

Witquest — Activity Book

A Spark & Anvil activity book — puzzles, questions, and fun from Witquest.

Write in the book, circle your answers, and check the Answer Key at the back.

1. Pattern Recognition

Circle the correct answer

1. What is a pattern?
(A) Something that repeats or follows a predictable rule (B) A single object by itself
(C) A random arrangement of shapes (D) Something that only appears in math class
2. What comes next in this sequence? Red, Blue, Red, Blue, Red, ____
(A) Yellow (B) Green (C) Blue (D) Red
3. What comes next in this number sequence? 2, 4, 6, 8, ____
(A) 9 (B) 10 (C) 16 (D) 12
4. What is the difference between a repeating pattern and a growing pattern?
(A) A repeating pattern cycles through the same elements, while a growing pattern changes by a consistent amount each time (B) There is no difference — they are the same thing (C) A repeating pattern uses numbers and a growing pattern uses shapes (D) A growing pattern is always longer than a repeating pattern
5. What comes next? 1, 1, 2, 3, 5, 8, ____
(A) 16 (B) 13 (C) 10 (D) 11
6. In the sequence 3, 6, 12, 24, 48, ____, each number is related to the one before it. What is the rule?
(A) Multiply by 3 each time (B) Add 3 each time (C) Add the previous two numbers (D) Multiply by 2 (double each time)

Write the answer

7. Which of these is an example of a pattern found in nature?

Answer: _____

8. A shape pattern goes: triangle, square, pentagon (5 sides), hexagon (6 sides), _.

What comes next?

Answer: _____

9. What comes next? A, C, E, G, _

Answer: _____

10. A code uses this pattern: 1=A, 2=B, 3=C, 4=D. What letter does 8 represent?

Answer: _____

Match each question to its answer

1. Look at this sequence: 1, 4, 9, 16, 25, _. What is the rule? → __

2. What is the core unit (the part that repeats) in this pattern? Star, Moon, Star, Moon, Star, Moon →

3. What comes next? 100, 90, 81, 73, 66, _ → __

4. A pattern uses these colors in order: Red, Red, Blue, Red, Red, Blue, Red, Red, Blue. What is the core unit? →

5. Why is pattern recognition considered an important skill for solving problems? →

(A) Each number is a perfect square (1×1 , 2×2 , 3×3 , 4×4 , 5×5)

(B) Recognizing patterns helps you make predictions, find shortcuts, and understand how things work

(C) Red, Red, Blue

(D) 60

(E) Star, Moon

2. Riddles & Brain Teasers

Circle the correct answer

11. I have cities but no houses, forests but no trees, and water but no fish. What am I?

(A) A dream (B) A map (C) A painting (D) A video game

12. What is a brain teaser?

(A) A puzzle that challenges you to think creatively and look beyond the obvious answer (B) A math problem that requires a calculator (C) A quiz with only one correct answer (D) A medical test for brain health

13. A farmer has 17 sheep. All but 9 run away. How many sheep does the farmer still have?

(A) 9 (B) 17 (C) 0 (D) 8

14. What has hands but can't clap?

(A) A clock (B) A glove (C) A robot (D) A statue

15. If you have it, you want to share it. If you share it, you don't have it. What is it?

- (A) Food (B) Money (C) A secret (D) A toy

16. Three friends are standing in a line. Alex is to the left of Blake. Casey is to the left of Alex. Who is in the middle?

- (A) Alex (B) Blake (C) It is impossible to determine (D) Casey

Write the answer

17. A boy is walking with his father when they meet the father's sister. The boy says, 'Hello, _.' **What word fills the blank?**

Answer: _____

18. How many months have 28 days?

Answer: _____

19. What gets wetter the more it dries?

Answer: _____

20. You are in a dark room with a candle, a wood stove, and a gas lamp. You only have one match. What should you light first?

Answer: _____

Match each question to its answer

1. A man looks at a portrait and says, 'Brothers and sisters I have none, but that man's father is my father's son.' Who is in the portrait? →

2. What is the key thinking skill that most brain teasers test? →

3. What can travel around the world while staying in a corner? →

4. Two fathers and two sons go fishing. They each catch one fish. They bring home only 3 fish. How is this possible? →

5. I can be cracked, made, told, and played. What am I? →

(A) There are only 3 people: a grandfather, his son, and his grandson (the son is both a father AND a son)

(B) The ability to question your first assumption and consider alternative interpretations

(C) A postage stamp

(D) His son

(E) A joke

3. Lateral Thinking

Circle the correct answer

21. What is lateral thinking?

(A) Only using the left side of your brain, as this is what research and standard practice suggests (B) Solving problems faster than anyone else, making this the most widely accepted explanation (C) Solving problems by approaching them from unexpected or indirect angles rather than the most obvious logical approach (D) Thinking while lying on your side, and this principle applies across similar situations

22. A man pushes his car to a hotel and tells the owner he is bankrupt. Why?

(A) He is asking the hotel owner for a job (B) His car ran out of gas near the hotel (C) He is playing Monopoly — pushing his game piece (a car) to a hotel on the board (D) He wants to sell his car to the hotel owner

23. What is the difference between lateral thinking and vertical (logical) thinking?

(A) Lateral thinking is creative and vertical thinking is always wrong (B) Vertical thinking moves step-by-step toward a solution; lateral thinking jumps sideways to explore new perspectives before solving (C) There is no real difference between them (D) Vertical thinking uses math and lateral thinking uses words

24. A truck gets stuck under a bridge because it is 1 inch too tall. Workers discuss cutting the roof of the truck or raising the bridge. A child suggests a simpler solution. What is it?

(A) Wait for the bridge to expand in the heat (B) Let some air out of the truck's tires to lower it by 1 inch (C) Build a ramp over the bridge (D) Push the truck harder

25. What is 'reframing' in the context of problem solving?

(A) Giving up on the original problem and choosing an easier one (B) Looking at a problem from a completely different perspective or restating it in a new way (C) Putting a new frame on a painting (D) Repeating the problem over and over until you understand it

26. A woman has two coins that total 30 cents. One of them is not a nickel. What are the two coins?

(A) Three dimes, and this has been consistently demonstrated in practice (B) A quarter (25 cents) and a nickel (5 cents) — one of them is not a nickel, but the other one is (C) It is impossible to solve, as this is what research and standard practice suggests (D) Two special 15-cent coins, which is the most common explanation for this phenomenon

Write the answer

27. Edward de Bono's 'Six Thinking Hats' technique assigns different colored hats to different types of thinking. Why would using multiple types of thinking help solve a problem better?

Answer: _____

28. Two people play five complete games of chess. Each person wins the same number of games with no draws. How is this possible?

Answer: _____

29. What is 'thinking outside the box,' and why is it called that?

Answer: _____

30. A man walks into a restaurant and orders a water. The waiter pulls out a gun and points it at him. The man says 'thank you' and walks out. Why?

