

Strategyforge — Activity Book

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

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

1. Introduction to Strategy Games

Circle the correct answer

1. What is a strategy game?

(A) A game that is always played on a computer (B) A game where you make plans and decisions to reach a goal (C) A game where the winner is decided by luck alone (D) A game where you only use fast reflexes to win

2. In a turn-based strategy game, when does each player make their moves?

(A) All players move at the same time as fast as they can (B) Players move whenever they feel like it with no order (C) Players take turns, one at a time, in a set order (D) Only the player who is winning gets to move

3. Which of the following is an example of a classic turn-based strategy board game?

(A) Musical chairs (B) Chess (C) Dodgeball (D) Tag

4. What does 'real-time' mean in a real-time strategy game?

(A) All players make decisions and act at the same time without waiting for turns (B) The game shows real news events while you play (C) The game takes place in the real world, not on a screen (D) The game can only be played during certain hours of the day

5. Why do turn-based games give players more time to think about their choices compared to real-time games?

(A) Because turn-based games have fewer rules to remember (B) Because turn-based games only last a few minutes (C) Because the game pauses while you decide, so there is no time pressure during your turn (D) Because turn-based games are always easier than real-time games

6. What is the difference between a tactic and a strategy?

(A) They mean exactly the same thing (B) A strategy is a long-term overall plan, while a tactic is a specific short-term action within that plan (C) A tactic is for board games and a strategy is for video games (D) A strategy is a lucky move and a tactic is a planned move

Write the answer

7. Why is it important to think about what your opponent might do next in a strategy game?

Answer: _____

8. How is playing a strategy game similar to solving a math word problem?

Answer: _____

9. In a strategy game where you can see all the pieces on the board, why might a player still lose even though they can see everything?

Answer: _____

10. Why do many strategy games have simple rules but are still very hard to master?

Answer: _____

Match each question to its answer

1. You are playing a board game and have two options: a safe move that gives you a small advantage, or a risky move that could give you a big advantage but might also backfire. Which strategic thinking skill are you using to decide? →

2. In a game of tic-tac-toe, your opponent places their X in the center square on their first move. Using strategic thinking, where should you place your O? →

3. You are playing a strategy card game and you have a powerful card you could play now, or you could save it for later. The game is close, with 5 rounds left. How would you apply strategic thinking to decide? →

4. Your class is organizing a team strategy game tournament. You need to form teams. How would you apply strategic thinking to create balanced teams? →

5. You have been losing in a strategy game because your opponent keeps using the same trick to beat you. How should you apply what you have learned about strategy to turn things around? →

(A) In a corner square, because corners give you the most winning opportunities against a center opening

(B) Risk assessment — weighing the potential rewards against the potential downsides

(C) Study the trick they keep using, figure out its weakness, and prepare a counter-strategy for next time

(D) Consider what situations might come up in the remaining rounds and whether the card would be more valuable later

(E) Mix experienced and newer players on each team so every team has a range of skill levels

2. Chess Fundamentals

Circle the correct answer

11. How many squares are on a standard chess board?
(A) 48 (B) 64 (C) 100 (D) 32
12. Which chess piece can only move diagonally?
(A) The knight (B) The pawn (C) The rook (D) The bishop
13. How does a knight move in chess?
(A) Diagonally as far as it wants (B) In an L-shape: two squares in one direction and one square perpendicular (C) One square in any direction (D) In a straight line as far as it wants
14. What is the objective of a chess game?
(A) To get your king to the other side of the board (B) To capture all of the opponent's pieces (C) To checkmate the opponent's king so it cannot escape capture (D) To be the first player to lose all your pieces
15. Why is the queen considered the most powerful piece in chess?
(A) Because capturing the queen wins the game (B) Because it can move any number of squares in any direction — horizontally, vertically, or diagonally (C) Because the queen can move to any square on the board in one move (D) Because the queen can jump over other pieces
16. Why is it usually a bad idea to bring your queen out very early in a chess game?
(A) Because your opponent can attack the queen with less valuable pieces, forcing you to waste moves retreating it (B) Because the queen gets weaker the more it moves (C) Because bringing out the queen early automatically causes a draw (D) Because the queen is not allowed to move in the first ten turns

Write the answer

17. In chess, why is controlling the center of the board (the four middle squares) considered a good strategy?
Answer: _____
18. What does it mean when a piece is 'pinned' in chess?
Answer: _____
19. Why is it generally a good idea to 'castle' early in a chess game?
Answer: _____

20. What happens when a pawn reaches the opposite end of the board?

Answer: _____

Match each question to its answer

1. You have a bishop and your opponent has a knight, with no other pieces except kings. Your bishop is on a light square. Your opponent places their king on a dark square. Why is this a problem for you? →
2. Your opponent has just moved their queen to threaten your rook and your bishop at the same time. You can only save one. Which piece should you save, and why? →
3. You notice your opponent's king has no escape squares and their only defender of a key square is their queen. If you can force a trade of queens, what would happen? →
4. You have two connected pawns (side by side) advancing up the board. How would you use them to create a strong position? →
5. Your opponent offers to trade their knight for your bishop. You notice you are playing on a very open board with few pawns left. Should you accept the trade? →

(A) Without the queen defending, you might be able to deliver checkmate because the king has no escape

(B) Advance them together so each pawn protects the other as they move forward

(C) Probably not, because bishops are usually stronger than knights on open boards where their long-range diagonal movement is most effective

(D) Your bishop can only reach light squares, so it can never attack the opponent's king on a dark square

(E) Save the rook because it is generally worth more (5 points) than the bishop (3 points)

3. Pattern Recognition in Games

Circle the correct answer

21. What does 'pattern recognition' mean in the context of strategy games?

- (A) The ability to recognize which game box a game comes in (B) The ability to notice recurring arrangements or sequences that help predict what will happen next
(C) The ability to memorize every possible move in a game (D) The ability to play games faster than other players

22. In a strategy game, what is a 'recurring position'?

- (A) A board that is set up incorrectly before the game starts (B) A position that only appears in one specific game ever played (C) A position where a player keeps moving back to the same square (D) A board arrangement or situation that appears frequently across many different games

23. What is a 'sequence' in a strategy game?

(A) A series of moves that follow each other in a specific order to achieve a goal (B) The time limit for each turn (C) A random set of moves with no particular order (D) The number of players in the game

24. What is a 'template' or 'motif' in strategy game pattern recognition?

(A) A type of game piece that looks decorative (B) The physical design printed on the game board (C) A cheat code that guarantees winning (D) A common tactical or strategic idea that appears in many different situations, like a blueprint

25. Why do experienced strategy game players make better decisions faster than beginners?

(A) Because they always memorize the entire game tree before playing (B) Because they have faster reflexes than beginners (C) Because strategy games become easier the more times you play them (D) Because they have seen similar patterns many times before and can quickly match the current situation to known patterns

26. How does recognizing your opponent's pattern of play help you in a strategy game?

(A) It guarantees you will win every game against them (B) It does not help at all because every game is completely different (C) It lets you predict their likely next moves and prepare effective counter-strategies in advance (D) It lets you read their mind telepathically

Write the answer

27. In many strategy games, a common pattern is 'if-then' thinking. What does this mean?

Answer: _____

28. Why is it useful to study patterns even in games that involve some randomness, like card games?

Answer: _____

29. What is the connection between pattern recognition in strategy games and pattern recognition in mathematics?

Answer: _____

30. What does it mean to 'read' a game board in a strategy game?

Answer: _____

Match each question to its answer

1. In a game of Connect Four, your opponent has three pieces in a row with one end open. You also have a chance to extend your own line to three pieces. What should you do? →
2. You are playing a board game against a friend who always builds up defenses first and attacks later. Knowing this pattern, how would you adjust your strategy? →
3. In a territory-control strategy game, you notice that the corners of the board are harder for opponents to attack because they are surrounded by edges. How would you use this pattern? →
4. You are playing a game where you can see the last five moves your opponent made. You notice they repeat a cycle of attack-defend-build every three turns. It is currently their 'build' turn. What move should you make next turn? →
5. You have been tracking your opponent's decisions in a resource management game. Out of the last 8 rounds, they chose gold 6 times and wood 2 times. Next round you can block one resource. Which should you block? →

(A) Prepare a strong defensive position because their pattern predicts an attack on their next turn

(B) Block your opponent's three-in-a-row first, because if you do not, they will win on their next turn

(C) Attack early before their defenses are fully built, since you know they will not be ready to counter right away

(D) Prioritize claiming corner territories early because they are naturally easier to defend with fewer exposed sides

(E) Block gold because the pattern shows your opponent strongly prefers it and depends on it for their strategy

4. Decision Trees & Planning Ahead

Circle the correct answer

31. What is a decision tree in the context of strategic planning?

(A) A ranking of players from best to worst (B) A type of tree planted in a garden to help you make decisions (C) A diagram that maps out possible choices and their consequences, branching out like a tree (D) A list of all the rules in a strategy game

32. What does 'thinking ahead' mean in a strategy game?

(A) Considering what will happen several moves into the future before making your current move (B) Making your move before it is your turn (C) Memorizing the instructions before starting the game (D) Thinking about what game to play next week

33. In a decision tree, what does each 'node' or branch point represent?

(A) A player who has been eliminated (B) A point where a player must make a choice between two or more options (C) The final score of the game (D) A rule that cannot be changed

