

FOUNDATIONS OF MATHEMATICS 12

STUDENT REFERENCE

Finance:

$$A = P\left(1 + \frac{i}{n}\right)^{tn}$$

$$I = Prt$$

Total paid on lease = Buyout + Down Payment + Number of payments \times Monthly Payment

$$\text{Average Annual Rate of Return} = \frac{\text{Total Interest in one year}}{\text{Total Invested}} \times 100\%$$

Set Notation:

Symbol	Meaning
\cup	Union
\cap	Intersection
A'	Not A
$\{ \}$	Empty Set
\emptyset	Empty Set

Probability:

$$P(A) = \frac{\text{Total number of favourable outcomes}}{\text{Total number of outcomes in sample space}}$$

$$P(\bar{A}) = 1 - P(A)$$

$$P(A \text{ and } B) = P(A) \times P(B)$$

$$P(A \text{ and } B) = P(A) \times P(B \text{ given } A)$$

$$P(A \text{ or } B) = P(A) + P(B)$$

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Combinatorics:

$${}_n P_r = \frac{n!}{(n-r)!}$$

$${}_n C_r = \frac{n!}{r!(n-r)!}$$

Sinusoidal Regression:

$$y = a \sin(bx + c) + d$$

$$\text{Period} = \frac{2\pi}{b}$$

$$\text{Phase Shift} = -\frac{c}{b}$$

Some Games/Puzzles:

Ken-Ken

The objective is to fill the grid with the digits 1 through n in a square (n by n) such that:

- Each row contains exactly one of each digit.
- Each column contains exactly one of each digit.
- Each bold-outlined group of cells is a cage containing digits which achieve the specified result using the specified mathematical operation: addition (+), subtraction (−), multiplication (\times) and division (\div).
- For subtraction and division, the entry of calculation does not matter. For example:

$2 \div$	2	1
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$2 \div$	1	2
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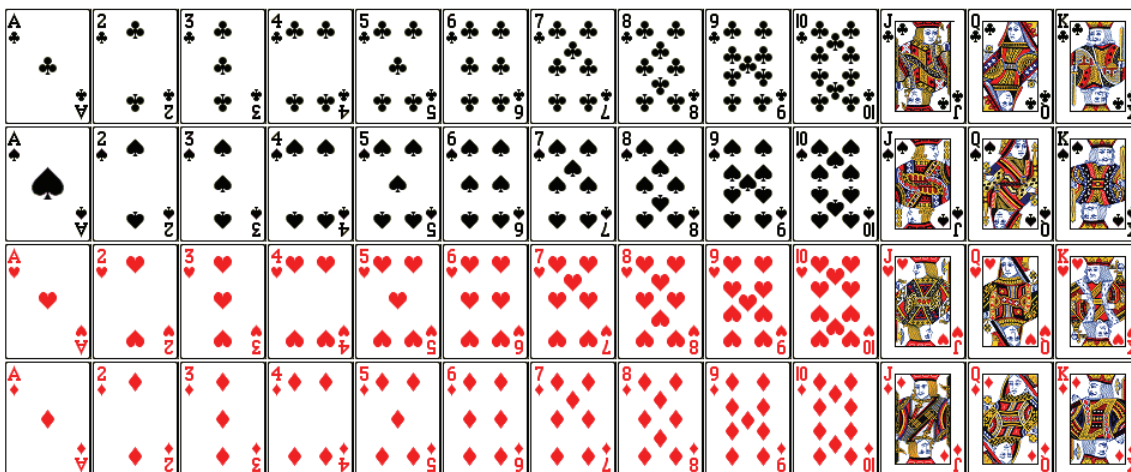
Sudoku

The objective is to fill a 9×9 grid with digits so that each column, each row, and each of the nine 3×3 sub-grids that compose the grid (also called “boxes”) contains all of the digits from 1 to 9.