Answer: _____

Match each question to its answer

1. What is 'random entry' in lateral thinking? →

2. You need to measure exactly 4 gallons of water, but you only have a 3-gallon bucket and a 5-gallon bucket. What is the first step in one valid solution? →

3. Why is it sometimes helpful to 'reverse the problem' — thinking about what you DON'T want instead of what you do want? →

4. A doctor gives you 3 pills and says to take one every half hour. How long does it take to finish all the pills? →

5. An inventor needs a way to keep ice cream cold during long car trips. Instead of thinking about better coolers, she thinks laterally. Which solution demonstrates lateral thinking? →

(A) Redesign ice cream to stay frozen at higher temperatures by changing its ingredients

(B) 1 hour — take the first pill immediately, the second at 30 minutes, the third at 60 minutes

(C) Introducing a completely random word or idea into your thinking to spark new connections and break mental patterns

(D) Identifying what to avoid can reveal obstacles and paths that are hard to see when only thinking about the goal

(E) Fill the 5-gallon bucket completely

4. Strategy Games

Circle the correct answer

- 31.** What does 'strategy' mean in the context of games and problem solving?
(A) A plan of action designed to achieve a long-term goal, considering possible responses from opponents or the environment (B) The rules of a game, and this principle applies across similar situations (C) Memorizing every possible outcome, as this directly follows from the underlying principles (D) The ability to move pieces quickly, as this directly follows from the underlying principles
- 32.** In tic-tac-toe, what is the best first move?
(A) Any corner (B) It doesn't matter — all first moves are equally good (C) The center square (D) Any edge (non-corner, non-center)
- 33.** What does 'thinking ahead' mean in strategy games?
(A) Only thinking about winning, not about the current position (B) Considering what will happen several moves into the future before making your current move (C) Playing your turn faster than your opponent (D) Moving your pieces forward on the board
- 34.** In the game of Nim, two players take turns removing 1, 2, or 3 objects from a pile. The player who takes the last object wins. If there are 5 objects and it's your turn, what should you take to guarantee a win?
(A) It doesn't matter what you take (B) Take 2 (leaving 3) (C) Take 3 (leaving 2) (D) Take 1 (leaving 4 for your opponent)
- 35.** What is a 'trade-off' in strategic decision-making?
(A) Giving up one advantage to gain a different advantage (B) Always choosing the option with zero downsides (C) Trading game pieces with your opponent (D) Exchanging one game for another
- 36.** In rock-paper-scissors, what is the best overall strategy if you play many rounds against the same person?
(A) Always pick rock because it sounds the strongest (B) Always pick whatever beat your opponent's last choice (C) Always repeat whatever won your last round (D) Choose randomly and equally among all three options so your opponent cannot predict your pattern

Write the answer

- 37.** What is 'the prisoner's dilemma'?

Answer: _____

- 38.** In Connect Four, why is controlling the center column considered an advantage?

Answer: _____

- 39.** What does it mean to 'control the board' in a strategy game?

Answer: _____

40. What is the difference between a 'tactic' and a 'strategy'?

Answer: _____

Match each question to its answer

1. In the game of Battleship, which search pattern is most efficient for finding enemy ships? →

2. What is 'working backward' in strategy, and when is it useful? →

3. In a game where you can choose to play it safe for a small guaranteed reward or take a risk for a large possible reward, what factor should determine your choice? →

4. What is a 'zero-sum game'? →

5. In chess, what does 'developing your pieces' mean, and why is it important in the opening? →

(A) Starting from the desired end result and figuring out the steps needed to reach it, in reverse order

(B) The probability of success, the size of the reward versus the risk, and your current position in the game

(C) Moving pieces from their starting positions to active squares where they control more of the board

(D) A game where one player's gain is exactly equal to the other player's loss — the total always adds up to zero

(E) A diagonal checkerboard pattern, because the smallest ship (2 squares) must cross at least one diagonal line

5. Codes & Ciphers

Circle the correct answer

41. What is the difference between a 'code' and a 'cipher'?

(A) A code is secret and a cipher is not, making this the most widely accepted explanation (B) A cipher is harder to break than a code, and this principle applies across similar situations (C) A code replaces entire words or phrases with other words or symbols, while a cipher replaces individual letters according to a system (D) There is no difference — they mean the same thing, which is why this approach is recommended by experts

42. What is a Caesar cipher?

(A) A cipher that shifts every letter in the alphabet by a fixed number of positions (B) A cipher invented by a Roman emperor that uses numbers instead of letters (C) A cipher that reverses the entire message (D) A cipher that only works in Latin

43. Using a Caesar cipher with a shift of 3, what does the encrypted message 'KHOOR' say?

(A) JOLLY (B) KEEP (C) HELLO (D) KNIFE

44. A Caesar cipher has only 25 possible shifts (1 through 25). Why does this make it easy to break?

(A) Because computers didn't exist when it was invented (B) An attacker can simply try all 25 shifts and see which one produces readable text (C) Because 25 is a small number that is easy to remember (D) Because the letter A is always encrypted the same way

45. In English, what is the most commonly used letter?

(A) E (B) T (C) A (D) S

46. What is 'frequency analysis,' and how is it used to break ciphers?

(A) Counting how many words are in the message, as this directly follows from the underlying principles (B) Analyzing the frequency of radio signals, which is why this approach is recommended by experts (C) Counting how often each letter appears in the encrypted message and matching the most frequent ones to common English letters like E, T, A, O (D) Measuring how frequently the message is sent, and this principle applies across similar situations

Write the answer

47. What is a 'substitution cipher'?

Answer: _____

48. What is a 'transposition cipher'?

Answer: _____

49. A message is encrypted using a rail fence cipher with 2 rails. The original message is 'MEET AT NOON.' The letters alternate between two rows. What is the encrypted message?

Answer: _____

50. What is the 'Enigma machine,' and why was breaking it so important?

Answer: _____

Match each question to its answer

1. What makes the Vigenere cipher harder to break than a simple Caesar cipher? →

2. In Morse code, letters are represented using dots and dashes. Why did the inventor assign shorter codes (like a single dot for E) to common letters? →

3. What is a 'key' in cryptography? →

4. You intercept a message that you know was encrypted with a Caesar cipher. The

most common letter in the encrypted message is X. What shift was most likely used?
→

5. What is 'steganography,' and how does it differ from cryptography? →

(A) The secret piece of information needed to encrypt or decrypt a message — without it, the cipher cannot be reversed

(B) Steganography hides the existence of a message (like invisible ink), while cryptography makes a visible message unreadable without a key

(C) A shift of 19 (since X is 19 positions after E, and E is the most common English letter)

(D) It uses a keyword to shift each letter by a different amount, so the same letter can encrypt to different letters throughout the message

(E) To make messages faster to transmit — common letters are used more often, so making them shorter saves the most total time

6. Mathematical Puzzles

Circle the correct answer

51. In a 3×3 magic square, every row, column, and diagonal adds up to the same number. If you use the numbers 1 through 9, what is that magic sum?

(A) 18 (B) 15 (C) 21 (D) 12

52. Pick any 3-digit number where the first and last digits differ by at least 2 (like 741). Reverse it (147). Subtract the smaller from the larger ($741 - 147 = 594$). Now reverse THAT result (495). Add the last two numbers ($594 + 495$). What do you always get?

(A) 1089 (B) 999 (C) 1000 (D) 1111

53. A KenKen puzzle is like Sudoku but includes math operations. In a 4×4 KenKen, each row and column must contain the numbers 1-4 exactly once. If a cage labeled '6×' contains two cells, what are the possible number pairs?

(A) 2 and 3 (since $2 \times 3 = 6$, and 1×6 is impossible with only numbers 1-4) (B) 1 and 6, based on the established understanding in this subject area (C) 2 and 4, since this follows logically from the fundamental principles involved (D) 3 and 3, which is the most widely accepted explanation for this concept

54. What is the 'handshake problem'? If 6 people are in a room and each person shakes hands with every other person exactly once, how many handshakes occur?

