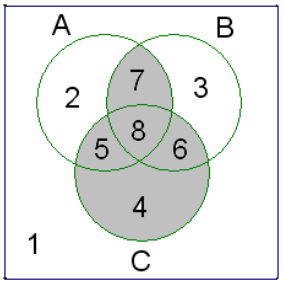
ii) Only Region 7 is shaded.



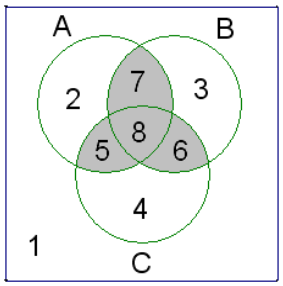
iii) Regions 1 and 4 are shaded.



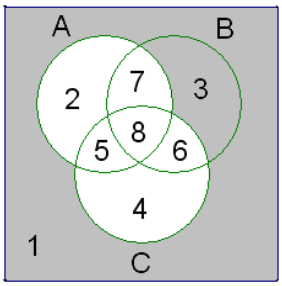
iv) Regions 4, 5, 6, 7 and 8 are shaded.



v) Regions 5, 6, 7 and 8 are shaded.



vi) Regions 1 and 3 are shaded.

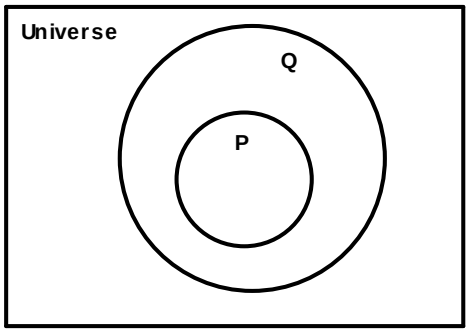


FUNCTIONS
What is a function?
Function Domain
Function Range
Function Examples and Non-Examples (Example C)
RECTANGULAR COORDINATES
Axes, Coordinates, Cartesian Coordinate System
LINEAR FUNCTIONS AND SLOPE
Slope

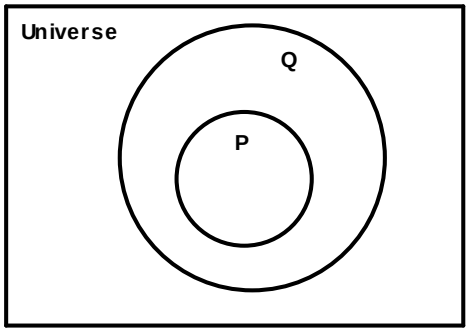
Y-Intercept
Rate (Examples E, F)
Linear Equations: Slope Intercept
NONLINEAR GRAPHS
Continuous Graph / Example H

§2.3 Deductive Reasoning and Conditional Statement Venn Diagram Guide

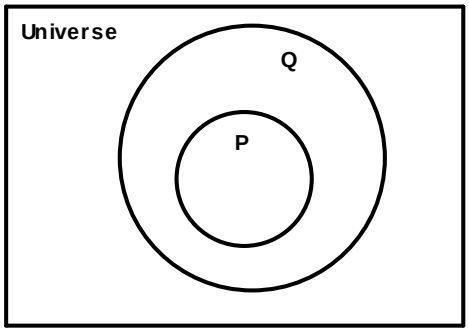
Conditional Statement: If P then Q



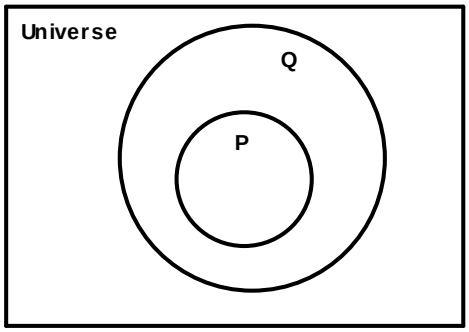
Invalid Argument: Inverse Statement: If not P then not Q



Invalid Argument: Converse Statement: If Q then P



Valid Argument: Contrapositive Statement: If not Q then not P



Induction Reasoning (Chapter 1)
Deductive Reasoning
VENN DIAGRAMS
Premise
Conclusion
Example C
Example D
CONDITIONAL STATEMENTS
Hypothesis

Conclusion
See Deductive Reasoning and Conditional Statement Guide
Converse
Inverse
Contrapositive

Grouping
Number Bases
Base Ten Numeration System
Digits
Expanded Form of a Number
Egyptian Numerals