34. What is the 'depth' of thinking ahead in a strategy game?

(A) How loudly a player thinks during the game, and this has been consistently demonstrated in practice (B) How deep the game box is, and this principle applies across similar situations (C) The total number of moves in the entire game, as this is what research and standard practice suggests (D) The number of moves into the future that a player considers before making their current move

35. Why does a decision tree get wider as you look further into the future?

(A) Because new players keep joining the game (B) Because the rules change and add more options each turn (C) Because each choice creates new branches, and each of those branches creates more branches, multiplying the possibilities (D) Because the game board physically gets larger over time

36. Why is it important to consider your opponent's possible responses when planning ahead?

(A) Because planning only matters if your opponent is not paying attention (B) Because your opponent will always make the worst possible move (C) Because you need to tell your opponent your plan before making it (D) Because your plan only works if it accounts for what your opponent might do — they are also trying to win

Write the answer

37. What is the difference between a 'forced move' and a 'free move' in strategic planning?

Answer: _____

38. What does 'pruning' a decision tree mean in strategic thinking?

Answer: _____

39. How does planning ahead in a strategy game relate to setting goals in real life?

Answer: _____

40. Why can thinking too many moves ahead sometimes be counterproductive in a strategy game?

Answer: _____

Match each question to its answer

1. You are playing a turn-based strategy game. You have three possible moves: Move A leads to a certain small gain, Move B has a 50% chance of a big gain but 50% chance of a big loss, and Move C leads to a neutral result. Your opponent is strong and you are slightly behind. Which move best applies strategic planning? →
2. Your strategy game gives you 3 actions per turn. You can attack, defend, or gather resources. You are about to face a powerful enemy in 3 turns. Draw up a plan for your three preparation turns. →
3. In a game of Othello (Reversi), you can either take many pieces now or take a corner square that gives fewer pieces immediately. Using decision tree thinking, which choice is likely better in the long run? →
4. You are playing a game where each turn you must choose between building a wall (defense) or training a soldier (offense). Your opponent has been building 3 soldiers for every 1 wall. You need to plan your next 4 turns to counter their approach. →
5. You have the option to sacrifice a piece in a game to open up a better position three moves later. How do you use a decision tree to decide whether the sacrifice is worth it? →

(A) Take the corner because corners cannot be flipped and provide permanent control, while other pieces can be flipped back

(B) Map out what happens after the sacrifice through multiple branches, checking if the improved position outweighs the lost piece in every likely scenario

(C) Gather resources on turns 1 and 2 to build strength, then defend on turn 3 to be ready for the attack — building resources first maximizes your power for the confrontation

(D) Move B, because when you are behind against a strong opponent, a safe approach likely leads to a slow loss — you need to take a calculated risk

(E) Build 3 walls and 1 soldier to create a strong defensive position that neutralizes their aggressive army before counter-attacking

5. Risk Assessment & Probability

Circle the correct answer

41. What does 'probability' mean in the context of a strategy game?

- (A) How long the game will take to finish, and this is the standard approach used in most cases (B) The number of players in the game, and this is the standard approach used in most cases (C) The total number of pieces on the board, as this is what research and standard practice suggests (D) The likelihood that a specific outcome will happen, expressed as a number between 0 and 1 (or 0% and 100%)

42. What is 'expected value' in game strategy?

(A) The highest possible score you can get, which is why this approach is recommended by experts (B) How much money the game costs at the store, as this directly follows from the underlying principles (C) The average outcome you would get if you made the same decision many times, calculated by multiplying each outcome by its probability (D) The value of the most expensive piece in the game, which is the most common explanation for this phenomenon

43. What does 'risk-reward trade-off' mean in strategic decision-making?

(A) A board game where players trade cards for rewards (B) A scoring system where risk and reward cancel out to zero (C) The balance between how much you could gain from a decision and how much you could lose if it goes wrong (D) The rule that risky moves always fail

44. In a strategy game that uses dice, if you need to roll a 5 or 6 on a standard six-sided die to succeed, what is the probability of success?

(A) 2 out of 6, or about 33% (B) 5 out of 6, or about 83% (C) 50%, because you either succeed or you do not (D) 1 out of 6, or about 17%

45. Why is understanding probability important even in strategy games that do not use dice or cards?

(A) It is not important — probability only matters in games with random elements, which is the most common explanation for this phenomenon (B) Because all strategy games secretly use hidden dice rolls (C) Because probability helps you memorize board positions faster (D) Because you still face uncertain outcomes when you cannot predict exactly what your opponent will do, and probability helps estimate the likelihood of different responses

46. In a card game, you have seen 20 of the 52 cards. Ten of the 32 unseen cards would help you. What is the probability that the next card drawn will help you?

(A) 20 out of 52, or about 38% (B) 10 out of 52, or about 19% (C) 10 out of 20, or 50% (D) 10 out of 32, or about 31%

Write the answer

47. What does it mean when someone says a strategy has 'high variance' in a game?

Answer: _____

48. How does the concept of 'sunk cost' apply to strategy games?

Answer: _____

49. Why do many strategy games include random elements like dice rolls or card draws, rather than being completely deterministic?

Answer: _____

50. What is the 'gambler's fallacy' and why is it dangerous in strategy games?

Answer: _____

Match each question to its answer

1. In a strategy game, you can attack with a 70% chance of success (gaining 10 points) or defend with a 100% chance of gaining 3 points. What is the expected value of the attack option? →

2. You are playing a board game where you can choose one of three paths. Path A: 50% chance of gaining 20 gold, 50% chance of gaining nothing. Path B: guaranteed 8 gold. Path C: 25% chance of gaining 40 gold, 75% chance of losing 5 gold. Which path has the highest expected value? →

3. In a game of Risk, you are attacking with 3 dice versus the defender's 2 dice. How does having more dice affect your probability of winning? →

4. You are playing a strategy card game and need a specific card to complete your strategy. There are 15 cards left in the deck and 3 of them are the card you need. You can either draw 1 card or pay a cost to draw 2 cards. How much does drawing 2 improve your chances? →

5. You are winning a strategy game but your opponent proposes a risky gamble that could flip the result. The gamble gives them a 40% chance of winning instantly. Should you accept the gamble? →

(A) More dice give you a higher probability of rolling high numbers, tilting the odds in your favor compared to rolling fewer dice

(B) No, because you are already winning — accepting a 40% chance of losing is a bad risk when you can win by playing safely

(C) Path A with an expected value of 10 gold ($0.50 \times 20 + 0.50 \times 0 = 10$)

(D) 7 points ($0.70 \times 10 = 7$), which is higher than the guaranteed 3 points from defending

(E) Drawing 1 gives you about a 20% chance. Drawing 2 roughly doubles your chances to about 37%, which is a significant improvement

6. Game Theory Basics

Circle the correct answer

51. What is 'game theory'?

(A) The mathematical study of strategic decision-making, where the outcome depends on the choices of multiple participants (B) A theory about why people enjoy playing video games, as this is what research and standard practice suggests (C) A set of rules for designing board games, making this the most widely accepted explanation

(D) A test that determines who is the best game player, which is why this approach is recommended by experts

52. What is a 'zero-sum game'?

(A) A game where both players always end with equal scores (B) A situation where one player's gain is exactly equal to the other player's loss — the total always adds to zero (C) A game that starts with zero pieces on the board (D) A game where nobody scores any points

53. What is the 'Prisoner's Dilemma' in game theory?

(A) A puzzle about how to unlock a jail cell, which is why this approach is recommended by experts (B) A scenario where two players each benefit from cooperating, but each has an individual incentive to betray the other, leading to a worse outcome for both (C) A board game where players try to escape from a prison, as this is what research and standard practice suggests (D) A strategy where the first player always goes to jail, and this has been consistently demonstrated in practice

54. What is a 'Nash equilibrium' in game theory?

(A) When a player named Nash wins the game, which is the most common explanation for this phenomenon (B) When the game ends in a tie, as this is what research and standard practice suggests (C) A situation where no player can improve their outcome by changing only their own strategy, given what the other players are doing (D) When all players have equal numbers of pieces, which is the most common explanation for this phenomenon

55. Why is chess considered a zero-sum game?

(A) Because both players can win at the same time (B) Because one player's win is the other player's loss — the outcomes are perfectly opposed, and there is no way for both to gain (C) Because the game was invented when zero was discovered (D) Because players start with zero points

56. What is the difference between a 'zero-sum game' and a 'positive-sum game'?

(A) They are just two names for the same concept (B) Zero-sum games have no winners while positive-sum games always have winners (C) Zero-sum games use negative numbers and positive-sum games use positive numbers (D) In a zero-sum game, one player's gain equals another's loss. In a positive-sum game, all players can gain — the total value increases through cooperation

Write the answer

57. In the Prisoner's Dilemma, why do both players often choose to betray even though cooperation gives a better combined outcome?