(A) 15 (B) 36 (C) 30 (D) 12

55. What is the Bridges of Konigsberg problem, and why is it famous in mathematics?

(A) A puzzle asking whether you can cross all 7 bridges of Konigsberg exactly once — Euler proved it was impossible, founding the field of graph theory (B) A puzzle about building the strongest bridge, and this principle applies across similar situations (C) A math problem about calculating bridge lengths, as this directly follows from the underlying principles (D) A riddle about meeting people on bridges, making this the most widely accepted explanation

56. What is a palindromic number?

(A) A number that reads the same forward and backward, like 121 or 12321 (B) A number divisible by all its digits (C) A number where all digits are the same (D) A number that equals its digits multiplied together

Write the answer

57. You have a standard 8×8 chessboard with 2 opposite corners removed. Can you cover the remaining 62 squares perfectly using 31 dominoes (each covering exactly 2 squares)?

Answer: _____

58. What number do you get if you multiply all the numbers on a standard telephone keypad together? (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)

Answer: _____

59. A lily pad doubles in size every day. If it takes 48 days to cover an entire lake, on what day does it cover half the lake?

Answer: _____

60. In a Sudoku puzzle, what are the three rules that must be satisfied?

Answer: _____

Match each question to its answer

1. What is the 'Monty Hall problem,' and what is the counterintuitive correct answer? →

2. What is the smallest number of moves needed to solve the Tower of Hanoi puzzle with 4 discs? →

3. What is special about the number 142857? Multiply it by 1, 2, 3, 4, 5, and 6. →

4. You have a 3×3 grid. Place the numbers 1-9 so that each row, column, AND diagonal sums to 15. What number must go in the center? →

5. Two trains are 100 miles apart, heading toward each other. Train A goes 40 mph, Train B goes 60 mph. A fly starts at Train A and flies at 80 mph toward Train B. When it reaches Train B, it turns around instantly and flies back to Train A, repeating until the trains meet. How far does the fly travel? →

- (A) 5
 - (B) After the host reveals a losing door, you should always switch — switching gives you a $\frac{2}{3}$ chance of winning versus $\frac{1}{3}$ for staying
 - (C) 15 moves
 - (D) 80 miles
 - (E) It is a cyclic number — multiplying by 1-6 produces the same digits in a different order: 142857, 285714, 428571, 571428, 714285, 857142
-

7. Creative Problem Solving

Circle the correct answer

61. What is the first step in the 'design thinking' process?

- (A) Empathize — understand the people affected by the problem and what they actually need (B) Search the internet for existing solutions (C) Write a detailed report about the problem (D) Build a solution as quickly as possible

62. During a brainstorming session, why is it important to separate idea generation from idea evaluation?

- (A) Judging ideas too early stops the flow of creative thinking and causes people to self-censor potentially good ideas (B) Because people can't think creatively and critically at the same time (C) Because evaluation should only happen after the project is complete (D) Because all ideas generated during brainstorming are equally good

63. What is a 'constraint' in problem solving, and why can constraints sometimes help creativity?

- (A) A constraint always makes problems harder to solve, and this principle applies across similar situations (B) A constraint is a limitation or requirement that a solution must satisfy — constraints focus creative energy and prevent overwhelming open-endedness (C) Constraints should be ignored to maximize creativity, and this principle applies across similar situations (D) A constraint is an unsolvable part of a problem, which is the most common explanation for this phenomenon

64. You need to get a basketball through a hoop, but you can't throw it and can't touch it with your hands. List the type of thinking this requires.

- (A) Divergent thinking — generating many possible approaches by questioning the assumptions about how things are normally done (B) Critical thinking — evaluating why the problem is impossible (C) Mathematical thinking — calculating the exact trajectory (D) Convergent thinking — narrowing down to the one correct method

65. What is 'SCAMPER' in creative problem solving?

(A) A checklist of creative thinking prompts: Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Reverse (B) A technique for running away from hard problems, and this has been consistently demonstrated in practice (C) An acronym for the steps of the scientific method, and this has been consistently demonstrated in practice (D) A method for organizing your workspace, as this directly follows from the underlying principles

66. A school cafeteria throws away 50 pounds of food waste daily. Using the 'Define' step of design thinking, which problem statement is best?

(A) 'The cafeteria throws away too much food', and this has been consistently demonstrated in practice (B) 'We need bigger trash cans', and this is the standard approach used in most cases (C) 'Students take more food than they eat because serving sizes are not adjustable and they can't predict how hungry they are' (D) 'Students are wasteful and don't care about food', as this directly follows from the underlying principles

Write the answer

67. What is a 'prototype' in the context of design thinking?

Answer: _____

68. What is 'root cause analysis,' and why is it important before solving a problem?

Answer: _____

69. You are designing a new playground for a park. Which approach represents 'human-centered design'?

Answer: _____

70. What is 'convergent thinking,' and when in the creative process should you use it?

Answer: _____

Match each question to its answer

1. Your team has generated 20 ideas for a school recycling program. What is a good method for narrowing them down to the top 3? →

2. What does 'fail fast, fail forward' mean? →

3. What is 'analogical problem solving'? →

4. A 'minimum viable product' (MVP) is a concept from startup culture. What does it mean? →

5. What is 'systems thinking,' and why is it important for complex problems? →

(A) Use criteria (cost, feasibility, impact, student participation) to score each idea, then discuss the highest-scoring ones

(B) Solving a new problem by finding a similar problem that has already been solved in a different field and adapting that solution

(C) The simplest version of a product that can be tested with real users to learn whether the core idea works

(D) Make quick, inexpensive tests to discover what doesn't work early, then use each failure as learning to improve the next attempt

(E) Understanding how different parts of a problem are connected and how changing one part affects others — seeing the whole system, not just individual pieces

8. Advanced Logic

Circle the correct answer

71. In propositional logic, what does the statement 'If P, then Q' mean when P is false?

- (A) The entire statement is considered true regardless of whether Q is true or false
(B) The entire statement is false (C) The statement is meaningless and cannot be evaluated (D) Q must also be false

72. What is the difference between deductive reasoning and inductive reasoning?

- (A) Deductive reasoning is used in science while inductive reasoning is used in math
(B) Deductive reasoning uses numbers while inductive reasoning uses words (C) Deductive reasoning is always correct while inductive reasoning is always incorrect
(D) Deductive reasoning goes from general rules to specific conclusions with certainty, while inductive reasoning goes from specific observations to general conclusions with probability

73. Which logical fallacy occurs when someone argues: 'You can't prove aliens DON'T exist, so they must exist'?

- (A) Straw man fallacy — misrepresenting someone's argument (B) Circular reasoning — using the conclusion as a premise (C) Red herring fallacy — changing the subject to avoid the argument (D) Argument from ignorance (appeal to ignorance) — claiming something is true because it hasn't been proven false

74. In Boolean logic, what is the result of TRUE AND FALSE?

- (A) UNDEFINED — because the inputs conflict (B) TRUE — because at least one input is TRUE (C) It depends on which value comes first (D) FALSE — the AND operator requires both inputs to be TRUE for the result to be TRUE

75. A detective knows the following: (1) If the butler did it, the door was locked. (2) The door was NOT locked. What can the detective conclude?