Babylonian Numbers
Mayan Numbers

Sums and Addends
Algorithm
Partial Sums (Example C)
Left to Right Addition
NUMBER PROPERTIES / ADDITION OF WHOLE NUMBERS
Closure / Not Closed
Identity
Associative

Commutative
SUBTRACTION MODELS
Missing Addend
Comparison
Take Away

Products: Rectangular Arrays
Tree Diagrams / Example A
MODELS FOR MULTIPLICATION ALGORITHMS
Repeated Addition
Partial Projects
NUMBER PROPERTIES / MULTIPLICATION OF WHOLE NUMBERS
Closure / Not Closed
Identity
Commutative

Associative
Distributive over Addition

MODELS FOR DIVISION
Measurement
Sharing
Rectangular Array
Division Theorem
EXPONENTS
b^n, b any number, n any whole number, b, n not both zero
$a^n \times a^m$, a any number, n, m any whole numbers except a, n, m = 0
$a^n \div a^m$, a any number, n, m any whole numbers except a, n, m = 0

Order of Operations
Equal Quotients
Estimation of Quotients
Rounding
Compatible Numbers
Front End Estimation

Factors
Multiples
a | b (a divides b) and a $\nmid$ b (a does not divide b)
DIVISIBILITY TESTS
2
3
4
5

6
9
10
Prime Numbers
Composite Numbers
Prime Number Test
Sieve of Eratosthenes

What is a common multiple?

What is a common factor?

Prime Factorization—Example B

Fundamental Theorem of Arithmetic

PRIME FACTORIZATION

Factor Trees

Greatest Common Factor

Least Common Multiple
Relationship between GCF and LCM

THE FACTOR GAME
Source: Dale Oliver, Humboldt State University

Two Players

Materials: Two sets of same-colored chips or tiles (about 30 each set)
Game board
Advanced 108 game board option for college students

Here is a game that can be played in grades 3 through 6. Play at least twice and discuss the winning strategy.

Before the game begins, all of the numbers on the Factor Game sheet are **exposed.** Two players then **cover** the numbers on the sheet according to the legal moves given in the table below.

Rules pertaining to incorrect moves, the end of the game, and the winner of the game are given below the table.

move	player	description/restrictions
1	A	Cover one of the numbers on the page with one of your chip.
2	B	Cover each of the exposed factors of the number that player A just covered.
3	B	Cover one of the exposed numbers which remain that allows player A to complete move 4. If this move cannot be made, the game is over.
4	A	Cover each of the exposed factors of the number that player B just covered.
5	A	Cover one of the exposed numbers which remain that allows player B to complete move 6. If this move cannot be made, the game is over.
6	B	Cover each of the exposed factors of the number that player A just covered.
7	B	Cover one of the exposed numbers which remain that allows player A to complete move 8. If this move cannot be made, the game is over.

...and so on.

What if player A "forgets" to cover all of the required factors in their first of two moves? Then player B may cover these missed factors after A has completed the second of two moves. Player B then continues to complete the appropriate two moves. The same holds for player B's forgetfulness.

When is the game over? When player A or player B cannot make the second move of their turn as described above.

Who wins? We all do, but technically, each player finds the sum of all of the numbers covered by their chips and the player with the largest sum wins.

Cooperative games:

1) Play so that the sum of the two player's score is as high as possible.
2) Play so that the sum of the two player's score is as low as possible.

Factor Game Board

1	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

Advanced Factor Game Board

1	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	101	102	103	104	105	106	107	108

Positive and Negative Integers and their Uses
MODELS FOR INTEGER OPERATIONS
Addition
Rules of Signs for Addition
Subtraction
Multiplication
Rules of Signs for Multiplication
Division

Rules of Signs for Division
PROPERTIES OF INTEGERS
Closure / Not Closed
Identity
Commutative
Associative
Distributive Property

Math 211 Skills Test Practice

No calculators should be used

For each number pair, determine
- a) the prime factorization
- b) the GCF of the two numbers and
- c) the LCM of the two numbers

A	B
74529	30030

A	B
12100	21450

A	B
14176	125125

A	B
36504	72930

A	B
15300	260100

A	B
2475	3510

Mth 212 Factors & Multiples Skills Test

You are **required** to pass a Factors and Multiples Skills Test in Mth212. There are 22 problems. You must get at least 18 of them correct to pass the Factors and Multiples Skills Test. You have 30 minutes in which to do this. YOU MAY NOT USE A CALCULATOR. You may use as much scratch paper as you wish.