Answer: _____

58. How does a 'repeated game' change the dynamics of the Prisoner's Dilemma compared to playing it just once?

Answer: _____

59. What does 'dominant strategy' mean in game theory?

Answer: _____

60. What is 'tit for tat' and why is it effective in repeated Prisoner's Dilemma games?

Answer: _____

Match each question to its answer

- 1.** Two competing businesses are deciding whether to lower prices. If both lower prices, they both make less profit. If only one lowers prices, that business gets all the customers. If neither lowers prices, both make good profit. Which game theory concept does this represent? Apply the concept to predict the likely outcome. →
- 2.** In a strategy game, you and another player can either share a resource (each getting 3 points) or fight over it (winner gets 5, loser gets 0, and there is a 50% chance for each). Use expected value to determine the best strategy. →
- 3.** You are in a multiplayer strategy game with 4 players. Two players propose an alliance to defeat the other two. Using game theory principles, how should you decide whether to join the alliance? →
- 4.** In a negotiation game, Player A values Item X at 8 points and Item Y at 2 points. Player B values Item X at 3 points and Item Y at 7 points. How can both players benefit from trading? →
- 5.** You are playing a repeated game against the same opponent for 10 rounds. In round 8, your opponent betrays you for the first time after cooperating for 7 rounds. Using the 'tit for tat' strategy, what do you do in round 9? →

(A) Player A should trade Item Y to Player B for Item X, because each player gets the item they value more — creating a positive-sum outcome

(B) Consider what happens after the other two are defeated — the alliance members must eventually compete, so evaluate whether the alliance benefits you in the long run

(C) Betray in round 9 to signal that betrayal has consequences, then return to cooperation if they cooperate in round 9

(D) This is a Prisoner's Dilemma — both businesses are likely to lower prices (betray) even though both keeping high prices (cooperating) would be better for both

(E) Sharing guarantees 3 points each. Fighting has an expected value of 2.5 points (0.5 times 5 + 0.5 times 0). Sharing is the better choice mathematically.

7. Historical Strategy Games

Circle the correct answer

61. Approximately how old is the game of Go (also called Weiqi in Chinese)?

(A) About 50 years old, invented alongside video games (B) About 500 years old, invented during the Renaissance (C) About 200 years old, invented during the Industrial Revolution (D) Over 2,500 years old, making it one of the oldest board games still played today

62. In which country did chess originate before spreading to Persia and then to Europe?

(A) England, where it was invented by a medieval king (B) Russia, where it was created for military training (C) Japan, where it evolved from Go (D) India, where an early form called Chaturanga was played around the 6th century CE

63. What is the name of the traditional African family of strategy games played on boards with rows of pits, where players distribute seeds or stones?

(A) Mancala (B) Mahjong (C) Backgammon (D) Dominoes

64. What major change happened to the chess queen piece around the late 15th century in Europe?

(A) The queen became the most powerful piece on the board, able to move any number of squares in any direction — previously it could only move one square diagonally (B) The queen was changed to only move backward, and this has been consistently demonstrated in practice (C) The queen was split into two separate pieces, making this the most widely accepted explanation (D) The queen was removed from the game entirely, as this directly follows from the underlying principles

65. Why was Go considered one of the 'four arts' that educated Chinese scholars were expected to master?

(A) Because Go used expensive materials that showed wealth (B) Because Go was seen as developing strategic thinking, patience, and balance — qualities valued in Chinese philosophy and governance (C) Because playing Go was required by law in ancient China (D) Because Go was easy enough for anyone to master quickly

66. How does the game of Go differ fundamentally from chess in terms of what happens during the game?

(A) Go and chess are fundamentally the same game with different-looking pieces, which is the most common explanation for this phenomenon (B) Go has more pieces than chess at the start of the game, and this is the standard approach used in most cases (C) Chess involves capturing while Go does not involve any captures, which is the most common explanation for this phenomenon (D) In Go, players add stones to an empty board to claim territory. In chess, players start with all pieces and the board becomes emptier over time as pieces are captured

Write the answer

67. Why is Go often described as having simple rules but being far more complex than chess?

Answer: _____

68. How did the Silk Road and trade routes influence the spread of strategy games across civilizations?

Answer: _____

69. What role did strategy games play in military training throughout history?

Answer: _____

70. Why was the defeat of chess grandmaster Garry Kasparov by IBM's Deep Blue computer in 1997 considered a landmark moment?

Answer: _____

Match each question to its answer

1. The ancient Indian game Chaturanga had four types of pieces representing four divisions of the Indian army. Chess evolved from this, but the pieces changed names. Match the original concept to modern chess: the 'elephant' in Chaturanga corresponds to which modern chess piece? →

2. Google DeepMind's AlphaGo defeated the world champion Go player Lee Sedol in 2016. How did AlphaGo's approach to Go differ from Deep Blue's approach to chess? →

3. The Japanese game of Shogi (Japanese chess) allows captured pieces to be returned to the board as your own. How would you apply this rule change to your strategic thinking compared to standard chess? →

4. Mancala games have been found carved into stone at ancient Egyptian temples dating back over 3,000 years. Using this evidence, what can you apply to our understanding of leisure and intellectual culture in ancient Egypt? →

5. During the Cold War, chess became a symbolic battleground between the United States and the Soviet Union. The 1972 Fischer-Spassky match was called the 'Match of the Century.' How would you apply your understanding of game theory to explain why a chess match carried such political weight? →

(A) Chess served as a zero-sum proxy for the US-Soviet rivalry — each side's victory was the other's defeat, symbolizing ideological superiority without military conflict

(B) Deep Blue used brute-force calculation of millions of positions, while AlphaGo used neural networks and machine learning to develop intuition-like pattern recognition

(C) Material advantage matters less because captured pieces return as enemies, so

you must think about how each captured piece could be used against you later

(D) The bishop — the elephant became the bishop as chess moved through Persian and European cultures

(E) Ancient Egyptians valued strategic thinking and leisure enough to permanently carve game boards into important structures, suggesting games were a respected part of their culture

8. Advanced Strategic Thinking

Circle the correct answer

71. What does 'multi-step planning' mean in a strategy game?

(A) Making random moves and hoping one works out (B) Thinking several moves ahead and considering how each action leads to future positions (C) Only planning your very next move and ignoring everything after (D) Copying whatever your opponent just did

72. In strategy games, what is a 'resource' typically referring to?

(A) Anything limited that a player must manage wisely, such as pieces, time, territory, or in-game currency (B) The number of players in the game, and this is the standard approach used in most cases (C) Only money or gold coins in the game, making this the most widely accepted explanation (D) The instructions printed on the game box, as this directly follows from the underlying principles

73. What does the term 'meta-strategy' refer to in competitive games?

(A) The physical materials the game is made from (B) A type of dice roll that always wins (C) The overall approach or dominant strategy that most skilled players use in the current competitive environment (D) A secret cheat code built into the game by its creators

74. What is 'tempo' in the context of a strategy game like chess?

(A) The background music that plays during a game (B) The advantage of being one move ahead in development or initiative, where each move counts as one unit of tempo (C) How fast you physically move the pieces on the board (D) The total number of pieces remaining on the board

75. Why is it important to consider your opponent's possible responses when planning your moves?

(A) Because the game rules require you to guess what your opponent is thinking (B) It isn't important — you should only focus on your own plan and ignore the opponent (C) Because your opponent will try to counter your strategy, so you need to account for their best possible replies to succeed (D) Because your opponent always makes

the worst possible move

76. In resource management, what does 'opportunity cost' mean when you choose one action over another?

(A) The time it takes to physically perform the action (B) The value of the best alternative action you gave up by making your current choice (C) The price you paid in in-game currency for the action (D) The amount of real money the game costs to buy

Write the answer

77. What does it mean to have 'positional advantage' in a strategy game?

Answer: _____

78. Why might a player deliberately sacrifice a valuable piece in a strategy game?

Answer: _____

79. How would you explain the difference between 'tactics' and 'strategy' in a game?

Answer: _____

80. In a strategy game where you have limited action points each turn, you can either build a defensive wall (costs 3 points) or train two soldiers (costs 2 points each, total 4). You have 4 action points and your opponent is preparing an attack. Which resource management principle should guide your decision?

Answer: _____

Match each question to its answer

1. You're playing a board game where you control territory. You could expand into a large undefended region or strengthen your existing smaller territory. Using multi-step thinking, how should you approach this decision? →

2. In a card game, you know your opponent tends to play aggressively in the early game. How should you adapt your strategy based on this observation? →

3. You're in a game with three opponents. Two of them are fighting each other intensely while the third is quietly building up resources. Using strategic awareness, what should you prioritize? →

4. Your game plan was to control the center of the board, but your opponent has already taken strong central positions. How should you apply the concept of strategic flexibility? →

5. In a game where you can trade resources with other players, your opponent offers you a deal that seems equally fair to both sides. However, they are much closer to winning than you are. Should you accept? →

(A) Keep an eye on the quiet player building resources — they may become the biggest threat while the fighting players weaken each other

(B) Probably not — an equally fair trade helps the player closer to winning more, because it advances them toward victory while you remain behind

(C) Consider what happens 2-3 turns after each choice — if expanding leaves you vulnerable to losing everything, strengthening first may lead to safer long-term growth

(D) Adjust your opening plan to defend against their early aggression, then look for opportunities to counter-attack once they've spent their resources

(E) Adapt your plan to work around their central control — perhaps target the flanks, undermine their center indirectly, or shift to a different winning approach

9. Strategic Thinking

Circle the correct answer

81. What does 'cooperative strategy' mean in a game?

(A) Players each play their own separate game at the same time (B) Players work together toward a shared goal instead of competing against each other (C) Players compete to see who can win the fastest (D) Players take turns being the leader and everyone else follows

82. In the cooperative board game Pandemic, what is the main goal all players share?

(A) Be the last player standing on the board (B) Build the tallest tower of cards (C) Collect the most money before time runs out (D) Cure all four diseases before they spread across the world

