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Wajdi Mohamed Ratemi: The mathematical secrets of Pascal's triangle | TED Talk

https://www.ted.com/talks/wajdi_mohamed_ratemi_the_mathematical_secrets_of_pascal_s_triangle

All Words

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Session 1: Word List

neat

adj. clean or tidy, with everything in its place

synonym : tidy, uncluttered, refined

(1) a **neat** piece of work, (2) **neat** idea

She has **neat** habits.

arrange

v. to plan, prepare for, and carry out something

synonym : set up, order, organize

(1) **arrange** the meeting, (2) the list was **arranged** alphabetically

I need to **arrange** plans with him for the celebration.

stack

n. a pile of something arranged or laid one on top of another; a large tall chimney through which combustion gases and smoke can be evacuated

synonym : accumulation, heap, pile

(1) high **stack**, (2) a large **stack** of paper

The earthquake caused a **stack** of lumber to crumble noisily.

mathematics

n. the science dealing with the logic of quantities, shapes, spaces, and arrangement

synonym : arithmetic, calculation, calculus

(1) a good grounding in **mathematics**, (2) **mathematics** competition

He has a flair for **mathematics**.

treasure

n. a valuable or desirable possession; something that is cherished or held dear; a collection of valuable objects or money that is hidden or protected

synonym: hoard, fortune, gem

(1) **treasure** hunt, (2) **treasure** island

The pirates searched for buried **treasure** in the dunes.

trove

n. a valuable collection of rare or interesting things, usually on the earth

synonym: hoard, collection, assemblage

(1) **trove** of information, (2) stumble on a **trove**

The treasure **trove** of ancient artifacts was a museum's dream come true.

staircase

n. a set of stairs inside a building, usually with posts and bars that are fixed at the side

synonym: stairway, stairwell

(1) spiral **staircase**, (2) beetle up the **staircase**

She walked urgently down the emergency **staircase**.

mount

v. to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone

synonym: climb, increase, get on

(1) **mount** a hill, (2) **mount** a counterattack

They **mounted** pictures on the paper in preparation for the birthday card.

triangle

n. a three-sided polygon with three angles; something that has three sides or parts

synonym: trilateral, delta, triad

(1) **triangle** shape, (2) love **triangle**

The Pythagorean theorem is used to calculate the length of the sides of a right **triangle**.

yang

n. in Chinese philosophy, the masculine or active principle characterized as light and the sun and associated with hardness, dryness, and heat

synonym : masculine, positive, active

(1) the **yang** principle, (2) embody **yang** energy

He saw the balance between the yin and **yang** as crucial for a harmonious life.

unfair

adj. not giving equal treatment or opportunities to people involved; marked by injustice, partiality, or deception

synonym : wrongful, biased, dishonest

(1) **unfair** employment practices, (2) have an **unfair** advantage

In a democracy, it is necessary to monitor the judiciary to see if it is making **unfair** decisions.

contribute

v. to give something, especially money or goods, to provide or achieve something together with other people

synonym : donate, devote, commit

(1) **contribute** a large sum of money to the fund,

(2) **contribute** to society

Government workers cannot **contribute** to political campaigns.

intrigue

v. to make someone interested, especially by being strange, unusual, or mysterious; to make a secret plan with other people to harm someone

synonym : attract, captivate, charm

(1) **intrigue** him, (2) **intrigue** against his rival

The artist's innovative style of work **intrigues** me.

foremost

adj. most important, leading, or prominent

synonym : leading, primary, first

(1) **foremost** expert, (2) keep **foremost** in mind

The **foremost** priority is the safety of the passengers.

invisible

adj. impossible or nearly impossible to see

synonym: hidden, imperceptible, unseen

(1) an **invisible** asset, (2) **invisible** stars

The phenomenon is **invisible** at optical wavelengths.

row

n. an arrangement of objects or people side by side in a line; (verb) to propel a boat through the water using oars

synonym: line, sequence, layer

(1) criminal on death **row**, (2) a **row** of cherry trees

He was the leader of the demonstrators and spoke out against the war in the front **row**.

infinite

adj. unlimited or very great; impossible to measure

synonym: boundless, countless, limitless

(1) **infinite** appetite, (2) **infinite** in supply

The battle had an **infinite** impact on the nation.