The test covers factoring whole numbers into primes, finding the Greatest Common Factor (GCF) of sets of whole numbers, and finding the Least Common Multiple (LCM) of sets of whole numbers. If you know the tests for divisibility by 2, 3, 4, 5 and 10, the Factors and Multiples Skills Test will be considerably simpler.

A small amount of time will be provided in class to prepare for the Factors and Multiples Skills Test. However, most of your preparation was done in Mth211. You will receive a Practice Factors and Multiples Skills Test and you should do this practice several times until you are **extremely** comfortable with the problems.

One-half hour of class time during the first or second week of the term will be used to administer the Factors and Multiples Skills Test to your class. (See your class schedule.) If you pass it at that time you will receive 10 points of extra credit towards your Mth212 grade. If you do not pass it you will need to retake it. In order to do a retake you must call Sharyne Ryals, the math department office manager, at 503-838-8465 to make an appointment. There will be NO more class time spent on the Factors and Multiples Skills Test in Mth212.

If you pass the test after the initial class offering but before the end of the fourth week of the term you will receive 5 points extra credit towards your grade in Mth212.

YOU MUST PASS THE FACTORS AND MULTIPLES SKILLS TEST
ON OR BEFORE FRIDAY OF DEAD WEEK.
IF YOU DO NOT, YOU WILL NEED TO RETAKE MTH212.

If you retake the Factors and Multiples Skills Test and do not pass it, you should get some help! Immediately! You can see your instructor, use the Tutoring Center, ask another (more skilled) student, and/or review your Mth211 work from Chapter Four in the text.

After three retakes of the Factors and Multiples Skills Test, if you have still not passed, Sharyne will give you a Retake Permission Slip. You are **required** to take this slip to your instructor before you can proceed. Your instructor will provide you with additional, individual assistance and will then write the number of times you can continue retaking the Factors and Multiples Skills Test on the Retake Permission Slip. You must present the completed Retake Permission Slip to Sharyne before further retesting can occur. This process will repeat until you have passed the Factors and Multiples Skills Test or until Dead Week ends, whichever comes first.

If you have any questions now is the time to ask! You are encouraged to contact your instructor:

Email: _____@wou.edu
Office Phone: 503-838-8_____

DO NOT DELAY PREPARATION FOR THE FACTORS AND MULTIPLES SKILLS TEST!!!

PASS IT THE FIRST TIME AND WIN BIG!

PRACTICE FACTORS & MULTIPLES TEST #1

Passing criterion is AT LEAST 18 correct in ONE-HALF HOUR.
You may NOT use a CALCULATOR.

I. Rewrite as a PRODUCT OF PRIMES. If the given number is prime, write 'PRIME.'

1. 213 = _____ 2. 139 = _____ 3. 377 = _____

4. 272 = _____ 5. 98 = _____ 6. 342 = _____

7. 131 = _____ 8. 609 = _____ 9. 412 = _____

II. Find the <u>GREATEST COMMON FACTOR</u> of the following sets of numbers:

1. GCF(45,60) = _____ 2. GCF(68,102,136) = _____

3. GCF(106,203) = _____ 4. GCF(90,60) = _____

5. GCF(201,67) = _____

⇩ OVER ⇩

III. TRUE or FALSE. Circle your answer.

T **F** 1. 16779 is a multiple of 47.

T **F** 2. 59 is a factor of 119.

T **F** 3. 750 is a multiple of 25.

IV. Find the <u>LEAST COMMON MULTIPLE</u> of the following sets of numbers:

1. LCM(45,60) = _____ 2. LCM(91,117) = _____

3. LCM(10,15,20) = _____ 4. LCM(121,77) = _____

5. LCM(80,60) = _____

ANSWER KEY

I. PRIMES & COMPOSITES

1. 3×71 2. PRIME 3. 13×29 4. 2×2×2×2×17 5. 2×7×7
6. 2×3×3×19 7. PRIME 8. 3×7×29 9. 2×2×103

II. GREATEST COMMON FACTOR

1. 3×5 or 15 2. 2×17 or 34 3. 1 4. 2×3×5 or 30 5. 67

III. TRUE OR FALSE

1. True 2. False 3. True

IV. LEAST COMMON MULTIPLE

1. 2×2×3×3×5 or 180 2. 3×3×7×13 or 819 3. 2×2×3×5 or 60
4. 7×11×11 or 847 5. 2×2×2×2×3×5 or 240