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

Fraction Terminology
Fraction
Numerator
Denominator
Part to Whole Fraction Models (Examples A, B, C)
Division Concept Fraction Model
Ratio Concept Fraction Model
Equality of Fractions
Fundamental Rule for Equality of Fractions
Simplifying Fractions
Simplest Form

Lowest Terms
Common Denominators (least common denominator)
Rules of Signs for Fractions
Test for Equality of Fractions
Inequality of Fractions
Test for Inequality of Fractions
Density of Fractions
Mixed Number and Improper Fractions

Models for Adding Fractions	
Term: Addend	Term: Sum
Like denominators	Number line
Unlike denominators	
Paper and Pencil Algorithm (Rule) for Adding Fractions	
Improper Fractions / Mixed Number solutions	
Models for Subtracting Fractions	
Term: Difference	
Take Away	Missing Addend
Adding Up	Unlike denominators
Paper and Pencil Algorithm (Rule) for Subtracting Fractions	

Models for Multiplying Fractions	
Term: Factor	Term: Product
Whole × Fraction; repeated addition	Fraction × Whole
Paper and Pencil Algorithm (Rule)	
Fraction × Fraction	
Paper and Pencil Algorithm (Rule)	
Models for Dividing Fractions	
Term: Divisor	Term: Quotient
Repeated Subtraction (Measurement)	
Paper and Pencil Algorithm (Rule): Invert and Multiply	

Number Properties for Fractions	
Closure: Addition and Subtraction	Closure: Multiplication
Identity: Addition	Identity: Multiplication
Commutative: Addition	Associative: Addition
Commutative: Multiplication	Associative: Multiplication
Distributive: Multiplication over Addition	
Inverses: Addition	Inverses: Multiplication
Mental Calculations for Fractions	
Compatible Numbers	Substitutions
Equal Differences or Add-Up	Equal Quotients
Estimation ideas for Fractions	
Rounding	Compatible Numbers

Decimals		
Term: Decimal Points	Term: Mixed Decimal	Term: Decimal Places
Reading and Writing Decimals		
Models for Decimals: Decimal Squares		
Models for Decimals: Place Value Table		
Models for Decimals: Number Lines		
Equality of Decimals		
Inequality of Decimals		
Place Value Test for Inequality of Decimals		
Rational Numbers		
Term: Rational Numbers		
Rational Numbers as Decimals		
Power of ten denominators		

Denominator can be converted to a power of ten
When is a rational number a terminating decimal?
Rounding Decimals

Adding and Subtracting Decimals
Models for adding and subtracting decimals
Paper and Pencil Algorithm (connected to model)
Multiplying Decimals
Models for multiplying decimals
Paper and Pencil Algorithm (connected to model)
Partial Products
Dividing Decimals
Models for dividing decimals
Paper and Pencil Algorithm (connected to model)

Terminating, Repeating and Non-repeating Decimals
Terminating
Repeating
Non-repeating

EXAMPLES:

Ratios & Proportions
Ratio: a: b = a / b
Examples
Proportion: a/b = c/d
Examples
Percents
Percents and Decimal Squares
Percents as decimals

Percents
Given the whole and the percent, find the part
Given the whole and the part, find the percent
Given the percent and the part, find the whole.
Scientific Notation
General Ideas

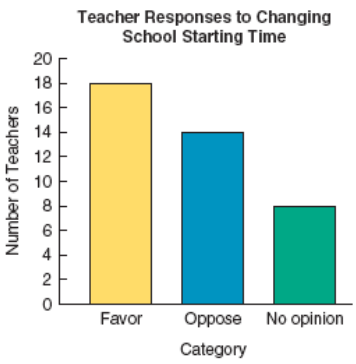
NOTES:

Pythagorean Theorem	
Theorem	
Examples	
Pythagorean Triplets	
Root Rules	
Real Numbers	
Venn Diagram	
Number Properties for Real Numbers	
Closure: Addition	Closure: Multiplication
Identity: Addition	Identity: Multiplication
Commutative: Addition	Associative: Addition
Commutative: Multiplication	Associative: Multiplication
Inverses: Addition	Inverses: Multiplication
Distributive: Multiplication over Addition	Completeness Property