83. What is a 'role' in a cooperative team game?

(A) A specific job or set of abilities assigned to a player that helps the team in a unique way (B) A punishment given to the losing player (C) The player who always goes first (D) The number of points each player starts with

84. What is 'communication' in the context of team games?

(A) Talking to distract other players (B) Sharing information, plans, and ideas with your teammates to coordinate actions (C) Reading the rulebook out loud (D) Keeping your strategy secret from everyone else

85. What is a 'shared resource' in a cooperative game?

(A) Something valuable that belongs to the whole team and must be managed together (B) Points that are hidden from other players (C) A resource that only the team captain can use (D) A bonus given to the player who is losing

86. In team strategy games, what does 'synergy' mean?

(A) When all players use the exact same strategy (B) When the game gives bonus points for playing quickly (C) When one player does all the work for the team (D) When players' actions combine to produce a result greater than what each could achieve alone

Write the answer

87. Why is it important for team members to have different roles in a cooperative game?

Answer: _____

88. How does a 'win-or-lose-together' condition change the way players think about strategy?

Answer: _____

89. What is the difference between 'cooperation' and 'compromise' in a team game?

Answer: _____

90. Why can too much discussion sometimes hurt a cooperative team's performance?

Answer: _____

Match each question to its answer

1. How does 'trust' between teammates affect cooperative strategy? →

2. Your cooperative game team has a healer, a scout, and a fighter. A dangerous enemy is approaching while an injured teammate needs help. How should the team coordinate? →

3. In a cooperative game, your team has 5 action points to share this round. One player wants to use 3 points for a risky move that could win the game, while another wants to spread points evenly for safety. What should the team consider? →

4. You are playing a cooperative card game where communication is limited. You cannot tell teammates exactly which cards you have. How can you signal your intentions? →

5. Your team is losing a cooperative game with 3 rounds left. One teammate suggests giving up. How should the team respond strategically? →

(A) The probability of the risky move succeeding, what happens if it fails, and whether the safe approach still gives the team a chance to win later

(B) When teammates trust each other, they can divide tasks confidently and act faster without second-guessing

(C) The healer tends to the injured teammate while the fighter engages the enemy and the scout watches for additional threats

(D) Use allowed actions strategically, such as which card you play first, to give

teammates clues about your hand

(E) Assess the remaining options together, identify the best possible path to victory, and commit to a focused plan

10. Strategic Thinking

Circle the correct answer

91. In economic strategy games, what is 'supply and demand'?

(A) A rule that says you must always buy things in order, which is the most common explanation for this phenomenon (B) The number of players in the game and how many want to win, and this is the standard approach used in most cases (C) Supply is how much of something is available, and demand is how much people want it; when demand is high and supply is low, prices go up (D) The total number of turns in the game, and this has been consistently demonstrated in practice

92. What is 'bartering' in a resource game?

(A) Discarding resources you do not need (B) Trading resources directly with another player without using money (C) Stealing resources from other players (D) Buying resources from the game bank

93. What does 'scarcity' mean in an economic strategy game?

(A) There are not enough resources for everyone to have everything they want, forcing players to make choices (B) Resources are unlimited and players can take as many as they want (C) The game ends when all resources are collected (D) Every player starts with the same amount of resources

94. In the board game Monopoly, what happens when a player lands on a property owned by another player?

(A) They swap properties with the owner (B) They get to buy it at half price (C) They must pay rent to the property owner (D) Nothing happens and they continue playing

95. What is an 'investment' in an economic strategy game?

(A) Saving all your resources and never spending them (B) Giving resources away to help another player (C) Spending resources now with the expectation of earning more resources back later (D) Using a special power card to gain extra turns

96. What is a 'monopoly' in economic terms?

(A) When all players have equal amounts of everything, and this principle applies across similar situations (B) When a player goes bankrupt and leaves the game, which is why this approach is recommended by experts (C) When one player or entity controls all or nearly all of a particular resource or market, allowing them to set prices

(D) A type of game where everyone cooperates, making this the most widely accepted explanation

Write the answer

97. Why do economic strategy games often have different types of resources instead of just one?

Answer: _____

98. How does 'inflation' work in an economic strategy game?

Answer: _____

99. What is the difference between a 'short-term gain' and a 'long-term investment' in resource games?

Answer: _____

100. Why is 'opportunity cost' important in economic strategy games?

Answer: _____

Match each question to its answer

1. How does 'negotiation' create value in a trading game? →

2. You are playing an economic game and have 10 gold. You can buy a farm that produces 2 gold per turn or a shop that produces 1 gold per turn but costs only 4 gold. Which is the better investment if the game has 8 turns left? →

3. In a trading game, you have lots of wood but need brick. Another player has lots of brick but needs wood. A third player is offering to sell brick for 3 gold each. What is your best option? →

4. You notice that stone is becoming scarce in your economic game and many players will need it next round. What strategic action should you take now? →

5. You control a market where you set prices for your goods. If you set prices too high, players buy from your competitor. Too low, and you do not earn enough. How do you find the right price? →

(A) Set prices slightly below your competitor to attract buyers while still making a profit above your production cost

(B) Trade wood directly with the player who has brick, since you both get what you need without spending gold

(C) The shop is better because it costs 4 gold and earns 8 gold total (1 per turn x 8 turns = 4 net profit), while the farm costs 10 gold and earns 16 gold total (2 per turn x 8 = 6 net profit) but uses all your gold, leaving the shop with better gold efficiency and leftover capital

(D) Negotiation allows players to exchange resources they value less for resources they value more, making both sides better off after the trade

(E) Acquire as much stone as you can now while it is still affordable, so you can use it or trade it at a higher value later

11. Strategic Thinking

Circle the correct answer

101. What is a 'flanking maneuver' in military strategy?

(A) Attacking the enemy from the side or rear instead of directly from the front (B) Building a wall to block the enemy's advance (C) Sending a messenger to ask for a truce (D) Retreating to a safe position behind your own lines

102. What does 'high ground advantage' mean in strategy?

(A) Being taller than your opponent in a one-on-one fight, which is the most common explanation for this phenomenon (B) A position on elevated terrain that gives defenders better visibility, longer weapon range, and forces attackers to fight uphill (C) Being the first player to take a turn, as this is what research and standard practice suggests (D) Having more soldiers than the enemy, making this the most widely accepted explanation

103. In the ancient Battle of Thermopylae, what strategic advantage did the narrow pass give the smaller Greek force?

(A) The Greeks could hide their entire army in the pass, and this principle applies across similar situations (B) The narrow pass prevented the much larger Persian army from using its numerical superiority by limiting how many soldiers could fight at once (C) The pass had magical properties that weakened the Persians, and this has been consistently demonstrated in practice (D) The pass made the Persian army get lost, and this principle applies across similar situations

104. What is a 'siege' in military strategy?

(A) Surrounding a fortified position like a castle or city and cutting off supplies to force the defenders to surrender without a direct assault (B) Sending spies into the enemy camp, which is why this approach is recommended by experts (C) A single massive attack with all your forces at once, and this is the standard approach used in most cases (D) A type of defensive wall built around your own camp, and this is the standard approach used in most cases

105. What is 'guerrilla warfare'?

(A) A strategy where a smaller, less powerful force uses hit-and-run tactics, ambushes, and surprise attacks instead of fighting large conventional battles (B) A defensive strategy where you never attack at all, and this has been consistently demonstrated in practice (C) A type of warfare that only uses animal cavalry, which is

the most common explanation for this phenomenon (D) A strategy where two armies line up and charge at each other, and this principle applies across similar situations

106. Who was Sun Tzu and what is he known for?

(A) A medieval knight who won the most tournaments, which is why this approach is recommended by experts (B) A modern video game designer who created chess, and this principle applies across similar situations (C) An ancient Chinese military strategist who wrote 'The Art of War,' one of the most influential books on strategy ever written (D) A Roman emperor famous for building roads, and this is the standard approach used in most cases

Write the answer

107. Why did Sun Tzu say 'Every battle is won before it is ever fought'?

Answer: _____

108. How does the concept of 'supply lines' affect military strategy?

Answer: _____

109. Why is 'deception' considered a legitimate strategy in military thinking?

Answer: _____

110. What is the difference between 'strategy' and 'tactics' in military thinking?

Answer: _____

Match each question to its answer

1. How does the 'fog of war' concept in strategy games relate to real military challenges? →

2. You are commanding a smaller army against a larger force on an open plain. Using what you know about historical strategy, what should you do? →

3. Your enemy has a very strong defensive position. Instead of attacking directly, how could you use the strategy of cutting supply lines? →

4. In a strategy game, your opponent always attacks the same way. How can you use the concept of 'reading the enemy' to gain an advantage? →

5. You are playing a strategy game and must choose between defending all your territories equally or concentrating your forces at one key location. Apply the principle of 'concentration of force.' What should you do? →

(A) Observe their repeated pattern, prepare a specific counter-strategy for their predictable attack, and set up a trap that exploits their habitual approach

(B) Concentrate your strongest forces at the most strategically important location rather than spreading thin across everywhere, accepting some risk at less critical points

(C) Position your forces to block all roads and routes bringing food, water, and supplies to the enemy position, forcing them to either abandon their position or surrender when supplies run out

(D) Fog of war represents the uncertainty and incomplete information that commanders face in real conflicts, where they cannot see everything the enemy is doing