correspond

v. to match or be similar to something else almost exactly; to exchange messages

synonym: match, equate, communicate

(1) **correspond** to a standard, (2) **correspond** with a foreign student

The numbers on the sign **correspond** to points on the map.

coefficient

n. a numerical measure of a specific property or characteristic of a substance or system that is used in mathematical equations or formulas to predict behavior or outcomes; a factor that expresses the change in one variable per unit change in another variable

synonym: constant, factor, ratio

(1) absorption **coefficient**, (2) thermal expansion **coefficient**

The **coefficient** of friction on the icy road was dangerously low.

binomial

n. a mathematical expression or equation consisting of two terms connected by a plus or minus sign; (of biology) a

Latin-based scientific name consisting of two words, the genus, and the species

(1) **binomial** distribution, (2) **binomial** theorem

In algebra, we often work with **binomial** expressions to solve equations.

expansion

n. the process of becoming larger or more extensive, or the result of this process

synonym: growth, enlargement, development

(1) industrial **expansion**, (2) **expansion** project

The company is undergoing an **expansion**, opening new locations in several states.

expand

v. to increase or to make something greater in size, number, or importance

synonym: extend, grow, boost

(1) **expand** a lineup, (2) **expand** agricultural output

They hope to **expand** their business worldwide.

variable

adj. likely to change or vary often; (noun) a symbol, like x or y , that is used in mathematical or logical expressions to represent a value that may be changed

synonym: erratic, inconsistent, irregular

(1) a **variable** species, (2) a dependent **variable**

Rainfall in the tropics is highly **variable**.

decimal

adj. based on or counted in the number 10

synonym: base-10, denary, ten-based

(1) **decimal** system, (2) an infinite **decimal**

The **decimal** point separates the whole number from the fractional part.

geometric

adj. relating to or having the characteristics of geometry (= the shape, properties, and relations of points, lines, surfaces, solids)

synonym: mathematical, symmetrical, regular

(1) a **geometric** proof, (2) **geometric** pattern

The **geometric** shapes and patterns in the artwork are visually stunning.

diagonal

adj. at an angle or slant; (noun) a line that runs across a surface or figure at an angle

synonym: oblique, sloping, slanting

(1) **diagonal** pattern, (2) place at a **diagonal**

The **diagonal** cut of the skirt added movement and flair to the outfit.

integer

n. a whole number, either positive, negative, or zero, that is not a fraction or decimal

synonym: whole number, real number, numeral

(1) **integer** division, (2) positive **integer**

The sum of two **integers** can be either a positive integer, a negative integer, or zero.

triangular

adj. having three angles or sides; forming or shaped like a triangle (= a three-sided polygon)

synonym: three-cornered, trilateral

(1) a **triangular** alliance, (2) **triangular** form

The **triangular** shape of the pyramid was an important architectural feature.

dot

n. a very small circular mark, especially one that is printed

synonym: drop, dab, fleck

(1) connecting the **dots**, (2) **dot** blot method

The wallpaper had a pattern of pink **dots** on a white surface.

equilateral

adj. characterized by having all sides of equal length, typically used to describe a geometric shape, usually a triangle

synonym: equal-sided, regular, isosceles

(1) **equilateral** polygon, (2) **equilateral** shape

An **equilateral** triangle has three equal sides and three equal

angles.

tetragonal

adj. of or relating to a crystal system characterized by three axes, two of which are of equal length and perpendicular to a third, longer axis

synonym : rectangular, quadrate

(1) **tetragonal** structure, (2) **tetragonal** prism

The **tetragonal** symmetry of the molecule plays an important role in its chemical properties

similarly

adv. in almost the same way

synonym : also, likewise, ditto

(1) **similarly** situated, (2) have **similarly** great abilities

We argue that wages for temporary workers should **similarly** rise.

sphere

n. a round object or geometric shape that is three-dimensional and symmetrical around a central point; a particular aspect or scope of life or activity

synonym : ball, globe, scope

(1) **sphere** of influence, (2) business **sphere**

The **sphere** of the earth is divided into several layers including the crust, mantle, and core.

tetrahedron

n. a solid geometric figure with four triangular faces, typically used in 3d geometry

synonym : triangular pyramid, four-faced solid

(1) regular **tetrahedron**, (2) **tetrahedron** molecule

In chemistry and physics, the **tetrahedron** shape describes the geometry of certain molecules and crystals.