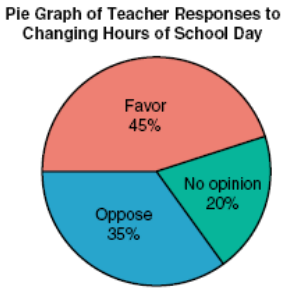
Pythagorean Theorem

Examples

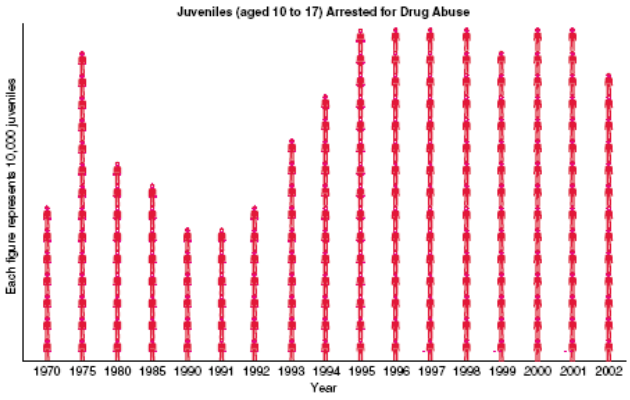
Bar Graph Key Features, Graphing Techniques & Uses



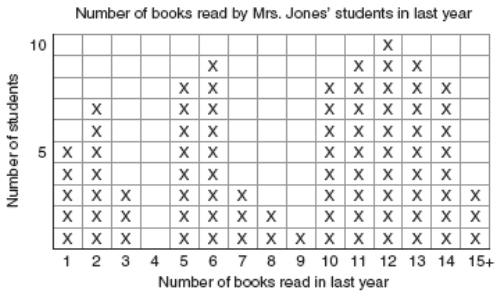
Pie Graph Key Features, Graphing Techniques & Uses



Pictograph Key Features, Graphing Techniques & Uses



Line Plot Key Features, Graphing Techniques & Uses



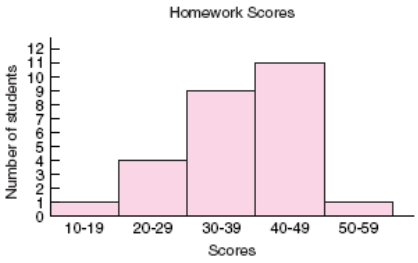
Stem and Leaf Plots Key Features, Graphing Techniques & Uses

Homework Scores

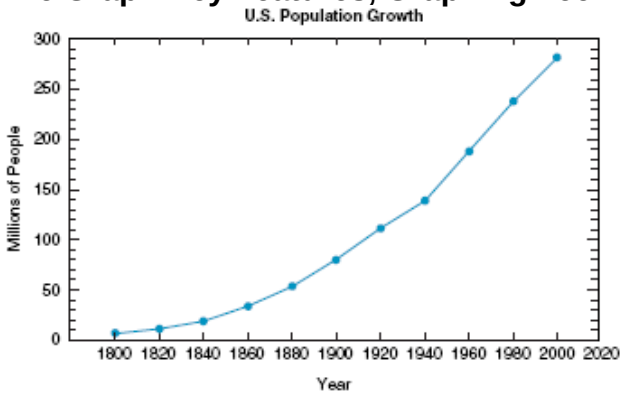
Stem	Leaf
1	9
2	2788
3	022447779
4	01335567889
5	00

Frequency Tables

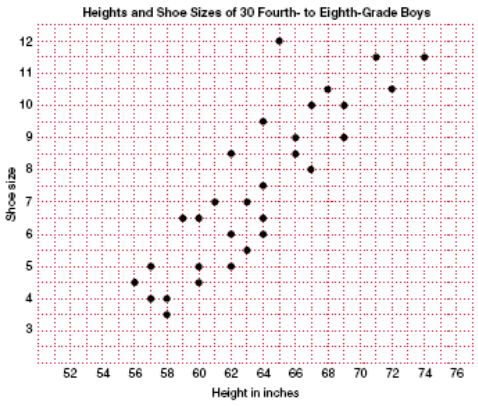
Histogram Key Features, Graphing Techniques & Uses



Line Graph Key Features, Graphing Techniques & Uses



Scatter Plot Key Features, Graphing Techniques & Uses



Measures of Central Tendency		
Definition: Mean		
Definition: Median—Odd number of measurements Definition: Median—Even number of measurements		
Definition Mode		
EXAMPLES		
Data Set One {1, 2, 3, 4, 5, 6}		
Mean	Median	Mode
Data Set Two {1, 2, 2, 4, 4, 5, 6}		
Mean	Median	Mode
Data Set Three {1, 4, 8, 13, 24, 36}		
Mean	Median	Mode
Data Set Four {1, 1, 1, 1, 4, 4, 64}		
Mean	Median	Mode
Quartiles Lower Quartile (Q1) Median (Q2) Upper Quartile (Q3)		