(A) The butler did it but used a different exit (B) Someone else locked the door after the butler left (C) The butler did NOT do it — this is an example of modus tollens (denying the consequent) (D) Nothing can be concluded because the evidence is insufficient

76. What is the contrapositive of the statement 'If it is raining, then the ground is wet'?

(A) If it is not raining, then the ground is not wet (B) If the ground is wet, then it is raining (C) If the ground is NOT wet, then it is NOT raining (D) It is raining and the ground is wet

Write the answer

77. The 'liar's paradox' states: 'This sentence is false.' Why is this statement considered a paradox?

Answer: _____

78. In set theory, if Set A = {1, 2, 3, 4} and Set B = {3, 4, 5, 6}, what is $A \cap B$ (the intersection of A and B)?

Answer: _____

79. Which logical fallacy is committed in this argument: 'We should trust Dr. Smith's opinion on climate policy because she is a famous heart surgeon'?

Answer: _____

80. What does the logical operator OR mean in Boolean logic? Specifically, what is TRUE OR TRUE?

Answer: _____

Match each question to its answer

1. Consider this syllogism: 'All roses are flowers. All flowers need water. Therefore, all roses need water.' Is this syllogism valid? →

2. What is a 'necessary condition' versus a 'sufficient condition'? If someone says 'Being 16 is necessary for getting a driver's license,' what does that mean? →

3. De Morgan's Laws state that NOT (A AND B) is equivalent to which expression? →

4. What is 'proof by contradiction'? How does it work? →

5. A store sign reads: 'No shirt, no shoes, no service.' A customer wearing a shirt but no shoes is denied service. The customer argues, 'But I have a shirt!' Is the store's denial logically justified? →

- (A) Yes — the sign requires BOTH a shirt AND shoes. Missing either one is grounds for denial, so lacking shoes alone is sufficient reason
- (B) (NOT A) OR (NOT B) — negating an AND flips it to OR and negates each part
- (C) It means you MUST be at least 16, but being 16 alone doesn't guarantee you'll get a license — you also need to pass tests and meet other requirements
- (D) Yes, it is valid — the conclusion follows necessarily from the premises through transitive reasoning
- (E) You assume the opposite of what you want to prove, then show that this assumption leads to a logical impossibility, which proves the original statement must be true
-

9. Wordplay & Language

Circle the correct answer

81. What is a pun?

- (A) A sentence with alliteration, which is the most common explanation for this phenomenon (B) A poem with a rhyming pattern, making this the most widely accepted explanation (C) A joke that plays on multiple meanings of a word or similar-sounding words (D) A word spelled backwards, and this is the standard approach used in most cases

82. In the joke 'I used to be a banker, but I lost interest,' which word is the pun?

- (A) used (B) interest (C) lost (D) banker

83. What is a homophone pun?

- (A) A pun using words that sound the same but have different meanings or spellings (B) A pun using words from other languages, and this is the standard approach used in most cases (C) A pun using rhyming words, which is the most common explanation for this phenomenon (D) A pun using silent letters, which is why this approach is recommended by experts

84. Which sentence contains a pun?

- (A) The bicycle had a flat tire. (B) The bicycle was red and shiny. (C) She rode her bicycle to school. (D) The bicycle couldn't stand on its own because it was two-tired.

85. What type of pun uses a word with two different meanings in the same sentence?

- (A) A malapropism (B) A double-meaning pun (C) A spoonerism (D) An oxymoron

86. In the pun 'A boiled egg every morning is hard to beat,' what two meanings does 'beat' have?

- (A) A musical rhythm AND a police route (B) To hit something AND to lose a game (C) To pound AND to defeat in battle (D) To surpass something AND to stir/whisk an

egg

Write the answer

87. Why does the pun 'I'm on a seafood diet — I see food and I eat it' work?

Answer: _____

88. Explain why 'A calendar's days are numbered' is a pun.

Answer: _____

89. What makes the sentence 'The grammarian was very tense' a pun?

Answer: _____

90. Why is the pun 'I used to hate math, but then I realized decimals have a point' effective?

Answer: _____

Match each question to its answer

1. How does understanding multiple word meanings help you appreciate puns? →

2. Which word would complete this pun? 'The electrician's work was _.' → __

3. Complete the pun: 'The baker felt _ because he kneaded the dough.' →

4. Which pun best fits a story about a musician? →

5. Create a pun using the word 'sole.' Which setup works best? →

(A) She was so good at piano, she never missed a beat — or a note.

(B) The shoe repairman put his whole sole into his work.

(C) shocking

(D) needed

(E) Knowing that many words have more than one definition lets you see the humor in wordplay

10. Wordplay & Language

Circle the correct answer

91. What is an idiom?

(A) A phrase whose meaning is different from the literal meaning of its individual words (B) A comparison using 'like' or 'as', as this is what research and standard practice suggests (C) A word that sounds like what it describes, which is why this approach is recommended by experts (D) A type of formal greeting, which is why this approach is recommended by experts

92. What does the idiom 'break a leg' mean?

(A) Start dancing (B) Run away quickly (C) Good luck (D) Be careful

93. What does 'piece of cake' mean as an idiom?

(A) Something that is very easy to do (B) A slice of dessert (C) A difficult challenge
(D) A cooking recipe

94. What does the idiom 'hit the nail on the head' mean?

(A) To hurt yourself by accident (B) To describe something exactly right or be precisely correct (C) To do construction work (D) To make a loud noise

95. What does 'spill the beans' mean?

(A) To reveal a secret or share information that was meant to be kept hidden (B) To drop food on the floor, and this is the standard approach used in most cases (C) To plant a garden, as this directly follows from the underlying principles (D) To cook dinner, and this has been consistently demonstrated in practice

96. What does the idiom 'under the weather' mean?

(A) Feeling sick or unwell (B) Watching a storm (C) Standing in the rain (D) Being outdoors in winter

Write the answer

97. Why might the idiom 'it's raining cats and dogs' confuse someone learning English for the first time?

Answer: _____

98. Explain what 'the ball is in your court' means and where it comes from.

Answer: _____

99. What does 'don't put all your eggs in one basket' mean, and why is the image effective?

Answer: _____

100. How is 'burning the midnight oil' different from 'burning bridges'?

Answer: _____

Match each question to its answer

1. Why do we say 'kick the bucket' instead of just saying 'die'? →

2. Your friend says 'I have butterflies in my stomach' before a big test. What do they mean? →

3. Which idiom would best describe someone who stays up very late studying for an exam? →

4. If a teacher says 'Let's not beat around the bush,' what should you expect next? →

5. Choose the correct idiom: After months of practice, Sarah's piano recital was . →
—

- (A) Idioms often provide a softer, indirect way to discuss uncomfortable topics like death
 - (B) Burning the midnight oil
 - (C) The teacher is about to speak directly and get to the main point
 - (D) They feel nervous or anxious
 - (E) a piece of cake
-

11. Wordplay & Language

Circle the correct answer

101. What is an anagram?

- (A) A word that sounds the same as another
- (B) A word or phrase formed by rearranging the letters of another word or phrase
- (C) A word spelled the same forwards and backwards
- (D) A word that means the opposite of another word

102. What is a palindrome?

- (A) A word or phrase that reads the same forwards and backwards
- (B) A word borrowed from another language
- (C) A word with a silent letter
- (D) A word with double letters

103. Which of these is a palindrome?

- (A) surfboard
- (B) sailboat
- (C) kayak
- (D) canoe

104. What is an acrostic?

- (A) A sentence with alliteration, which is the most common explanation for this phenomenon
- (B) A word puzzle with crossing words, and this principle applies across similar situations
- (C) A composition where the first letters of each line or word spell out a word or message
- (D) A riddle with a hidden answer, making this the most widely accepted explanation