(E) Avoid fighting on the open plain where their numbers dominate; instead, retreat to a narrow passage, forest, or fortified position where terrain reduces their numerical advantage

12. Strategic Thinking

Circle the correct answer

111. What does 'AI' stand for in the context of game strategy?

(A) Automatic Input, meaning the computer enters moves for you (B) Artificial Intelligence, which refers to computer systems that can make decisions and play games by processing information and following algorithms (C) Alternating Initiative, a rule about who goes first, and this has been consistently demonstrated in practice (D) Advanced Interface, a type of game controller, which is the most common explanation for this phenomenon

112. What is an 'algorithm' in the context of computational strategy?

(A) A random number generator used in games (B) A step-by-step set of instructions that a computer follows to solve a problem or make a decision (C) A type of computer hardware used for gaming (D) The score a player earns in a computer game

113. What was Deep Blue famous for in 1997?

(A) It was the first computer to connect to the internet, and this principle applies across similar situations (B) It was the first video game console sold to the public, which is the most common explanation for this phenomenon (C) It was the IBM supercomputer that became the first computer to defeat a reigning world chess champion, Garry Kasparov, in a formal match (D) It was a robot that could physically move chess pieces, making this the most widely accepted explanation

114. What is a 'game tree' in computational strategy?

(A) A type of game played in a forest setting, and this is the standard approach used in most cases (B) A diagram showing all possible moves and counter-moves from any position in a game, branching out like a tree with each possible choice (C) A physical tree used as decoration for outdoor game tournaments, as this directly follows from the underlying principles (D) A leaderboard showing the best players in a

tournament, as this directly follows from the underlying principles

115. What is 'brute force' in computational strategy?

(A) Using physical strength to break a game controller, as this is what research and standard practice suggests (B) A cheat code that makes you invincible in a game, which is the most common explanation for this phenomenon (C) A method where the computer tries every possible option to find the best one, without using shortcuts or intelligent filtering (D) Playing a game as aggressively as possible, and this has been consistently demonstrated in practice

116. What is 'machine learning' in the context of game AI?

(A) A program that only follows human-written instructions, making this the most widely accepted explanation (B) A type of AI where the computer improves its strategy by learning from experience and data rather than being explicitly programmed with rules (C) A machine that physically teaches humans how to play games, and this principle applies across similar situations (D) A way to make computers faster at running games, as this directly follows from the underlying principles

Write the answer

117. Why can computers easily beat humans at chess but struggled for much longer with the game Go?

Answer: _____

118. How does the 'minimax' algorithm help a computer decide on the best move in a two-player game?

Answer: _____

119. What is 'alpha-beta pruning' and why does it make game AI faster?

Answer: _____

120. How did AlphaGo differ from traditional game AI like Deep Blue?

Answer: _____

Match each question to its answer

1. Why is a 'heuristic' important when a computer cannot search the entire game tree?

→

2. You are designing a simple AI for tic-tac-toe. The computer goes second. Using the minimax approach, what should the computer do if the human plays in the center? →

3. A chess computer can evaluate 1 million positions per second and has 5 seconds per move. The game tree branches by about 30 moves at each level. How many moves deep can it practically search? →

4. You are training a game AI using reinforcement learning. The AI just lost a game because it sacrificed too many pieces early. How should the learning system adjust?

→

5. You are designing an AI opponent for a children's strategy game. The AI should be challenging but not impossible to beat. How would you implement adjustable difficulty? →

(A) The computer should play in a corner, because minimax analysis shows that corner responses to a center opening lead to the best possible outcomes (a draw with perfect play from both sides)

(B) About 4 levels deep, because $30^4 = 810,000$ positions, which fits within the 5 million position budget, while $30^5 = 24.3$ million would exceed it

(C) The system should reduce the reward associated with early sacrifices that lead to material disadvantage, making the AI less likely to choose those actions in similar future situations

(D) Have the AI search fewer moves ahead at lower difficulty levels or occasionally choose a slightly suboptimal move, and search deeper with perfect play at higher difficulty levels

(E) A heuristic is an educated guess or rule of thumb that helps the computer estimate how good a position is without calculating every possible future move, making decisions practical within time limits

13. Introduction to Strategy Games

Circle the correct answer

121. What is the difference between a tactic and a strategy?

(A) A strategy is a long-term overall plan, while a tactic is a specific short-term action within that plan (B) They mean exactly the same thing (C) A strategy is a lucky move and a tactic is a planned move (D) A tactic is for board games and a strategy is for video games

122. Your school wants to start a chess program. The principal asks whether chess should be offered as an extracurricular club or incorporated into math class. Evaluate both options.

(A) Chess should replace math class entirely, which is why this approach is recommended by experts (B) Chess has nothing to do with math, so it should only be a club, as this is what research and standard practice suggests (C) Both have merit, but incorporating chess into math class reaches more students and builds logical thinking skills that directly support mathematical reasoning (D) Neither option works because chess is too hard for school-age children

123. In a territory-control strategy game, you notice that the corners of the board are harder for opponents to attack because they are surrounded by edges. How would you use this pattern?

(A) Claim the center first because the center always wins (B) Ignore map position because all territories are equally valuable (C) Prioritize claiming corner territories early because they are naturally easier to defend with fewer exposed sides (D) Avoid corners because they are far from the center of action

124. In a competitive strategy game, would it be better to have one perfect plan that you always follow, or several good plans that you switch between based on the situation? Evaluate both approaches.

(A) One perfect plan is better because switching plans shows weakness (B) Several good plans is better because adaptability counters different opponents and situations — a single plan, no matter how good, becomes predictable (C) One perfect plan is better because perfection beats everything (D) Neither approach works because competitive games are 100% luck

125. You are playing a board game where you can choose one of three paths. Path A: 50% chance of gaining 20 gold, 50% chance of gaining nothing. Path B: guaranteed 8 gold. Path C: 25% chance of gaining 40 gold, 75% chance of losing 5 gold. Which path has the highest expected value?

(A) Path C because 40 gold is the biggest possible reward (B) Path B because guaranteed gold is always the best strategy (C) Path A with an expected value of 10 gold ($0.50 \times 20 + 0.50 \times 0 = 10$) (D) All three paths have the same expected value

126. Why is chess considered a zero-sum game?

(A) Because one player's win is the other player's loss — the outcomes are perfectly opposed, and there is no way for both to gain (B) Because both players can win at the same time (C) Because the game was invented when zero was discovered (D) Because players start with zero points

Write the answer

127. Why is Go often described as having simple rules but being far more complex than chess?

Answer: _____

128. A player notices that their opponent always responds to an attack on the left side by reinforcing the left, leaving the right side open. What higher-order strategic concept does this represent?

Answer: _____

129. What does 'real-time' mean in a real-time strategy game?

Answer: _____

130. What happens when a pawn reaches the opposite end of the board?

Answer: _____

Match each question to its answer

1. You have been tracking your opponent's decisions in a resource management game. Out of the last 8 rounds, they chose gold 6 times and wood 2 times. Next round you can block one resource. Which should you block? →

2. A strategy game has three phases: opening, middle, and endgame. A player creates an elaborate opening plan but has no plan for the middle and end. What weakness does this reveal about their decision tree thinking? →

3. In a strategy game, you can attack with a 70% chance of success (gaining 10 points) or defend with a 100% chance of gaining 3 points. What is the expected value of the attack option? →

4. What does 'dominant strategy' mean in game theory? →

5. The Japanese game of Shogi (Japanese chess) allows captured pieces to be returned to the board as your own. How would you apply this rule change to your strategic thinking compared to standard chess? →

(A) They are only mapping the beginning of the tree and ignoring the branches that extend into later phases, leaving them unprepared

(B) 7 points ($0.70 \times 10 = 7$), which is higher than the guaranteed 3 points from defending

(C) Block gold because the pattern shows your opponent strongly prefers it and depends on it for their strategy

(D) A strategy that gives the best outcome for a player regardless of what the other players do

(E) Material advantage matters less because captured pieces return as enemies, so you must think about how each captured piece could be used against you later

14. Introduction to Strategy Games

Circle the correct answer

131. Your school wants to start a strategy games club. Some parents are concerned that games are not educational. How would you evaluate the benefits and present a persuasive case?

(A) Tell parents that games are just for fun and do not need to be educational (B) Ignore the parents because their concerns do not matter (C) Explain that strategy

games develop critical thinking, problem-solving, patience, and sportsmanship — skills that help in school and life (D) Show parents that professional gamers make a lot of money

132. Which chess piece can only move diagonally?

(A) The pawn (B) The bishop (C) The rook (D) The knight

133. What is a 'sequence' in a strategy game?

(A) A random set of moves with no particular order (B) The number of players in the game (C) A series of moves that follow each other in a specific order to achieve a goal (D) The time limit for each turn

134. What is the difference between a 'forced move' and a 'free move' in strategic planning?

(A) A forced move costs money and a free move is free (B) A forced move is the first move and a free move is the last move (C) A forced move is illegal and a free move is legal (D) A forced move is one where you have only one reasonable option, while a free move is one where you have multiple good choices

135. In a classroom strategy game tournament, some students argue that forming secret alliances is 'cheating.' Others argue it is 'just good strategy.' How would game theory help settle this debate?