odd

adj. strange or unexpected; not divisible by two

synonym : strange, bizarre, abnormal

(1) in an **odd** way, (2) **odd** behavior

His grandfather was an **odd** man.

fractal

n. a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations

synonym : pattern, design, geometry

(1) **fractal** pattern, (2) **fractal** art

The coastline of Norway is one of the most famous examples of **fractal** geometry in nature.

probabilistic

adj. characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks

synonym : probable, statistical, likely

(1) **probabilistic** model, (2) **probabilistic** approach

In a **probabilistic** system, the outcome is uncertain and can vary based on chance.

calculation

n. the act or process of using numbers to judge an amount of something

synonym : analysis, computation, estimate

(1) make a **calculation**, (2) **calculation** of loss and gain

The error in the **calculation** was attributable to rounding.

domain

n. a specific sphere of influence or control; a specific field of knowledge or expertise

synonym : territory, realm, sphere

(1) **domain** of use, (2) a dependent **domain**

The company's **domain** in the market was expanding to new territories.

combinatorics

n. a branch of mathematics that deals with counting, arranging, and manipulating the combinations and permutations of elements in a set

synonym : combinatorial mathematics, permutation theory

(1) discrete **combinatorics**, (2) applied **combinatorics**

The theory of **combinatorics** has numerous practical applications, including network design and scheduling.

possibility

n. a chance that something may happen or be true
synonym : chance, prospect, likelihood

(1) **possibility** for growth, (2) **possibility** of a major earthquake

The **possibility** of getting the disease will drastically increase.

random

adj. made, done, or happening without method, conscious decision, or any regular pattern

synonym : incidental, arbitrary, unanticipated

(1) a **random** choice, (2) bombs fell at **random**

To find drunk drivers, police conduct **random** tests.

combination

n. a collection of things that have been combined; an assemblage of separate parts or qualities

synonym : blend, hybrid, compounding

(1) genic **combinations**, (2) **combination** number

The **combination** to the safe was a secret.

phrase

n. a group of words that mean something specific when used together

synonym : expression, idiom, term

(1) ready-made **phrases**, (2) noun **phrase**

We bought a Spanish **phrase** book.

calculated

adj. done with careful thought or planning; deliberate and intentional; based on a process of reasoning or estimation rather than on instinct or chance

synonym : premeditated, willful, deliberate

(1) **calculated** bankruptcy, (2) **calculated** crime

The company made a **calculated** decision to invest in new technology.

formula

n. a group of symbols, letters, or numbers that represent a rule, law, or mathematical statement

synonym : expression, recipe, procedure

(1) structural **formula**, (2) a binomial **formula**

The teacher told the students to memorize the math **formula**.

testament

n. a thing that proves the existence or truth of something else

synonym: proof, testimony, testimonial

(1) give properties by **testament**, (2) **testament** to the superior quality

His wealth is a **testament** to his success.

elegant

adj. pleasing and graceful in appearance or manner, or showing good taste and refinement

synonym: refined, sophisticated, graceful

(1) **elegant** design, (2) write **elegant** sentences

She wore an **elegant** evening gown to the gala.

interweave

v. to combine or blend substantive parts or elements; to interlace; to mix or intermingle

synonym: intertwine, intertwist, interlace

(1) **interweave** threads, (2) **interweave** ideas

The author expertly tried to **interweave** the story's plot and characters.

fabric

n. cloth or other material produced by weaving wool, cotton, silk, etc., used for making clothes, covering furniture, etc.

synonym: cloth, material, goods

(1) a hand-loomed **fabric**, (2) **fabric** of creation

These synthetic **fabrics** are used in military vests because of their excellent abrasion resistance.

rev

n. a measure of the rate at which an engine or motor rotates, often expressed in revolutions per minute (RPM); (verb) to increase the number of rotations per minute

synonym: revolution, RPM, speed

(1) low- **rev** engine, (2) **rev** up the crowd

He stepped on the gas pedal, and the engine released a loud

rev.

discovery

n. the act or process of finding information, a place, or an object, or learning about something that was previously not known

synonym: finding, uncovering, detection

(1) a scientific **discovery**, (2) the great **discovery** of the century

Her research team made an important **discovery**.

polynomial

n. a mathematical expression consisting of one or more terms, with variables raised to positive integer exponents and combined using addition, subtraction, and multiplication

synonym: algebraic expression, multinomial, binomial

(1) **polynomial** function, (2) quadratic **polynomial**

The mathematics professor explained how to solve a complex **polynomial** equation.

