
Mathematics As A Liberal Art

Math 105 Spring 2024
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Fowler 309 MWF 3:00pm- 3:55pm
<http://sites.oxy.edu/ron/math/105/24/>

Worksheet 28: Monday April 22

Ambigrams

Definition

An **ambigram** is a word which retains its meaning when subject to a symmetric transformation, like a (vertical or horizontal) reflection, (180-degree) rotation or mirror-image.

GroupWork

Here are some examples of ambigrams. What kind of symmetries do they possess?

ambigram

fantasy

Dance

Mathematics

ABBA

miror

earth
fire
air
water

Class Summary: Oh, The Places We Went!**Class Worksheets**

Worksheet 1	<i>Introduction: Why Math?</i>
Worksheet 2	<i>What is Mathematics?</i>
Worksheet 3	<i>The Poison Game and Introduction to Modular Arithmetic</i>
Worksheet 4	<i>Introduction to Number Theory: Looking for Patterns in Numbers</i>
Worksheet 5	<i>Mathematical Induction</i>
Worksheet 6	<i>Looking for Numbers in Patterns</i>
Worksheet 7	<i>Many Multiplications: An Example of Algorithm</i>
Worksheet 8	<i>The Fundamental Theorem of Arithmetic</i>
Worksheet 9	<i>All Numbers Are Not Rational!</i>
Worksheet 10	<i>All About That Base: Binary, Quinary and Septenary</i>
Worksheet 11	<i>Everything You Ever Wanted To Know About Hex</i>
Worksheet 12	<i>Mathematical Logic: Introduction to Truth Tables and Boolean Operators</i>
Worksheet 13	<i>Mathematical Logic: Implications</i>
Worksheet 14	<i>Mathematical Logic: Conclusions</i>
Worksheet 15	<i>Review for Midterm Exam</i>
Worksheet 16	<i>Introduction to Infinite Sequences and Infinite Series</i>
Worksheet 17	<i>Infinitesimals, Part 1: The Differential Calculus</i>
Worksheet 18	<i>Infinitesimals, Part 2: The Integral Calculus</i>
Worksheet 19	<i>The Fundamental Theorem of Calculus</i>
Worksheet 20	<i>Power Sets, Infinite Sets, Bijections and Cardinality</i>
Worksheet 21	<i>Aleph One and All That: The Continuum Hypothesis</i>
Worksheet 22	<i>Introduction to Symmetry and Shapes</i>
Worksheet 23	<i>Euclid, Geometry and The Platonic Solids</i>
Worksheet 24	<i>Frieze Patterns: Translational Symmetry</i>
Worksheet 25	<i>Euler and Graph Theory</i>
Worksheet 26	<i>Euler and Topology</i>
Worksheet 27	<i>Tessellations: Tiling The PLane</i>
Worksheet 28	<i>Ambigrams</i>

Problems of the Day

POTD 1	<i>The Poison Game</i>
POTD 2	<i>Triangular Numbers</i>
POTD 3	<i>Application of Modular Arithmetic: UPC Codes</i>
POTD 4	<i>Classifying Numbers (Prime, Composite, Abundant, Deficient)</i>
POTD 5	<i>Base 5 Arithmetic</i>
POTD 6	<i>Knights and Knaves</i>
POTD 7	<i>Modus Ponens</i>
POTD 8	<i>Truth Tables and Venn Diagrams</i>
POTD 9	<i>Geometric Series</i>
POTD 10	<i>Power Sets and Cardinality</i>
POTD 11	<i>Cayley Table of the Symmetry Group of the Equilateral Triangle</i>
POTD 12	<i>Frieze Patterns</i>
POTD 13	<i>Platonic Solids and the Euler Characteristic</i>
POTD 14	<i>Graph Theory</i>
POTD 15	<i>Ambigrams and Tessellations</i>

Homework Sets

HW 1	<i>Induction, Poison, Modular Arithmetic, Multiplication Methods, etc.</i>
HW 2	<i>Mathematical logic and truth tables</i>
HW 3	<i>Differentiation, Integration and Anti-differentiation</i>
HW 4	<i>Symmetry Groups, Fractals, Frieze Strips</i>

Discussion

What is Mathematics? (How has taking this class changed or impacted your view of mathematics?)