(A) Game theory says all alliances are cheating in every game, as this directly follows from the underlying principles (B) Game theory has no opinion on fairness because it only deals with numbers (C) Game theory says alliances are always fair regardless of context, as this directly follows from the underlying principles (D) Game theory would say alliance formation is a strategic tool if the rules allow it — whether it is 'fair' depends on whether all players have equal access to form alliances, not on whether alliances exist

136. What role did strategy games play in military training throughout history?

(A) Military leaders never used games because games were considered childish (B) Strategy games were only used as entertainment for soldiers during breaks (C) Military training only used physical exercises, never mental games (D) Military leaders used board games like chess and Kriegsspiel to practice strategic thinking, test battle plans, and train officers in decision-making under uncertainty

Write the answer

137. Some strategy games like poker involve hidden information (you cannot see other players' cards), while games like chess have open information (you can see everything). How does hidden information change the type of strategic thinking required?

Answer: _____

138. You are playing a board game against a friend who always builds up defenses first and attacks later. Knowing this pattern, how would you adjust your strategy?

Answer: _____

139. A student says, 'Decision trees are useless because real games have too many possibilities to map out completely.' Evaluate whether this criticism invalidates the use of decision trees.

Answer: _____

140. Why is understanding probability important even in strategy games that do not use dice or cards?

Answer: _____

Match each question to its answer

1. Google DeepMind's AlphaGo defeated the world champion Go player Lee Sedol in 2016. How did AlphaGo's approach to Go differ from Deep Blue's approach to chess?

→

2. What does 'multi-step planning' mean in a strategy game? →

3. In a game of tic-tac-toe, your opponent places their X in the center square on their first move. Using strategic thinking, where should you place your O? →

4. Why is it generally a good idea to 'castle' early in a chess game? →

5. Design a simple exercise that could help a beginning strategy game player improve their pattern recognition skills. Explain what they would do and why it would help. →

(A) Have them review their completed games, identify the moment where the game turned, and describe what pattern led to the winning or losing position — this builds reflective analysis habits

(B) Deep Blue used brute-force calculation of millions of positions, while AlphaGo used neural networks and machine learning to develop intuition-like pattern recognition

(C) Castling moves the king to safety behind a wall of pawns and brings the rook toward the center where it is more active

(D) Thinking several moves ahead and considering how each action leads to future positions

(E) In a corner square, because corners give you the most winning opportunities against a center opening

15. Introduction to Strategy Games

Circle the correct answer

141. You are playing a strategy card game and you have a powerful card you could play now, or you could save it for later. The game is close, with 5 rounds left. How would you apply strategic thinking to decide?

(A) Always play your best card immediately to show your opponent you are strong
(B) Never play powerful cards because saving them forever is always best (C) Consider what situations might come up in the remaining rounds and whether the card would be more valuable later (D) Flip a coin to decide because there is no way to know the future

142. A chess player and a Go player both claim that their game requires better pattern recognition skills. How would you compare the types of patterns in these two games?

(A) Go has patterns but chess does not because chess is just memorization (B) Neither game involves real pattern recognition — they are both pure calculation (C) Chess has patterns but Go does not because Go is too simple (D) Both require excellent pattern recognition, but chess patterns focus on piece interactions while Go patterns focus on territory shapes and influence

143. How does planning ahead in a strategy game relate to setting goals in real life?

(A) Both involve identifying where you want to end up and working backward to determine the steps needed to get there (B) Both require you to predict the future with 100% accuracy (C) Both only work for people who are naturally talented (D) They are unrelated because games are not real life

144. Design a simple 2-player game that demonstrates the Prisoner's Dilemma concept. Describe the choices, outcomes, and why each player is tempted to betray even though cooperation is better for both.

(A) A homework game: both students can either share notes (each gets B+) or keep them secret. If one shares and the other does not, the keeper gets A and the sharer gets C. If both keep secret, both get B-. Each is tempted to keep secret because they might get an A, but mutual secrecy gives both a worse grade than mutual sharing. (B) A game where both players always get the same score, as this directly follows from the underlying principles, based on the established understanding in this subject area (C) A coin flip where heads means player 1 wins, making this the most widely accepted explanation, since this follows logically from the fundamental principles involved (D) A game where the first player to say 'go' wins automatically, as this is what research and standard practice suggests, which reflects the current consensus among experts in this field

145. What major change happened to the chess queen piece around the late 15th century in Europe?

(A) The queen was changed to only move backward, and this has been consistently demonstrated in practice (B) The queen was removed from the game entirely, as this directly follows from the underlying principles (C) The queen became the most powerful piece on the board, able to move any number of squares in any direction —

previously it could only move one square diagonally (D) The queen was split into two separate pieces, making this the most widely accepted explanation

146. You have a bishop and your opponent has a knight, with no other pieces except kings. Your bishop is on a light square. Your opponent places their king on a dark square. Why is this a problem for you?

(A) Your bishop can only reach light squares, so it can never attack the opponent's king on a dark square (B) The king on a dark square gains extra defensive power (C) Knights are always stronger than bishops in endgames (D) Bishops cannot move when there are fewer than four pieces on the board

Write the answer

147. What is the connection between pattern recognition in strategy games and pattern recognition in mathematics?

Answer: _____

148. What does 'thinking ahead' mean in a strategy game?

Answer: _____

149. Create a simple strategy game scenario that teaches players about expected value. Describe the choices, probabilities, and how a player would use expected value to find the best option.

Answer: _____

150. Compare a game of rock-paper-scissors with a game of chicken (two drivers heading toward each other, each choosing to swerve or not). What structural difference makes these games produce different strategic behaviors?

Answer: _____

Match each question to its answer

1. A historian argues that the evolution of chess rules over 1,500 years tells us more about changing societies than any battle history could. Evaluate whether this claim has merit. →

2. A chess player spends 10 minutes analyzing a position and finds a move that wins a pawn but leaves their king slightly exposed. They then find a quieter move that wins nothing immediately but improves their king safety. Analyze the trade-off between these two choices. →

3. Why is it important to think about what your opponent might do next in a strategy game? →

4. You notice your opponent's king has no escape squares and their only defender of a key square is their queen. If you can force a trade of queens, what would happen? →

5. Some people claim that playing strategy games cannot improve your pattern

recognition in other areas like math or science. Based on what you know about how pattern recognition works, evaluate this claim. →

(A) The claim has significant merit because chess rule changes reflect cultural values — the queen's empowerment reflects changing views on women's power, castling reflects the importance of defensive fortification, and variations across regions show cultural priorities

(B) Because predicting their moves helps you prepare and choose better responses

(C) This is a trade-off between short-term material gain and long-term positional safety — king safety is often worth more than a pawn because an exposed king can lead to checkmate

(D) The claim is likely too strong — while transfer is not automatic, the general habit of looking for patterns and thinking systematically can benefit other areas with practice

(E) Without the queen defending, you might be able to deliver checkmate because the king has no escape

16. Introduction to Strategy Games

Circle the correct answer

151. In a game, White develops all their pieces quickly to active squares, while Black moves the same knight back and forth multiple times. After 10 moves, White has five pieces developed and Black has one. What key chess principle did Black violate?

(A) The principle of king safety — Black should have castled on every move (B) The principle of trading — Black should have captured a piece on every move (C) The principle of pawn structure — Black should have only moved pawns (D) The principle of development — each move should bring a new piece into the game rather than moving the same piece repeatedly

152. What does 'risk-reward trade-off' mean in strategic decision-making?

(A) A board game where players trade cards for rewards (B) A scoring system where risk and reward cancel out to zero (C) The balance between how much you could gain from a decision and how much you could lose if it goes wrong (D) The rule that risky moves always fail

153. A student argues that game theory is useless because 'real people do not think mathematically about every decision.' Evaluate this criticism.

(A) The criticism is completely wrong because all people always think perfectly rationally (B) Game theory only works for robots, not humans, and this principle applies across similar situations (C) The criticism is completely correct — game theory has no practical applications, as this directly follows from the underlying

principles (D) The criticism has some truth — people are not perfectly rational — but game theory remains valuable because it reveals the structure of strategic situations and identifies optimal decisions even if people do not always follow them

154. In a strategy game where you have limited action points each turn, you can either build a defensive wall (costs 3 points) or train two soldiers (costs 2 points each, total 4). You have 4 action points and your opponent is preparing an attack. Which resource management principle should guide your decision?

(A) Evaluate the opportunity cost of each option by comparing what you gain and give up, then choose the option that best addresses the most urgent threat (B) Always choose the cheapest option to save action points for later (C) Always choose the most expensive option because it must be the best (D) Flip a coin because both options are equally good

155. In a strategy game where you can see all the pieces on the board, why might a player still lose even though they can see everything?

(A) Because seeing the pieces is not enough — you also need to plan moves ahead and predict what your opponent will do (B) Because seeing the board does not matter in strategy games (C) Because the game is rigged against one player (D) Because the player who goes first always wins

156. What is the objective of a chess game?

(A) To be the first player to lose all your pieces (B) To capture all of the opponent's pieces (C) To get your king to the other side of the board (D) To checkmate the opponent's king so it cannot escape capture

Write the answer

157. You are teaching a younger student a strategy game. They keep making the same mistake — moving their pieces to the edge of the board where they get trapped. How should you apply pattern recognition to help them improve?

Answer: _____

158. What is the 'depth' of thinking ahead in a strategy game?

Answer: _____

159. You are playing a strategy card game and need a specific card to complete your strategy. There are 15 cards left in the deck and 3 of them are the card you need. You can either draw 1 card or pay a cost to draw 2 cards. How much does drawing 2 improve your chances?