Session 2: Spelling

1. fa___c of creation *n.* cloth or other material produced by weaving wool, cotton, silk, etc., used for making clothes, covering furniture, etc.
2. pos_____ty of a major earthquake *n.* a chance that something may happen or be true
3. equ_____al shape *adj.* characterized by having all sides of equal length, typically used to describe a geometric shape, usually a triangle
4. cal_____on of loss and gain *n.* the act or process of using numbers to judge an amount of something
5. in_____ue him *v.* to make someone interested, especially by being strange, unusual, or mysterious; to make a secret plan with other people to harm someone
6. n__t idea *adj.* clean or tidy, with everything in its place
7. pro_____tic model *adj.* characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks
8. di_____al pattern *adj.* at an angle or slant; (noun) a line that runs across a surface or figure at an angle
9. have an un___r advantage *adj.* not giving equal treatment or opportunities to people involved; marked by injustice, partiality, or deception

ANSWERS: 1. fabric, 2. possibility, 3. equilateral, 4. calculation, 5. intrigue, 6. neat, 7. probabilistic, 8. diagonal, 9. unfair

10. ex_____on project *n.* the process of becoming larger or more extensive, or the result of this process
11. r_v up the crowd *n.* a measure of the rate at which an engine or motor rotates, often expressed in revolutions per minute (RPM); (verb) to increase the number of rotations per minute
12. o_d behavior *adj.* strange or unexpected; not divisible by two
13. a tri_____ar alliance *adj.* having three angles or sides; forming or shaped like a triangle (= a three-sided polygon)
14. do___n of use *n.* a specific sphere of influence or control; a specific field of knowledge or expertise
15. tri_____ar form *adj.* having three angles or sides; forming or shaped like a triangle (= a three-sided polygon)
16. industrial ex_____on *n.* the process of becoming larger or more extensive, or the result of this process
17. an infinite de_____l *adj.* based on or counted in the number 10
18. bi_____al distribution *n.* a mathematical expression or equation consisting of two terms connected by a plus or minus sign; (of biology) a Latin-based scientific name consisting of two words, the genus, and the species
19. in_____le stars *adj.* impossible or nearly impossible to see

ANSWERS: 10. expansion, 11. rev, 12. odd, 13. triangular, 14. domain, 15. triangular, 16. expansion, 17. decimal, 18. binomial, 19. invisible

20. quadratic pol_____al *n.* a mathematical expression consisting of one or more terms, with variables raised to positive integer exponents and combined using addition, subtraction, and multiplication
21. bi_____al theorem *n.* a mathematical expression or equation consisting of two terms connected by a plus or minus sign; (of biology) a Latin-based scientific name consisting of two words, the genus, and the species
22. make a cal_____on *n.* the act or process of using numbers to judge an amount of something
23. ex____d agricultural output *v.* to increase or to make something greater in size, number, or importance
24. pol_____al function *n.* a mathematical expression consisting of one or more terms, with variables raised to positive integer exponents and combined using addition, subtraction, and multiplication
25. connecting the d_ts *n.* a very small circular mark, especially one that is printed
26. com_____on number *n.* a collection of things that have been combined; an assemblage of separate parts or qualities
27. con_____te to society *v.* to give something, especially money or goods, to provide or achieve something together with other people
28. tet_____on molecule *n.* a solid geometric figure with four triangular faces, typically used in 3d geometry

ANSWERS: 20. polynomial, 21. binomial, 22. calculation, 23. expand, 24. polynomial, 25. dot, 26. combination, 27. contribute, 28. tetrahedron

29. tet_____al prism *adj.* of or relating to a crystal system characterized by three axes, two of which are of equal length and perpendicular to a third, longer axis
30. tr__e of information *n.* a valuable collection of rare or interesting things, usually on the earth
31. in_____ue against his rival *v.* to make someone interested, especially by being strange, unusual, or mysterious; to make a secret plan with other people to harm someone
32. tr_____re island *n.* a valuable or desirable possession; something that is cherished or held dear; a collection of valuable objects or money that is hidden or protected
33. mo__t a counterattack *v.* to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone
34. give properties by te_____nt *n.* a thing that proves the existence or truth of something else
35. a scientific di_____ry *n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known
36. noun ph___e *n.* a group of words that mean something specific when used together
37. fr_____l art *n.* a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations

ANSWERS: 29. tetragonal, 30. trove, 31. intrigue, 32. treasure, 33. mount, 34. testament, 35. discovery, 36. phrase, 37. fractal

38. business sp___e *n.* a round object or geometric shape that is three-dimensional and symmetrical around a central point; a particular aspect or scope of life or activity
39. un___r employment practices *adj.* not giving equal treatment or opportunities to people involved; marked by injustice, partiality, or deception
40. a r_w of cherry trees *n.* an arrangement of objects or people side by side in a line; (verb) to propel a boat through the water using oars
41. bombs fell at ra___m *adj.* made, done, or happening without method, conscious decision, or any regular pattern
42. in___r division *n.* a whole number, either positive, negative, or zero, that is not a fraction or decimal
43. te_____nt to the superior quality *n.* a thing that proves the existence or truth of something else
44. high st__k *n.* a pile of something arranged or laid one on top of another; a large tall chimney through which combustion gases and smoke can be evacuated
45. cor_____nd with a foreign student *v.* to match or be similar to something else almost exactly; to exchange messages
46. d_t blot method *n.* a very small circular mark, especially one that is printed
47. ar_____e the meeting *v.* to plan, prepare for, and carry out something

ANSWERS: 38. sphere, 39. unfair, 40. row, 41. random, 42. integer, 43. testament, 44. stack, 45. correspond, 46. dot, 47. arrange

48. love tr____le *n.* a three-sided polygon with three angles; something that has three sides or parts
49. an in_____le asset *adj.* impossible or nearly impossible to see
50. regular tet_____on *n.* a solid geometric figure with four triangular faces, typically used in 3d geometry
51. a va____le species *adj.* likely to change or vary often; (noun) a symbol, like x or y, that is used in mathematical or logical expressions to represent a value that may be changed
52. fo____st expert *adj.* most important, leading, or prominent
53. de____l system *adj.* based on or counted in the number 10
54. in an o_d way *adj.* strange or unexpected; not divisible by two
55. in____te appetite *adj.* unlimited or very great; impossible to measure
56. tr____re hunt *n.* a valuable or desirable possession; something that is cherished or held dear; a collection of valuable objects or money that is hidden or protected
57. keep fo____st in mind *adj.* most important, leading, or prominent
58. low-r_v engine *n.* a measure of the rate at which an engine or motor rotates, often expressed in revolutions per minute (RPM); (verb) to increase the number of rotations per minute
59. sp____e of influence *n.* a round object or geometric shape that is three-dimensional and symmetrical around a central point; a particular aspect or scope of life or activity

ANSWERS: 48. triangle, 49. invisible, 50. tetrahedron, 51. variable, 52. foremost, 53. decimal, 54. odd, 55. infinite, 56. treasure, 57. foremost, 58. rev, 59. sphere

60. structural fo____a *n.* a group of symbols, letters, or numbers that represent a rule, law, or mathematical statement
61. tet____al structure *adj.* of or relating to a crystal system characterized by three axes, two of which are of equal length and perpendicular to a third, longer axis
62. a hand-loomed fa____c *n.* cloth or other material produced by weaving wool, cotton, silk, etc., used for making clothes, covering furniture, etc.
63. in____te in supply *adj.* unlimited or very great; impossible to measure
64. cor____nd to a standard *v.* to match or be similar to something else almost exactly; to exchange messages
65. embody y__g energy *n.* in Chinese philosophy, the masculine or active principle characterized as light and the sun and associated with hardness, dryness, and heat
66. applied com______ics *n.* a branch of mathematics that deals with counting, arranging, and manipulating the combinations and permutations of elements in a set
67. int____ve threads *v.* to combine or blend substantive parts or elements; to interlace; to mix or intermingle
68. pro______tic approach *adj.* characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks

ANSWERS: 60. formula, 61. tetragonal, 62. fabric, 63. infinite, 64. correspond, 65. yang, 66. combinatorics, 67. interweave, 68. probabilistic