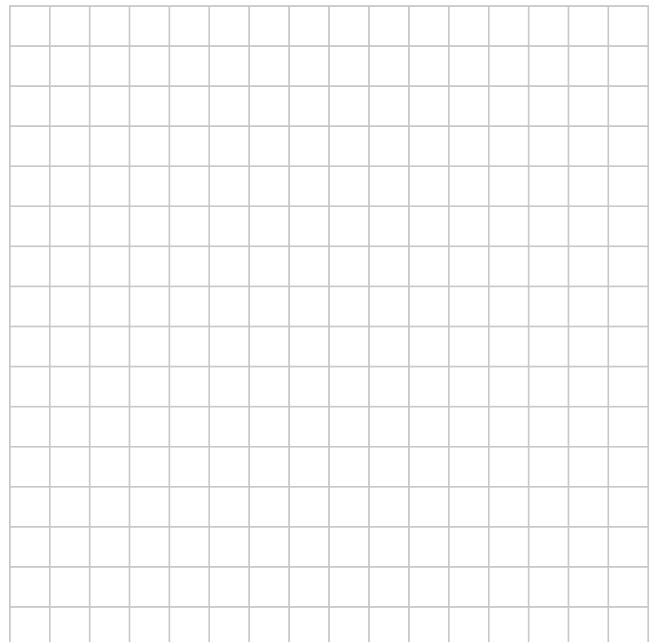
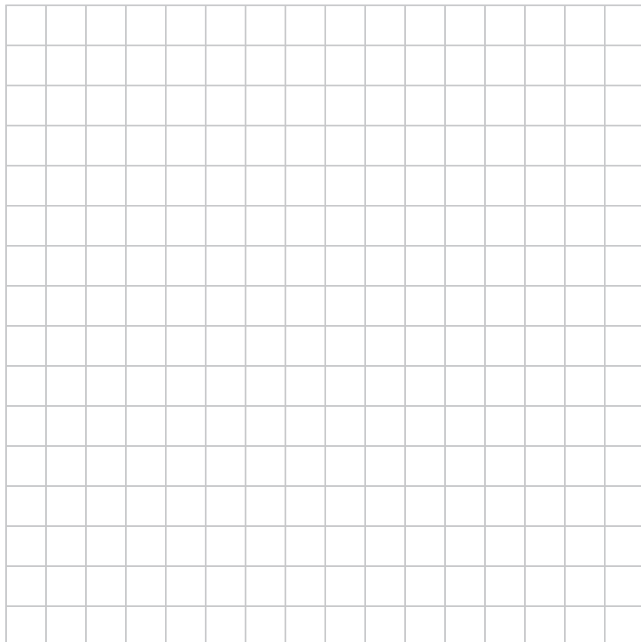
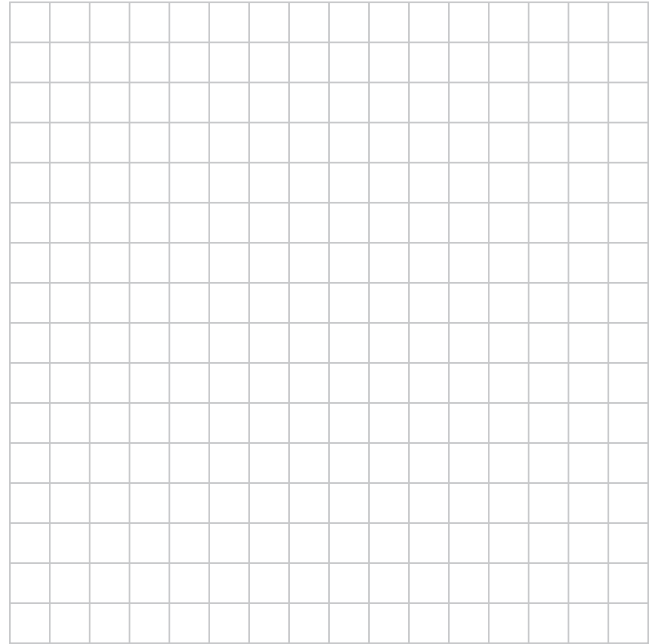
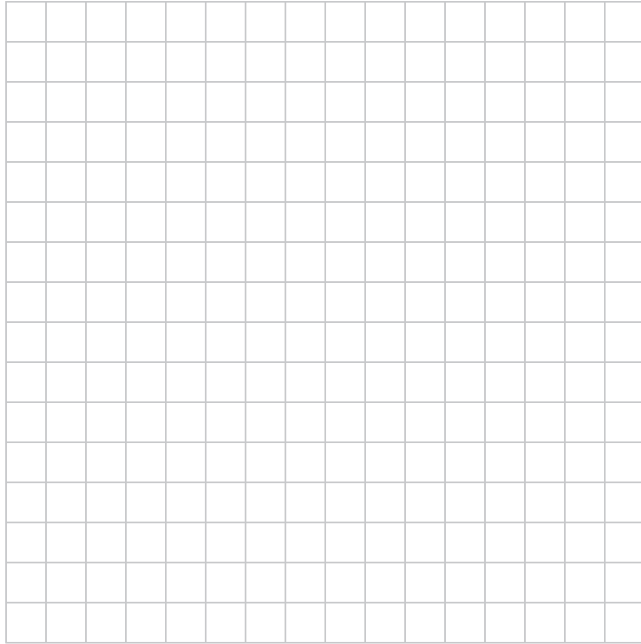
Magic Square

A magic square of order n is an arrangement of n by n , distinct natural numbers, such that the numbers in all rows, all columns, and both diagonals sum to the same constant.

Standard Deck of 52 cards



ROUGH WORK FOR GRAPHING
(No marks will be given for work done on this page.)



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