105. Which word is an anagram of 'listen'?

- (A) noisy
- (B) whisper
- (C) sound
- (D) silent

106. What is a word ladder?

- (A) A puzzle where you change one letter at a time to transform one word into another, making a real word at each step
- (B) Words arranged by length from shortest to longest, and this is the standard approach used in most cases
- (C) A crossword puzzle shaped like a ladder, and this is the standard approach used in most cases
- (D) A list of words in alphabetical order, as this directly follows from the underlying

principles

Write the answer

107. Why is 'astronomer' becoming 'moon starrer' considered a perfect anagram?

Answer: _____

108. Explain why 'A man, a plan, a canal: Panama' is considered a remarkable palindrome.

Answer: _____

109. How does solving anagrams help improve your vocabulary?

Answer: _____

110. What makes a word puzzle 'solvable' versus 'impossible'?

Answer: _____

Match each question to its answer

1. Why are short words like 'cat' harder to make interesting anagrams from than longer words like 'orchestra'? →

2. Rearrange the letters in 'EARTH' to make another word. →

3. Which word is an anagram of 'NOTES'? →

4. Complete this word ladder: COLD → CO_D → _ORD → WORD. What are the missing words? →

5. Find the hidden word: The letters AELPP rearrange to form a fruit. What is it? →

(A) STONE

(B) APPLE

(C) CORD, FORD

(D) Shorter words have fewer letters to rearrange, producing fewer possible combinations and fewer valid words

(E) HEART

12. Wordplay & Language

Circle the correct answer

111. What is etymology?

(A) The study of word pronunciation (B) The study of sentence structure (C) The study of insects (D) The study of the origin and history of words

112. What does the Latin root 'aqua' mean?

(A) Water (B) Fire (C) Earth (D) Air

113. What does the Greek root 'graph' mean?

(A) To write or draw (B) To speak (C) To build (D) To think

114. What does the prefix 'un-' mean?

(A) Many, based on the established understanding in this subject area (B) Not or the opposite of (C) Before, according to the standard framework used to analyze this topic (D) Again, which reflects the current consensus among experts in this field

115. What does the suffix '-ology' mean?

(A) The study of (B) The fear of (C) The love of (D) The making of

116. Which language family contributed the most roots to English scientific vocabulary?

(A) Greek and Latin (B) Arabic and Hindi (C) French and Spanish (D) German and Dutch

Write the answer

117. The word 'telephone' combines 'tele-' (far) and '-phone' (sound). What does this tell us about how the word was created?

Answer: _____

118. Why does knowing the root 'bio' (life) help you understand 'biology,' 'biography,' and 'biodegradable'?

Answer: _____

119. Explain how the word 'disaster' reveals its historical origin.

Answer: _____

120. How did the word 'salary' originate from the Latin word for salt?

Answer: _____

Match each question to its answer

1. Why do many medical terms use Greek roots instead of everyday English words? →

2. Using the prefix 'pre-' (before) and the root 'view' (to see), what does 'preview' mean? →

3. The Greek root 'chrono' means time. Which word means 'arranged in time order'? →

4. Using the root 'port' (to carry), explain what 'transport,' 'export,' and 'import' have in common. →

5. What does 'microscope' literally mean based on its Greek roots? →

- (A) Greek roots provide precise, internationally recognized terminology that means the same thing to doctors worldwide
 - (B) To see something before it is officially shown or released
 - (C) All three involve carrying something: transport = carry across, export = carry out, import = carry in
 - (D) Small-viewer (micro = small, scope = to look at or examine)
 - (E) Chronological
-

13. Pattern Recognition

Circle the correct answer

- 121.** What comes next in this number sequence? 2, 4, 6, 8, ____
(A) 9 (B) 12 (C) 10 (D) 16
- 122.** The more you take, the more you leave behind. What are they?
(A) Breadcrumbs (B) Photographs (C) Memories (D) Footsteps
- 123.** You need to measure exactly 4 gallons of water, but you only have a 3-gallon bucket and a 5-gallon bucket. What is the first step in one valid solution?
(A) Fill both buckets halfway (B) It is impossible to measure exactly 4 gallons (C) Fill the 5-gallon bucket completely (D) Pour water back and forth 4 times
- 124.** In a strategy game, your opponent makes an unexpected move. What should you do?
(A) Copy their unexpected move, making this the most widely accepted explanation
(B) Make your next move as quickly as possible, making this the most widely accepted explanation
(C) Ignore their move and continue with your original plan, and this principle applies across similar situations
(D) Pause, re-evaluate the board position, try to understand why they made that move, and adjust your plan accordingly
- 125.** A message is encrypted using a rail fence cipher with 2 rails. The original message is 'MEET AT NOON.' The letters alternate between two rows. What is the encrypted message?
(A) MTANEETOO N, which is why this approach is recommended by experts (B) TEEM TA NOON, and this has been consistently demonstrated in practice (C) NOON TA TEEM, and this is the standard approach used in most cases (D) MEANO ETTON (reading top row then bottom row: M-E-A-N-O then E-T-T-O-N)
- 126.** What number do you get if you multiply all the numbers on a standard telephone keypad together? (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)
(A) 362880, according to the standard framework used to analyze this topic (B) 3628800, based on the established understanding in this subject area (C) 0 (because

multiplying anything by 0 gives 0) (D) 45, which reflects the current consensus among experts in this field

Write the answer

127. What is a 'prototype' in the context of design thinking?

Answer: _____

128. Which logical fallacy occurs when someone argues: 'You can't prove aliens DON'T exist, so they must exist'?

Answer: _____

129. What is a pattern?

Answer: _____

130. A farmer has 17 sheep. All but 9 run away. How many sheep does the farmer still have?

Answer: _____

Match each question to its answer

1. A man pushes his car to a hotel and tells the owner he is bankrupt. Why? →

2. What is a 'dominant strategy'? →

3. In the binary number system used by computers, how is the letter A typically represented (using ASCII)? →

4. You have a standard 8×8 chessboard with 2 opposite corners removed. Can you cover the remaining 62 squares perfectly using 31 dominoes (each covering exactly 2 squares)? →

5. What is the first step in the 'design thinking' process? →

(A) 01000001 (the number 65 in binary)

(B) Empathize — understand the people affected by the problem and what they actually need

(C) No — each domino must cover one light and one dark square, but removing opposite corners removes 2 squares of the same color, leaving unequal counts

(D) A strategy that gives you the best outcome regardless of what your opponent does

(E) He is playing Monopoly — pushing his game piece (a car) to a hotel on the board

14. Pattern Recognition

Circle the correct answer

131. In a calendar, what pattern do the days of the week follow?

(A) A random arrangement that changes each month (B) A repeating cycle of 7 (Sunday through Saturday, then back to Sunday) (C) A growing pattern that adds one day each week (D) A pattern of 5 weekdays followed by 10 weekend days

132. What has hands but can't clap?

(A) A statue (B) A glove (C) A robot (D) A clock

133. Why is it sometimes helpful to 'reverse the problem' — thinking about what you DON'T want instead of what you do want?

(A) Reverse thinking always gives you the wrong answer, which helps by elimination (B) Identifying what to avoid can reveal obstacles and paths that are hard to see when only thinking about the goal (C) It confuses the problem enough that the answer becomes obvious (D) Reverse thinking is never helpful — it wastes time

134. What does it mean to 'control the board' in a strategy game?

(A) Taking as many of your opponent's pieces as possible (B) Having more pieces than your opponent (C) Having your pieces or influence in positions that limit your opponent's options while maximizing your own (D) Moving your pieces to the edges of the board

135. The Navajo code talkers in World War II used the Navajo language as a code. Why was this more secure than a traditional cipher?