69. con_____te a large sum of money
to the fund *v.* to give something, especially money or goods, to provide or achieve something together with other people
70. place at a di_____al *adj.* at an angle or slant; (noun) a line that runs across a surface or figure at an angle
71. thermal expansion coe_____nt *n.* a numerical measure of a specific property or characteristic of a substance or system that is used in mathematical equations or formulas to predict behavior or outcomes; a factor that expresses the change in one variable per unit change in another variable
72. discrete com_____ics *n.* a branch of mathematics that deals with counting, arranging, and manipulating the combinations and permutations of elements in a set
73. spiral st_____se *n.* a set of stairs inside a building, usually with posts and bars that are fixed at the side
74. pos_____ty for growth *n.* a chance that something may happen or be true
75. mo__t a hill *v.* to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone
76. the y__g principle *n.* in Chinese philosophy, the masculine or active principle characterized as light and the sun and associated with hardness, dryness, and heat

ANSWERS: 69. contribute, 70. diagonal, 71. coefficient, 72. combinatorics, 73. staircase, 74. possibility, 75. mount, 76. yang

77. the great di_____ry of the century *n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known
78. fr_____l pattern *n.* a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations
79. a ra___m choice *adj.* made, done, or happening without method, conscious decision, or any regular pattern
80. a ge_____ic proof *adj.* relating to or having the characteristics of geometry (= the shape, properties, and relations of points, lines, surfaces, solids)
81. write el_____t sentences *adj.* pleasing and graceful in appearance or manner, or showing good taste and refinement
82. equ_____al polygon *adj.* characterized by having all sides of equal length, typically used to describe a geometric shape, usually a triangle
83. genic com_____ons *n.* a collection of things that have been combined; an assemblage of separate parts or qualities
84. a large st__k of paper *n.* a pile of something arranged or laid one on top of another; a large tall chimney through which combustion gases and smoke can be evacuated
85. mat_____cs competition *n.* the science dealing with the logic of quantities, shapes, spaces, and arrangement

ANSWERS: 77. discovery, 78. fractal, 79. random, 80. geometric, 81. elegant, 82. equilateral, 83. combination, 84. stack, 85. mathematics

86. a good grounding in mat_____cs *n.* the science dealing with the logic of quantities, shapes, spaces, and arrangement
87. el_____t design *adj.* pleasing and graceful in appearance or manner, or showing good taste and refinement
88. ge_____ic pattern *adj.* relating to or having the characteristics of geometry (= the shape, properties, and relations of points, lines, surfaces, solids)
89. the list was ar_____ed alphabetically *v.* to plan, prepare for, and carry out something
90. beetle up the st_____se *n.* a set of stairs inside a building, usually with posts and bars that are fixed at the side
91. a dependent do_____n *n.* a specific sphere of influence or control; a specific field of knowledge or expertise
92. ex_____d a lineup *v.* to increase or to make something greater in size, number, or importance
93. a binomial fo_____a *n.* a group of symbols, letters, or numbers that represent a rule, law, or mathematical statement
94. criminal on death r_w *n.* an arrangement of objects or people side by side in a line; (verb) to propel a boat through the water using oars
95. have si_____ly great abilities *adv.* in almost the same way
96. cal_____ed bankruptcy *adj.* done with careful thought or planning; deliberate and intentional; based on a process of reasoning or estimation rather than on instinct or chance

ANSWERS: 86. mathematics, 87. elegant, 88. geometric, 89. arrange, 90. staircase, 91. domain, 92. expand, 93. formula, 94. row, 95. similarly, 96. calculated

97. a n__t piece of work *adj.* clean or tidy, with everything in its place
98. tr____le shape *n.* a three-sided polygon with three angles; something that has three sides or parts
99. absorption coe____nt *n.* a numerical measure of a specific property or characteristic of a substance or system that is used in mathematical equations or formulas to predict behavior or outcomes; a factor that expresses the change in one variable per unit change in another variable
100. a dependent va____le *adj.* likely to change or vary often; (noun) a symbol, like x or y, that is used in mathematical or logical expressions to represent a value that may be changed
101. si____ly situated *adv.* in almost the same way
102. positive in____r *n.* a whole number, either positive, negative, or zero, that is not a fraction or decimal
103. int____ve ideas *v.* to combine or blend substantive parts or elements; to interlace; to mix or intermingle
104. ready-made ph____es *n.* a group of words that mean something specific when used together
105. cal____ed crime *adj.* done with careful thought or planning; deliberate and intentional; based on a process of reasoning or estimation rather than on instinct or chance
106. stumble on a tr__e *n.* a valuable collection of rare or interesting things, usually on the earth