Box and Whiskers

EXAMPLES

Data Set One

{1, 2, 3, 4, 5, 6}

Q1= Lower	Q2 = Median	Q3 = Upper	Box and Whiskers

Data Set Two

{1, 2, 2, 4, 4, 5, 6}

Q1= Lower	Q2 = Median	Q3 = Upper	Box and Whiskers

Data Set Three

{1, 4, 8, 13, 24, 36}

Q1= Lower	Q2 = Median	Q3 = Upper	Box and Whiskers

Data Set Four

{1, 1, 1, 1, 4, 4, 64}

Q1= Lower	Q2 = Median	Q3 = Upper	Box and Whiskers

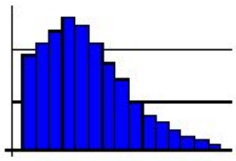
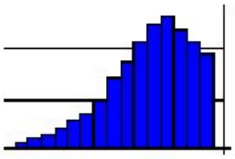
Interquartile Range

Outliers

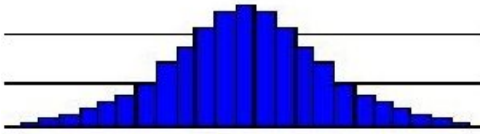
Measures of Variability

Data Set Range

Standard Deviation (from calculator—use **σx** not Sx)

Sampling
Sample
Population
Random Sample
Stratified Sampling
Distributions
(Tail) Skewed to the Right (positively skewed) 
If a housing market was Skewed to the Right; what would this mean in terms of housing prices? How would the mean and median be related?
(Tail) Skewed to the Left (negatively skewed) 
If a housing market was Skewed to the Left; what would this mean in terms of housing prices? How would the mean and median be related?

Symmetric

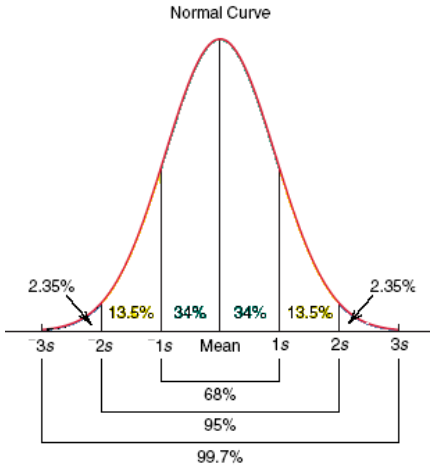


If a housing market was Symmetric; what would this mean in terms of housing prices?

How would the mean and median be related?

Normal Distributions

Normal Curve & 68% - 95% - 99.7% rule



Example E

Percentiles

Definition: pth percentile

Example G

Z-Scores
Definition: Z-Score
Example I
Definition: Rare Event
Dice Rolling Simulation

SUM OF TWO DICE DISTRIBUTION CHART

2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**

Experiment
Sample Space of an Experiment
Probability of an outcome in an experiment (Experimental Probability)
Theoretical Probability of an Outcome if there are *n* equally likely outcomes
Example
Probability of Events
Example
Sample Space, S
Probability of an Event E P(E) = $\frac{\#E}{\#S}$
Example E
$0 \le P(E) \le 1$

Probabiity SUM formula
Example F
Probability of Compound Events
Probability of events A and B that are not disjoint
Probability of events A and B that are disjoint
Probabiity ADDITION Property
Example G
Complimentary Events
Definition / Description
Example
Odds
Definition / Description
Example

Single-stage Experiment
Multistage Experiment
Probability Trees
Examples
Tree diagrams and products of probabilities
Example C—how to simply your tree diagram
Independent Events
Probability of Independent Events (A and B)—Multiplication Property
Example D

Other ideas
Dependent Events
Example G
Probability of Dependent Events (A and B)
Complementary Events
Example H
Expected Value
Example J
Permutations and Combinations
Example M (tile arrangements)
n factorial!
Example N

Permutation Theorem
Example O
Example P (sets of tiles)
Order matters vs. order does not matter
Combination Theorem
Example Q
Examples