(A) Because the Navajo alphabet has more letters than English (B) Because Navajo words are shorter and transmit faster (C) Because the military added encryption on top of the Navajo language (D) The Navajo language had no written form, was extremely complex, and was understood by almost no one outside the Navajo nation, making it virtually impossible to decode

136. What is the smallest number of moves needed to solve the Tower of Hanoi puzzle with 4 discs?

(A) 15 moves (B) 16 moves (C) 12 moves (D) 8 moves

Write the answer

137. Why is creative problem solving considered an essential skill for the future, regardless of what career you pursue?

Answer: _____

138. Which logical fallacy is committed in this argument: 'We should trust Dr. Smith's opinion on climate policy because she is a famous heart surgeon'?

Answer: _____

139. A shape pattern goes: triangle, square, pentagon (5 sides), hexagon (6 sides), ...
What comes next?

Answer: _____

140. What is a brain teaser?

Answer: _____

Match each question to its answer

1. How many squares do you see on a standard 8×8 chess board? →
2. In rock-paper-scissors, what is the best overall strategy if you play many rounds against the same person? →
3. In English, what is the most commonly used letter? →
4. Why are mathematical puzzles valuable for developing mathematical thinking, beyond just being fun? →
5. What is the difference between a 'wicked problem' and a 'tame problem'? →

(A) E

(B) A tame problem has a clear definition and solution (like a math equation); a wicked problem is complex, has no single right answer, and solutions create new problems

(C) They build problem-solving resilience, teach you to look for structure and patterns, develop multiple solution strategies, and show that math is creative — not just computational

(D) 204 — including 1×1, 2×2, 3×3, and larger squares of all sizes up to 8×8

(E) Choose randomly and equally among all three options so your opponent cannot predict your pattern

15. Pattern Recognition

Circle the correct answer

141. A pattern uses these colors in order: Red, Red, Blue, Red, Red, Blue, Red, Red, Blue. What is the core unit?

(A) Red, Red, Blue (B) Red, Blue (C) Red, Blue, Blue (D) Red, Red

142. Two fathers and two sons go fishing. They each catch one fish. They bring home only 3 fish. How is this possible?

(A) There are only 3 people: a grandfather, his son, and his grandson (the son is both a father AND a son) (B) One fish was too small and they threw it back, as this directly follows from the underlying principles (C) One person didn't actually catch a fish, which is why this approach is recommended by experts (D) They miscounted the fish,

as this is what research and standard practice suggests

143. What is 'analogical thinking,' and how does it help solve problems?

(A) Finding solutions by comparing your problem to a similar problem in a completely different field and adapting that solution (B) Copying someone else's solution exactly, and this principle applies across similar situations (C) Thinking about problems in alphabetical order, and this principle applies across similar situations (D) Solving problems using only analog (non-digital) tools, making this the most widely accepted explanation

144. What is the difference between a 'tactic' and a 'strategy'?

(A) A tactic is a specific short-term action; a strategy is the overall long-term plan that guides your tactics (B) A strategy is easier to learn than a tactic (C) Tactics are for board games and strategies are for video games (D) There is no difference — the words mean the same thing

145. You want to send a secret message to a friend. You both agree on a book cipher using a specific book. How does a book cipher work?

(A) You use the title of the book as the encryption key for a Caesar cipher (B) You write the message on random pages of the book (C) Each word in the message is replaced by the page number, line number, and word position where that word appears in the shared book (D) You hide the message inside the book's spine

146. What is the 'handshake problem'? If 6 people are in a room and each person shakes hands with every other person exactly once, how many handshakes occur?

(A) 30 (B) 36 (C) 12 (D) 15

Write the answer

147. You need to get a basketball through a hoop, but you can't throw it and can't touch it with your hands. List the type of thinking this requires.

Answer: _____

148. The statement 'All squares are rectangles' is true. Does this mean 'All rectangles are squares' is also true?

Answer: _____

149. What is lateral thinking?

Answer: _____

150. What does 'strategy' mean in the context of games and problem solving?

Answer: _____

Match each question to its answer

1. What is a 'one-time pad,' and why is it theoretically unbreakable? →
2. What is the 'birthday paradox'? →
3. Evaluate this argument: 'Either you support building a new stadium or you don't care about our city's future.' What type of logical fallacy is this? →
4. Which of these sequences does NOT follow a consistent pattern? →
5. I have cities but no houses, forests but no trees, and water but no fish. What am I? →

(A) False dilemma (false dichotomy) — presenting only two options when many more positions are possible

(B) In a group of just 23 people, there is a greater than 50% chance that two people share the same birthday

(C) A map

(D) 3, 7, 2, 9, 1, 8

(E) A cipher using a random key that is as long as the message itself and is never reused — it produces random-looking output with no patterns to analyze

16. Pattern Recognition

Circle the correct answer

151. Look at these pairs: (1, 2), (2, 4), (3, 6), (4, 8). What is the relationship between the first and second number in each pair?

(A) The numbers are randomly paired (B) The second number is always 2 more than the first (C) The second number is always double the first number (D) The second number is the square of the first

152. Three friends are standing in a line. Alex is to the left of Blake. Casey is to the left of Alex. Who is in the middle?

(A) Alex (B) It is impossible to determine (C) Blake (D) Casey

153. In a game, you have a winning position but could also try for an even bigger win by taking a risk. Your opponent is skilled. What is usually the wisest strategic decision?

(A) Secure the win you already have rather than risk losing it for a bigger victory (B) Always go for the biggest possible win (C) Quit the game while you're ahead (D) Let your opponent catch up to make the game more exciting

154. A KenKen puzzle is like Sudoku but includes math operations. In a 4×4 KenKen, each row and column must contain the numbers 1-4 exactly once. If a cage labeled '6×' contains two cells, what are the possible number pairs?

(A) 1 and 6, which is the most widely accepted explanation for this concept (B) 3 and 3, based on the established understanding in this subject area (C) 2 and 3 (since

2×3=6, and 1×6 is impossible with only numbers 1-4) (D) 2 and 4, which reflects the current consensus among experts in this field

155. What is 'convergent thinking,' and when in the creative process should you use it?

(A) Generating as many ideas as possible without judging them, which is the most common explanation for this phenomenon (B) Thinking that always converges on the same answer regardless of the problem, making this the most widely accepted explanation (C) A type of thinking that only works in groups, and this is the standard approach used in most cases (D) Narrowing down many ideas to find the best one by evaluating, comparing, and selecting — used AFTER generating many options through divergent thinking

156. What comes next? A, C, E, G, ____

(A) F (B) I (C) J (D) H

Write the answer

157. A truck gets stuck under a bridge because it is 1 inch too tall. Workers discuss cutting the roof of the truck or raising the bridge. A child suggests a simpler solution. What is it?

Answer: _____

158. What is a 'forcing move' in strategy games?

Answer: _____

159. Using a pigpen cipher grid, each letter is represented by the shape of the box it sits in. Why might this type of cipher be easy for a codebreaker to crack?