ANSWERS: 97. neat, 98. triangle, 99. coefficient, 100. variable, 101. similarly, 102. integer, 103. interweave, 104. phrase, 105. calculated, 106. trove

ANSWERS:

Session 3: Fill in the Blanks

1. She walked urgently down the emergency _____.
n. a set of stairs inside a building, usually with posts and bars that are fixed at the side
2. The pirates searched for buried _____ in the dunes.
n. a valuable or desirable possession; something that is cherished or held dear; a collection of valuable objects or money that is hidden or protected
3. He stepped on the gas pedal, and the engine released a loud _____.
n. a measure of the rate at which an engine or motor rotates, often expressed in revolutions per minute (RPM); (verb) to increase the number of rotations per minute
4. We argue that wages for temporary workers should _____ rise.
adv. in almost the same way
5. He has a flair for _____.
n. the science dealing with the logic of quantities, shapes, spaces, and arrangement
6. The error in the _____ was attributable to rounding.
n. the act or process of using numbers to judge an amount of something
7. The phenomenon is _____ at optical wavelengths.
adj. impossible or nearly impossible to see
8. These synthetic _____ are used in military vests because of their excellent abrasion resistance.
n. cloth or other material produced by weaving wool, cotton, silk, etc., used for making clothes, covering furniture, etc.

ANSWERS: 1. staircase, 2. treasure, 3. rev, 4. similarly, 5. mathematics, 6. calculation, 7. invisible, 8. fabrics

9. The _____ of friction on the icy road was dangerously low.
- n.* a numerical measure of a specific property or characteristic of a substance or system that is used in mathematical equations or formulas to predict behavior or outcomes; a factor that expresses the change in one variable per unit change in another variable
10. She wore an _____ evening gown to the gala.
- adj.* pleasing and graceful in appearance or manner, or showing good taste and refinement
11. I need to _____ plans with him for the celebration.
- v.* to plan, prepare for, and carry out something
12. The _____ priority is the safety of the passengers.
- adj.* most important, leading, or prominent
13. To find drunk drivers, police conduct _____ tests.
- adj.* made, done, or happening without method, conscious decision, or any regular pattern
14. The numbers on the sign _____ to points on the map.
- v.* to match or be similar to something else almost exactly; to exchange messages
15. The _____ of the earth is divided into several layers including the crust, mantle, and core.
- n.* a round object or geometric shape that is three-dimensional and symmetrical around a central point; a particular aspect or scope of life or activity
16. The _____ shapes and patterns in the artwork are visually stunning.
- adj.* relating to or having the characteristics of geometry (= the shape, properties, and relations of points, lines, surfaces, solids)

ANSWERS: 9. coefficient, 10. elegant, 11. arrange, 12. foremost, 13. random, 14. correspond, 15. sphere, 16. geometric

17. Government workers cannot _____ to political campaigns.

v. to give something, especially money or goods, to provide or achieve something together with other people

18. The battle had an _____ impact on the nation.

adj. unlimited or very great; impossible to measure

19. In algebra, we often work with _____ expressions to solve equations.

n. a mathematical expression or equation consisting of two terms connected by a plus or minus sign; (of biology) a Latin-based scientific name consisting of two words, the genus, and the species

20. She has _____ habits.

adj. clean or tidy, with everything in its place

21. The _____ cut of the skirt added movement and flair to the outfit.

adj. at an angle or slant; (noun) a line that runs across a surface or figure at an angle

22. In a _____ system, the outcome is uncertain and can vary based on chance.

adj. characterized by the influence of chance or probability; involving the use of statistical models or methods to estimate likelihoods or risks

23. The _____ to the safe was a secret.

n. a collection of things that have been combined; an assemblage of separate parts or qualities

24. The _____ point separates the whole number from the fractional part.

adj. based on or counted in the number 10

ANSWERS: 17. contribute, 18. infinite, 19. binomial, 20. neat, 21. diagonal, 22. probabilistic, 23. combination, 24. decimal

25. His grandfather was an ____ man.

adj. strange or unexpected; not divisible by two

26. The _____ shape of the pyramid was an important architectural feature.

adj. having three angles or sides; forming or shaped like a triangle (= a three-sided polygon)

27. The company made a _____ decision to invest in new technology.

adj. done with careful thought or planning; deliberate and intentional; based on a process of reasoning or estimation rather than on instinct or chance