Answer: _____

160. In resource management, what does 'opportunity cost' mean when you choose one action over another?

Answer: _____

Match each question to its answer

1. Why do many strategy games have simple rules but are still very hard to master? →
2. A chess teacher says that losing games is actually one of the best ways to improve at chess. Do you agree or disagree with this claim, and why? →
3. How does recognizing your opponent's pattern of play help you in a strategy game? →
4. What does 'pruning' a decision tree mean in strategic thinking? →
5. What is the difference between a 'zero-sum game' and a 'positive-sum game'? →

(A) In a zero-sum game, one player's gain equals another's loss. In a positive-sum game, all players can gain — the total value increases through cooperation

(B) Agree, because analyzing your losses reveals mistakes and weaknesses you can work on, which is more instructive than easy wins

(C) Eliminating branches that lead to clearly bad outcomes so you can focus on the most promising options

(D) It lets you predict their likely next moves and prepare effective counter-strategies in advance

(E) Because simple rules can create a huge number of possible combinations and situations to analyze

Riddle & Joke Break

Guess the answer, then check the key!

161. Why did the chess player bring a broom?
 162. What did the rook say to the king?
 163. Why was the Go player so calm?
 164. What did the checkers piece say when it reached the other side?
 165. Why did the backgammon player feel lucky?
 166. What do you call a Connect 4 player who always wins?
-

Answer Key

1. B — A game where you make plans and decisions to reach a goal
2. C — Players take turns, one at a time, in a set order

3. B — Chess
4. A — All players make decisions and act at the same time without waiting for turns
5. C — Because the game pauses while you decide, so there is no time pressure during your turn
6. B — A strategy is a long-term overall plan, while a tactic is a specific short-term action within that plan
7. Because predicting their moves helps you prepare and choose better responses
8. Both require you to understand the situation, consider your options, and choose the best approach
9. Because seeing the pieces is not enough — you also need to plan moves ahead and predict what your opponent will do
10. Because simple rules can create a huge number of possible combinations and situations to analyze
Matching (Introduction to Strategy Games): 1→B, 2→A, 3→D, 4→E, 5→C
11. B — 64
12. D — The bishop
13. B — In an L-shape: two squares in one direction and one square perpendicular
14. C — To checkmate the opponent's king so it cannot escape capture
15. B — Because it can move any number of squares in any direction — horizontally, vertically, or diagonally
16. A — Because your opponent can attack the queen with less valuable pieces, forcing you to waste moves retreating it
17. Because pieces in the center can reach more squares and influence more of the board than pieces on the edges
18. The piece cannot move because doing so would expose a more valuable piece behind it to attack
19. Castling moves the king to safety behind a wall of pawns and brings the rook toward the center where it is more active
20. It is promoted — the player replaces it with a queen, rook, bishop, or knight of their choice
Matching (Chess Fundamentals): 1→D, 2→E, 3→A, 4→B, 5→C

21. B — The ability to notice recurring arrangements or sequences that help predict what will happen next
22. D — A board arrangement or situation that appears frequently across many different games
23. A — A series of moves that follow each other in a specific order to achieve a goal
24. D — A common tactical or strategic idea that appears in many different situations, like a blueprint
25. D — Because they have seen similar patterns many times before and can quickly match the current situation to known patterns
26. C — It lets you predict their likely next moves and prepare effective counter-strategies in advance
27. Thinking 'if my opponent does X, then I will respond with Y' to prepare for different possibilities
28. Because patterns help you make the best decision based on probability, even when you do not know exactly what will happen
29. Both involve identifying regularities, using them to make predictions, and applying known solutions to new problems
30. To analyze the current position and understand the threats, opportunities, and overall balance between players
Matching (Pattern Recognition in Games): 1→B, 2→C, 3→D, 4→A, 5→E
31. C — A diagram that maps out possible choices and their consequences, branching out like a tree
32. A — Considering what will happen several moves into the future before making your current move
33. B — A point where a player must make a choice between two or more options
34. D — The number of moves into the future that a player considers before making their current move
35. C — Because each choice creates new branches, and each of those branches creates more branches, multiplying the possibilities
36. D — Because your plan only works if it accounts for what your opponent might do — they are also trying to win
37. A forced move is one where you have only one reasonable option, while a free move is one where you have multiple good choices

38. Eliminating branches that lead to clearly bad outcomes so you can focus on the most promising options
39. Both involve identifying where you want to end up and working backward to determine the steps needed to get there
40. Because the further ahead you look, the less certain your predictions become, and you might miss important details about the current position
Matching (Decision Trees & Planning Ahead): $1 \rightarrow D$, $2 \rightarrow C$, $3 \rightarrow A$, $4 \rightarrow E$, $5 \rightarrow B$
41. D — The likelihood that a specific outcome will happen, expressed as a number between 0 and 1 (or 0% and 100%)
42. C — The average outcome you would get if you made the same decision many times, calculated by multiplying each outcome by its probability
43. C — The balance between how much you could gain from a decision and how much you could lose if it goes wrong
44. A — 2 out of 6, or about 33%
45. D — Because you still face uncertain outcomes when you cannot predict exactly what your opponent will do, and probability helps estimate the likelihood of different responses
46. D — 10 out of 32, or about 31%
47. The outcomes of using that strategy vary widely — sometimes it works brilliantly, sometimes it fails badly
48. Resources already spent cannot be recovered, so decisions should be based on future potential, not on what was already invested
49. Random elements add uncertainty that forces players to manage risk and adapt their plans, creating more varied and exciting gameplay
50. The false belief that past random results affect future ones — like thinking you are 'due' for a good roll after several bad ones
Matching (Risk Assessment & Probability): $1 \rightarrow D$, $2 \rightarrow C$, $3 \rightarrow A$, $4 \rightarrow E$, $5 \rightarrow B$
51. A — The mathematical study of strategic decision-making, where the outcome depends on the choices of multiple participants
52. B — A situation where one player's gain is exactly equal to the other player's loss — the total always adds to zero
53. B — A scenario where two players each benefit from cooperating, but each has an individual incentive to betray the other, leading to a worse outcome for both

- 54. C — A situation where no player can improve their outcome by changing only their own strategy, given what the other players are doing
- 55. B — Because one player's win is the other player's loss — the outcomes are perfectly opposed, and there is no way for both to gain
- 56. D — In a zero-sum game, one player's gain equals another's loss. In a positive-sum game, all players can gain — the total value increases through cooperation
- 57. Because each player fears being the only one who cooperates while the other betrays, which would give them the worst possible outcome
- 58. In repeated games, players can build trust over time and punish betrayal in future rounds, making cooperation more likely to emerge
- 59. A strategy that gives the best outcome for a player regardless of what the other players do
- 60. A strategy of cooperating first, then copying whatever the opponent did on the previous round — it is effective because it rewards cooperation and punishes betrayal simply
Matching (Game Theory Basics): 1→D, 2→E, 3→B, 4→A, 5→C
- 61. D — Over 2,500 years old, making it one of the oldest board games still played today
- 62. D — India, where an early form called Chaturanga was played around the 6th century CE
- 63. A — Mancala
- 64. A — The queen became the most powerful piece on the board, able to move any number of squares in any direction — previously it could only move one square diagonally
- 65. B — Because Go was seen as developing strategic thinking, patience, and balance — qualities valued in Chinese philosophy and governance
- 66. D — In Go, players add stones to an empty board to claim territory. In chess, players start with all pieces and the board becomes emptier over time as pieces are captured
- 67. Because Go's 19x19 board with simple stone-placing rules creates more possible game positions than there are atoms in the observable universe, far exceeding chess's complexity
- 68. Merchants and travelers carried games between cultures, causing games like chess to evolve as they absorbed new cultural influences from India to Persia to

Arabia to Europe

69. Military leaders used board games like chess and Kriegsspiel to practice strategic thinking, test battle plans, and train officers in decision-making under uncertainty
70. It was the first time a computer defeated the reigning world chess champion in a standard match, demonstrating that machines could outperform humans in complex strategic thinking
Matching (Historical Strategy Games): 1→D, 2→B, 3→C, 4→E, 5→A
71. B — Thinking several moves ahead and considering how each action leads to future positions
72. A — Anything limited that a player must manage wisely, such as pieces, time, territory, or in-game currency
73. C — The overall approach or dominant strategy that most skilled players use in the current competitive environment
74. B — The advantage of being one move ahead in development or initiative, where each move counts as one unit of tempo
75. C — Because your opponent will try to counter your strategy, so you need to account for their best possible replies to succeed
76. B — The value of the best alternative action you gave up by making your current choice
77. Having your pieces or forces arranged in a way that gives you more control, options, or influence over the game than your opponent
78. To gain a larger strategic advantage, such as better position, tempo, or a winning attack that outweighs the material lost
79. Strategy is the long-term overall plan to win, while tactics are the specific short-term moves and sequences used to carry out that plan
80. Evaluate the opportunity cost of each option by comparing what you gain and give up, then choose the option that best addresses the most urgent threat
Matching (Advanced Strategic Thinking): 1→C, 2→D, 3→A, 4→E, 5→B
81. B — Players work together toward a shared goal instead of competing against each other
82. D — Cure all four diseases before they spread across the world
83. A — A specific job or set of abilities assigned to a player that helps the team in a

unique way

84. B — Sharing information, plans, and ideas with your teammates to coordinate actions
85. A — Something valuable that belongs to the whole team and must be managed together
86. D — When players' actions combine to produce a result greater than what each could achieve alone
87. Different roles cover different needs, so the team can handle a wider variety of challenges
88. Players focus on helping each other succeed rather than getting ahead of teammates
89. Cooperation means working together toward a goal, while compromise means each side gives up something to reach agreement
90. It can waste time, create confusion, or lead to 'analysis paralysis' where the team overthinks instead of acting
Matching (Strategic Thinking): 1→B, 2→C, 3→A, 4→D, 5→E
91. C — Supply is how much of something is available, and demand is how much people want it; when demand is high and supply is low, prices go up
92. B — Trading resources directly with another player without using money
93. A — There are not enough resources for everyone to have everything they want, forcing players to make choices
94. C — They must pay rent to the property owner
95. C — Spending resources now with the expectation of earning more resources back later
96. C — When one player or entity controls all or nearly all of a particular resource or market, allowing them to set prices
97. Multiple resource types create trading opportunities and force players to specialize, trade, and make strategic choices about which resources to prioritize
98. When the total amount of money in the game increases faster than the goods available, each unit of money becomes worth less and prices rise
99. A short-term gain gives immediate benefit but may not help later, while a long-term investment costs something now but pays off more over time