Answer: _____

160. What makes mathematical puzzles different from regular math problems?

Answer: _____

Match each question to its answer

1. A school cafeteria throws away 50 pounds of food waste daily. Using the 'Define' step of design thinking, which problem statement is best? →

2. The sequence 2, 6, 18, 54 follows a rule. If someone told you the next number is 162, how could you verify they are correct? →

3. How does understanding formal logic help you in everyday life, beyond mathematics and computer science? →

4. How many months have 28 days? →

5. What is a 'necessary condition' versus a 'sufficient condition'? If someone says 'Being 16 is necessary for getting a driver's license,' what does that mean? →

- (A) All 12 months have at least 28 days
 - (B) Check if $54 \times 3 = 162$, since each number in the sequence is multiplied by 3
 - (C) It helps you evaluate arguments critically, spot manipulation and fallacies in advertising and politics, make better decisions, and communicate your own reasoning more clearly and persuasively
 - (D) 'Students take more food than they eat because serving sizes are not adjustable and they can't predict how hungry they are'
 - (E) It means you **MUST** be at least 16, but being 16 alone doesn't guarantee you'll get a license — you also need to pass tests and meet other requirements
-

Riddle & Joke Break

Guess the answer, then check the key!

- 161.** Why did the knight bring a joke book to battle?
 - 162.** What did the pun sword say when drawn?
 - 163.** Why did the jester get promoted?
 - 164.** What do you call an adventurer who only tells riddles?
 - 165.** Why was the comedy quest so easy?
 - 166.** What did the NPC say when the hero told a bad joke?
-

Answer Key

- 1. A — Something that repeats or follows a predictable rule
- 2. C — Blue
- 3. B — 10
- 4. A — A repeating pattern cycles through the same elements, while a growing pattern changes by a consistent amount each time
- 5. B — 13
- 6. D — Multiply by 2 (double each time)
- 7. The spiral arrangement of seeds in a sunflower head
- 8. A heptagon (7-sided shape)
- 9. I

10. H

Matching (Pattern Recognition): $1 \rightarrow A$, $2 \rightarrow E$, $3 \rightarrow D$, $4 \rightarrow C$, $5 \rightarrow B$

11. B — A map

12. A — A puzzle that challenges you to think creatively and look beyond the obvious answer

13. A — 9

14. A — A clock

15. C — A secret

16. A — Alex

17. Aunt

18. All 12 months have at least 28 days

19. A towel

20. The match

Matching (Riddles & Brain Teasers): $1 \rightarrow D$, $2 \rightarrow B$, $3 \rightarrow C$, $4 \rightarrow A$, $5 \rightarrow E$

21. C — Solving problems by approaching them from unexpected or indirect angles rather than the most obvious logical approach

22. C — He is playing Monopoly — pushing his game piece (a car) to a hotel on the board

23. B — Vertical thinking moves step-by-step toward a solution; lateral thinking jumps sideways to explore new perspectives before solving

24. B — Let some air out of the truck's tires to lower it by 1 inch

25. B — Looking at a problem from a completely different perspective or restating it in a new way

26. B — A quarter (25 cents) and a nickel (5 cents) — one of them is not a nickel, but the other one is

27. Different perspectives reveal different aspects of a problem — facts, feelings, risks, benefits, creativity, and organization each contribute unique insights

28. They are not playing against each other — they are each playing chess against different opponents

29. Finding solutions that go beyond the obvious constraints of a problem — named after the nine-dot puzzle where you must draw lines outside the box of dots

30. The man had hiccups — the waiter scared them away by surprising him, which is why he said thank you
Matching (Lateral Thinking): 1→C, 2→E, 3→D, 4→B, 5→A
31. A — A plan of action designed to achieve a long-term goal, considering possible responses from opponents or the environment
32. C — The center square
33. B — Considering what will happen several moves into the future before making your current move
34. D — Take 1 (leaving 4 for your opponent)
35. A — Giving up one advantage to gain a different advantage
36. D — Choose randomly and equally among all three options so your opponent cannot predict your pattern
37. A situation where two players each benefit from cooperating, but individual self-interest tempts each to betray the other, making both worse off
38. The center column is part of the most possible four-in-a-row combinations, giving you more ways to win
39. Having your pieces or influence in positions that limit your opponent's options while maximizing your own
40. A tactic is a specific short-term action; a strategy is the overall long-term plan that guides your tactics
Matching (Strategy Games): 1→E, 2→A, 3→B, 4→D, 5→C
41. C — A code replaces entire words or phrases with other words or symbols, while a cipher replaces individual letters according to a system
42. A — A cipher that shifts every letter in the alphabet by a fixed number of positions
43. C — HELLO
44. B — An attacker can simply try all 25 shifts and see which one produces readable text
45. A — E
46. C — Counting how often each letter appears in the encrypted message and matching the most frequent ones to common English letters like E, T, A, O
47. A cipher where each letter is replaced by a different letter or symbol according to

a fixed mapping

48. A cipher that rearranges the order of letters in the message without replacing any letters
49. MEANO ETON (reading top row then bottom row: M-E-A-N-O then E-T-T-O-N)
50. A complex electromechanical cipher machine used by Germany in World War II — breaking it gave the Allies crucial intelligence about enemy plans
Matching (Codes & Ciphers): $1 \rightarrow D$, $2 \rightarrow E$, $3 \rightarrow A$, $4 \rightarrow C$, $5 \rightarrow B$
51. B — 15
52. A — 1089
53. A — 2 and 3 (since $2 \times 3 = 6$, and 1×6 is impossible with only numbers 1-4)
54. A — 15
55. A — A puzzle asking whether you can cross all 7 bridges of Königsberg exactly once — Euler proved it was impossible, founding the field of graph theory
56. A — A number that reads the same forward and backward, like 121 or 12321
57. No — each domino must cover one light and one dark square, but removing opposite corners removes 2 squares of the same color, leaving unequal counts
58. 0 (because multiplying anything by 0 gives 0)
59. Day 47
60. Every row must contain 1-9, every column must contain 1-9, and every 3×3 box must contain 1-9
Matching (Mathematical Puzzles): $1 \rightarrow B$, $2 \rightarrow C$, $3 \rightarrow E$, $4 \rightarrow A$, $5 \rightarrow D$
61. A — Empathize — understand the people affected by the problem and what they actually need
62. A — Judging ideas too early stops the flow of creative thinking and causes people to self-censor potentially good ideas
63. B — A constraint is a limitation or requirement that a solution must satisfy — constraints focus creative energy and prevent overwhelming open-endedness
64. A — Divergent thinking — generating many possible approaches by questioning the assumptions about how things are normally done
65. A — A checklist of creative thinking prompts: Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Reverse

66. C — 'Students take more food than they eat because serving sizes are not adjustable and they can't predict how hungry they are'
67. A quick, rough version of a solution built to test whether the idea works before investing time and resources in a polished version
68. Digging deeper to find the fundamental cause of a problem rather than just addressing symptoms — solving the root cause prevents the problem from recurring
69. Observing how children actually use the current playground, interviewing kids and parents about what they enjoy and what frustrates them, then designing based on those insights
70. Narrowing down many ideas to find the best one by evaluating, comparing, and selecting — used AFTER generating many options through divergent thinking
Matching (Creative Problem Solving): $1 \rightarrow A$, $2 \rightarrow D$, $3 \rightarrow B$, $4 \rightarrow C$, $5 \rightarrow E$
71. A — The entire statement is considered true regardless of whether Q is true or false
72. D — Deductive reasoning goes from general rules to specific conclusions with certainty, while inductive reasoning goes from specific observations to general conclusions with probability
73. D — Argument from ignorance (appeal to ignorance) — claiming something is true because it hasn't been proven false
74. D — FALSE — the AND operator requires both inputs to be TRUE for the result to be TRUE
75. C — The butler did NOT do it — this is an example of modus tollens (denying the consequent)
76. C — If the ground is NOT wet, then it is NOT raining
77. If the sentence is true, then it must be false (as it claims), but if it's false, then it must be true — creating an endless contradiction
78. {3, 4} — the intersection contains only elements that appear in BOTH sets
79. Appeal to authority — citing an expert whose expertise is in an unrelated field
80. TRUE — the OR operator returns TRUE if at least one input is TRUE (inclusive OR)
Matching (Advanced Logic): $1 \rightarrow D$, $2 \rightarrow C$, $3 \rightarrow B$, $4 \rightarrow E$, $5 \rightarrow A$
81. C — A joke that plays on multiple meanings of a word or similar-sounding words
82. B — interest