28. The mathematics professor explained how to solve a complex _____ equation.

n. a mathematical expression consisting of one or more terms, with variables raised to positive integer exponents and combined using addition, subtraction, and multiplication

29. The theory of _____ has numerous practical applications, including network design and scheduling.

n. a branch of mathematics that deals with counting, arranging, and manipulating the combinations and permutations of elements in a set

30. We bought a Spanish _____ book.

n. a group of words that mean something specific when used together

31. He saw the balance between the yin and ____ as crucial for a harmonious life.

n. in Chinese philosophy, the masculine or active principle characterized as light and the sun and associated with hardness, dryness, and heat

32. An _____ triangle has three equal sides and three equal angles.

adj. characterized by having all sides of equal length, typically used to describe a geometric shape, usually a triangle

ANSWERS: 25. odd, 26. triangular, 27. calculated, 28. polynomial, 29. combinatorics, 30. phrase, 31. yang, 32. equilateral

33. The teacher told the students to memorize the math _____.
- n.* a group of symbols, letters, or numbers that represent a rule, law, or mathematical statement
34. They _____ pictures on the paper in preparation for the birthday card.
- v.* to increase, go up, or advance gradually or continuously; to prepare and supply with the necessary equipment for execution or performance; to ride on something or someone
35. The company is undergoing an _____ opening new locations in several states.
- n.* the process of becoming larger or more extensive, or the result of this process
36. His wealth is a _____ to his success.
- n.* a thing that proves the existence or truth of something else
37. Her research team made an important _____.
- n.* the act or process of finding information, a place, or an object, or learning about something that was previously not known
38. The _____ symmetry of the molecule plays an important role in its chemical properties
- adj.* of or relating to a crystal system characterized by three axes, two of which are of equal length and perpendicular to a third, longer axis
39. In a democracy, it is necessary to monitor the judiciary to see if it is making _____ decisions.
- adj.* not giving equal treatment or opportunities to people involved; marked by injustice, partiality, or deception

ANSWERS: 33. formula, 34. mounted, 35. expansion, 36. testament, 37. discovery, 38. tetragonal, 39. unfair

40. The sum of two _____ can be either a positive integer, a negative integer, or zero.
- n.* a whole number, either positive, negative, or zero, that is not a fraction or decimal
41. The artist's innovative style of work _____ me.
- v.* to make someone interested, especially by being strange, unusual, or mysterious; to make a secret plan with other people to harm someone
42. Rainfall in the tropics is highly _____.
- adj.* likely to change or vary often; (noun) a symbol, like x or y, that is used in mathematical or logical expressions to represent a value that may be changed
43. In chemistry and physics, the _____ shape describes the geometry of certain molecules and crystals.
- n.* a solid geometric figure with four triangular faces, typically used in 3d geometry
44. The Pythagorean theorem is used to calculate the length of the sides of a right _____.
- n.* a three-sided polygon with three angles; something that has three sides or parts
45. The wallpaper had a pattern of pink _____ on a white surface.
- n.* a very small circular mark, especially one that is printed
46. The earthquake caused a _____ of lumber to crumble noisily.
- n.* a pile of something arranged or laid one on top of another; a large tall chimney through which combustion gases and smoke can be evacuated
47. The author expertly tried to _____ the story's plot and characters.
- v.* to combine or blend substantive parts or elements; to interlace; to mix or intermingle

ANSWERS: 40. integers, 41. intrigues, 42. variable, 43. tetrahedron, 44. triangle, 45. dots, 46. stack, 47. interweave

48. He was the leader of the demonstrators and spoke out against the war in the front ____.
- n.* an arrangement of objects or people side by side in a line; (verb) to propel a boat through the water using oars
49. The company's _____ in the market was expanding to new territories.
- n.* a specific sphere of influence or control; a specific field of knowledge or expertise
50. The _____ of getting the disease will drastically increase.
- n.* a chance that something may happen or be true
51. The treasure _____ of ancient artifacts was a museum's dream come true.
- n.* a valuable collection of rare or interesting things, usually on the earth
52. The coastline of Norway is one of the most famous examples of _____ geometry in nature.
- n.* a complex geometric pattern or shape that repeats itself on smaller and smaller scales, often occurring in nature or mathematical equations
53. They hope to _____ their business worldwide.
- v.* to increase or to make something greater in size, number, or importance

ANSWERS: 48. row, 49. domain, 50. possibility, 51. trove, 52. fractal, 53. expand