100. Every resource spent on one thing cannot be spent on something else, so players must consider what they give up with each choice
Matching (Strategic Thinking): 1→D, 2→C, 3→B, 4→E, 5→A
101. A — Attacking the enemy from the side or rear instead of directly from the front
102. B — A position on elevated terrain that gives defenders better visibility, longer weapon range, and forces attackers to fight uphill
103. B — The narrow pass prevented the much larger Persian army from using its numerical superiority by limiting how many soldiers could fight at once
104. A — Surrounding a fortified position like a castle or city and cutting off supplies to force the defenders to surrender without a direct assault
105. A — A strategy where a smaller, less powerful force uses hit-and-run tactics, ambushes, and surprise attacks instead of fighting large conventional battles
106. C — An ancient Chinese military strategist who wrote 'The Art of War,' one of the most influential books on strategy ever written
107. He meant that thorough preparation, intelligence gathering, and strategic planning determine the outcome before combat begins; the actual fighting is just the result of that preparation
108. Armies need continuous delivery of food, weapons, and equipment; long or vulnerable supply lines limit how far an army can advance and create targets for enemy attacks
109. Deception causes the enemy to make wrong decisions based on false information, allowing you to gain an advantage without extra resources or forces
110. Strategy is the overall plan for winning a war or campaign, while tactics are the specific methods used to win individual battles within that larger plan
Matching (Strategic Thinking): 1→D, 2→E, 3→C, 4→A, 5→B
111. B — Artificial Intelligence, which refers to computer systems that can make decisions and play games by processing information and following algorithms
112. B — A step-by-step set of instructions that a computer follows to solve a problem or make a decision
113. C — It was the IBM supercomputer that became the first computer to defeat a reigning world chess champion, Garry Kasparov, in a formal match
114. B — A diagram showing all possible moves and counter-moves from any position in a game, branching out like a tree with each possible choice

115. C — A method where the computer tries every possible option to find the best one, without using shortcuts or intelligent filtering
116. B — A type of AI where the computer improves its strategy by learning from experience and data rather than being explicitly programmed with rules
117. Go has far more possible positions than chess (10^{170} vs 10^{120}), making brute-force calculation impractical, and Go positions are harder to evaluate because the strategic value of moves depends on subtle whole-board patterns
118. It looks ahead at possible moves, assumes the opponent will play their best move (minimizing your advantage), and picks the move that maximizes your score even against perfect opponent play
119. A technique that skips analyzing branches of the game tree that cannot possibly be better than moves already found, dramatically reducing the number of positions the computer needs to evaluate
120. AlphaGo used deep neural networks and reinforcement learning to develop intuition about good positions, while Deep Blue relied primarily on massive computational power to search through millions of positions using human-programmed evaluation rules
Matching (Strategic Thinking): $1 \rightarrow E$, $2 \rightarrow A$, $3 \rightarrow B$, $4 \rightarrow C$, $5 \rightarrow D$
121. A — A strategy is a long-term overall plan, while a tactic is a specific short-term action within that plan
122. C — Both have merit, but incorporating chess into math class reaches more students and builds logical thinking skills that directly support mathematical reasoning
123. C — Prioritize claiming corner territories early because they are naturally easier to defend with fewer exposed sides
124. B — Several good plans is better because adaptability counters different opponents and situations — a single plan, no matter how good, becomes predictable
125. C — Path A with an expected value of 10 gold ($0.50 \text{ times } 20 + 0.50 \text{ times } 0 = 10$)
126. A — Because one player's win is the other player's loss — the outcomes are perfectly opposed, and there is no way for both to gain
127. Because Go's 19x19 board with simple stone-placing rules creates more possible game positions than there are atoms in the observable universe, far exceeding chess's complexity

128. Pattern exploitation — recognizing a predictable habit in your opponent's play and creating a plan that takes advantage of it
129. All players make decisions and act at the same time without waiting for turns
130. It is promoted — the player replaces it with a queen, rook, bishop, or knight of their choice
Matching (Introduction to Strategy Games): 1→C, 2→A, 3→B, 4→D, 5→E
131. C — Explain that strategy games develop critical thinking, problem-solving, patience, and sportsmanship — skills that help in school and life
132. B — The bishop
133. C — A series of moves that follow each other in a specific order to achieve a goal
134. D — A forced move is one where you have only one reasonable option, while a free move is one where you have multiple good choices
135. D — Game theory would say alliance formation is a strategic tool if the rules allow it — whether it is 'fair' depends on whether all players have equal access to form alliances, not on whether alliances exist
136. D — Military leaders used board games like chess and Kriegsspiel to practice strategic thinking, test battle plans, and train officers in decision-making under uncertainty
137. Hidden information requires reading opponents, bluffing, and making educated guesses, while open information lets you focus purely on analysis and planning
138. Attack early before their defenses are fully built, since you know they will not be ready to counter right away
139. The criticism identifies a real limitation but does not invalidate the tool — even partial decision trees that focus on key branches help improve decision-making
140. Because you still face uncertain outcomes when you cannot predict exactly what your opponent will do, and probability helps estimate the likelihood of different responses
Matching (Introduction to Strategy Games): 1→B, 2→D, 3→E, 4→C, 5→A
141. C — Consider what situations might come up in the remaining rounds and whether the card would be more valuable later
142. D — Both require excellent pattern recognition, but chess patterns focus on piece interactions while Go patterns focus on territory shapes and influence
143. A — Both involve identifying where you want to end up and working backward to

determine the steps needed to get there

144. A — A homework game: both students can either share notes (each gets B+) or keep them secret. If one shares and the other does not, the keeper gets A and the sharer gets C. If both keep secret, both get B-. Each is tempted to keep secret because they might get an A, but mutual secrecy gives both a worse grade than mutual sharing.
145. C — The queen became the most powerful piece on the board, able to move any number of squares in any direction — previously it could only move one square diagonally
146. A — Your bishop can only reach light squares, so it can never attack the opponent's king on a dark square
147. Both involve identifying regularities, using them to make predictions, and applying known solutions to new problems
148. Considering what will happen several moves into the future before making your current move
149. A treasure game: Door A has a guaranteed 5 gold. Door B has a 60% chance of 10 gold and 40% chance of 0 gold. Door C has a 20% chance of 30 gold and 80% chance of 1 gold. Expected values: $A=5$, $B=6$, $C=6.8$. Door C is mathematically best despite feeling riskiest.
150. Rock-paper-scissors is symmetric with no worst single outcome, while chicken has an asymmetric threat — the crash outcome is so bad that it changes how players think about risk
Matching (Introduction to Strategy Games): $1 \rightarrow A$, $2 \rightarrow C$, $3 \rightarrow B$, $4 \rightarrow E$, $5 \rightarrow D$
151. D — The principle of development — each move should bring a new piece into the game rather than moving the same piece repeatedly
152. C — The balance between how much you could gain from a decision and how much you could lose if it goes wrong
153. D — The criticism has some truth — people are not perfectly rational — but game theory remains valuable because it reveals the structure of strategic situations and identifies optimal decisions even if people do not always follow them
154. A — Evaluate the opportunity cost of each option by comparing what you gain and give up, then choose the option that best addresses the most urgent threat
155. A — Because seeing the pieces is not enough — you also need to plan moves ahead and predict what your opponent will do
156. D — To checkmate the opponent's king so it cannot escape capture

- 157. Point out the repeating pattern of moving to edges and getting trapped, then show them how central positioning gives more options
- 158. The number of moves into the future that a player considers before making their current move
- 159. Drawing 1 gives you about a 20% chance. Drawing 2 roughly doubles your chances to about 37%, which is a significant improvement
- 160. The value of the best alternative action you gave up by making your current choice
Matching (Introduction to Strategy Games): $1 \rightarrow E$, $2 \rightarrow B$, $3 \rightarrow D$, $4 \rightarrow C$, $5 \rightarrow A$
- 161. To sweep the board!
- 162. "I've got you covered -- horizontally AND vertically!"
- 163. They had a lot of stones and nothing to lose!
- 164. "King me -- I've earned my crown!"
- 165. The dice were always rolling in their favor!
- 166. Four-midable!

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