83. A — A pun using words that sound the same but have different meanings or spellings
84. D — The bicycle couldn't stand on its own because it was two-tired.
85. B — A double-meaning pun
86. D — To surpass something AND to stir/whisk an egg
87. Because 'seafood' sounds like 'see food' when spoken aloud
88. Because 'days are numbered' means both literally having numbers on them AND the idiom meaning time is running out
89. Because 'tense' means both anxious AND a verb form in grammar
90. Because 'point' means both a decimal point AND a purpose or valid argument
Matching (Wordplay & Language): 1→E, 2→C, 3→D, 4→A, 5→B
91. A — A phrase whose meaning is different from the literal meaning of its individual words
92. C — Good luck
93. A — Something that is very easy to do
94. B — To describe something exactly right or be precisely correct
95. A — To reveal a secret or share information that was meant to be kept hidden
96. A — Feeling sick or unwell
97. Because the literal meaning (animals falling from the sky) is completely different from the figurative meaning (raining very heavily)
98. It means it's your turn to take action or make a decision, from tennis where the ball must be returned
99. Don't risk everything on a single plan — if you drop one basket, all eggs break, so spread your resources
100. 'Midnight oil' means working late into the night; 'burning bridges' means ruining relationships or options permanently
Matching (Wordplay & Language): 1→A, 2→D, 3→B, 4→C, 5→E
101. B — A word or phrase formed by rearranging the letters of another word or phrase
102. A — A word or phrase that reads the same forwards and backwards

103. C — kayak
104. C — A composition where the first letters of each line or word spell out a word or message
105. D — silent
106. A — A puzzle where you change one letter at a time to transform one word into another, making a real word at each step
107. Because it uses every letter from 'astronomer' AND the new phrase meaningfully relates to what an astronomer does
108. Because it forms a grammatically complete, meaningful sentence that reads the same forwards and backwards
109. It forces you to think about letter combinations and word structure, strengthening your mental word bank
110. A solvable puzzle has exactly one clear answer that can be reached through logical reasoning or letter manipulation
Matching (Wordplay & Language): 1→D, 2→E, 3→A, 4→C, 5→B
111. D — The study of the origin and history of words
112. A — Water
113. A — To write or draw
114. B — Not or the opposite of
115. A — The study of
116. A — Greek and Latin
117. It was built from Greek roots to describe its function: a device for hearing sound from far away
118. Because all three words contain 'bio' meaning life, so you can deduce they all relate to living things or life processes
119. It comes from Latin/Italian 'dis-' (bad) + 'astro' (star), meaning 'bad star' — ancient people blamed catastrophes on unlucky star alignments
120. Roman soldiers were sometimes paid in salt or given money to buy salt, called 'salarium,' which evolved into 'salary'
Matching (Wordplay & Language): 1→A, 2→B, 3→E, 4→C, 5→D
121. C — 10

122. D — Footsteps
123. C — Fill the 5-gallon bucket completely
124. D — Pause, re-evaluate the board position, try to understand why they made that move, and adjust your plan accordingly
125. D — MEANO ETON (reading top row then bottom row: M-E-A-N-O then E-T-T-O-N)
126. C — 0 (because multiplying anything by 0 gives 0)
127. A quick, rough version of a solution built to test whether the idea works before investing time and resources in a polished version
128. Argument from ignorance (appeal to ignorance) — claiming something is true because it hasn't been proven false
129. Something that repeats or follows a predictable rule
130. 9
Matching (Pattern Recognition): 1→E, 2→D, 3→A, 4→C, 5→B
131. B — A repeating cycle of 7 (Sunday through Saturday, then back to Sunday)
132. D — A clock
133. B — Identifying what to avoid can reveal obstacles and paths that are hard to see when only thinking about the goal
134. C — Having your pieces or influence in positions that limit your opponent's options while maximizing your own
135. D — The Navajo language had no written form, was extremely complex, and was understood by almost no one outside the Navajo nation, making it virtually impossible to decode
136. A — 15 moves
137. As routine tasks become automated, the ability to solve new, complex, open-ended problems creatively becomes the most valuable human skill across all fields
138. Appeal to authority — citing an expert whose expertise is in an unrelated field
139. A heptagon (7-sided shape)
140. A puzzle that challenges you to think creatively and look beyond the obvious answer
Matching (Pattern Recognition): 1→D, 2→E, 3→A, 4→C, 5→B

- 141. A — Red, Red, Blue
- 142. A — There are only 3 people: a grandfather, his son, and his grandson (the son is both a father AND a son)
- 143. A — Finding solutions by comparing your problem to a similar problem in a completely different field and adapting that solution
- 144. A — A tactic is a specific short-term action; a strategy is the overall long-term plan that guides your tactics
- 145. C — Each word in the message is replaced by the page number, line number, and word position where that word appears in the shared book
- 146. D — 15
- 147. Divergent thinking — generating many possible approaches by questioning the assumptions about how things are normally done
- 148. No — the converse of a true statement is not necessarily true. Rectangles include shapes that have unequal side lengths, which squares do not
- 149. Solving problems by approaching them from unexpected or indirect angles rather than the most obvious logical approach
- 150. A plan of action designed to achieve a long-term goal, considering possible responses from opponents or the environment
Matching (Pattern Recognition): $1 \rightarrow E$, $2 \rightarrow B$, $3 \rightarrow A$, $4 \rightarrow D$, $5 \rightarrow C$
- 151. C — The second number is always double the first number
- 152. A — Alex
- 153. A — Secure the win you already have rather than risk losing it for a bigger victory
- 154. C — 2 and 3 (since $2 \times 3 = 6$, and 1×6 is impossible with only numbers 1-4)
- 155. D — Narrowing down many ideas to find the best one by evaluating, comparing, and selecting — used AFTER generating many options through divergent thinking
- 156. B — I
- 157. Let some air out of the truck's tires to lower it by 1 inch
- 158. A move that limits your opponent to only one or very few reasonable responses
- 159. It is a simple substitution cipher — each letter always becomes the same symbol, making it vulnerable to frequency analysis
- 160. Mathematical puzzles require creative thinking and insight to find an approach,

while regular problems usually have a standard method to follow
Matching (Pattern Recognition): $1 \rightarrow D$, $2 \rightarrow B$, $3 \rightarrow C$, $4 \rightarrow A$, $5 \rightarrow E$

- 161. For some comic relief!
- 162. "I'm ready to deliver some sharp wit!"
- 163. They were always clowning around -- and it worked!
- 164. A puzzle-paladin!
- 165. Because the punchlines kept landing!
- 166. "I'm programmed to laugh, but even I have standards!"

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