DraftKids
Learn through sports

PRINTABLE · GRADES 6-8 · AGES 11–14

# Draft Day Logic

The Riverbend Flag Football League is holding its draft. Use clues, careful reasoning and a little math to solve each case. Show how you know: a guess isn't a proof.

Name _____

Date _____

## LOGIC TOOLKIT

**Eliminate**
cross out what can't be true

**If p, then q**
p happens, then q must happen

**Venn count**
A + B – both = A or B

**Snake draft**
order flips every round

**Test cases**
try each option against every clue



SNAKE DRAFT · 4 TEAMS

ROOKIE

**1** Four teams draft in order: Hawks, Lynx, Otters and Comets. The Otters pick **right before** the Hawks. The Comets pick **last**. The Lynx pick before the Otters. Which team picks **2nd**?

WORK SPACE

_____

ROOKIE

**2** A league has **30** players. **18** play offense, **15** play defense and **5** play both. How many players play **neither**?

WORK SPACE

_____ players

STARTER

**3** What is the **smallest** number of players a team needs to be **sure** that at least **3** of them share a birth month?

WORK SPACE

_____ players

STARTER

**4** In a **10-team** snake draft, the order flips every round. The team with the **3rd** pick in Round 1 makes which **overall** pick in Round 2?

WORK SPACE

Pick # _____

PRO

**5** Coach Rivera must choose **2 captains** from **6** seniors. Order doesn't matter. How many different pairs are possible?

WORK SPACE

_____ pairs

PRO

**6** Riley's jersey number has two digits. It is a **multiple of 7**, and its digits add up to **11**. What is Riley's number?

WORK SPACE

# _____

ALL-STAR

**7** Someone left the game ball on the bus. Ari says, "Bo did it." Bo says, "I didn't." Cy says, "I didn't." **Exactly one** of them is telling the truth. Who left the ball?

WORK SPACE

_____

CHALLENGE ★

**8** Challenge: **13** teams enter a single-elimination tournament (lose once and you're out; some teams get a bye). How many games are played to crown one champion?

WORK SPACE

_____ games

## A Logic Grid: Who Went Where?

Four players were drafted by the Riverbend Hawks. Use all five clues to find each player's position and draft pick.

| | QB | Center | Receiver | Rusher | Pick 1 | Pick 2 | Pick 3 | Pick 4 |
|---|---|---|---|---|---|---|---|---|
| Maya | | | | | | | | |
| Theo | | | | | | | | |
| Jonah | | | | | | | | |
| Priya | | | | | | | | |

Write X for "no" and O for "yes." Each row gets one O per block.

1. The rusher was picked **last**.
2. Jonah was picked 2nd or 3rd, and he is **not** the receiver.
3. The quarterback was picked **right before** Theo.
4. Maya was picked before Priya, and **neither** of them is the center.
5. Priya is **not** the rusher.

| PLAYER | POSITION | PICK |
|---|---|---|
| Maya | | |
| Theo | | |
| Jonah | | |
| Priya | | |

## B Fill the Snake Draft Board

Six teams, four rounds. The order flips every round (1 to 6, then 6 to 1). Write the overall pick number in each empty box.

| | TEAM 1 | TEAM 2 | TEAM 3 | TEAM 4 | TEAM 5 | TEAM 6 |
|---|---|---|---|---|---|---|
| Round 1 | 1 | 2 | 3 | 4 | 5 | 6 |
| Round 2 | | | | | | 7 |
| Round 3 | | | | | | |
| Round 4 | | | | | | |

1. Team 1 gets two picks **in a row** once in this draft. Which overall picks are they?

   # _____ and # _____

2. Team 4 picks at #4. How many picks are made by **other** teams before Team 4's next pick?

   _____ **picks**

## C Valid or Not?

An argument is **valid** if the conclusion **must** be true whenever the first two sentences are true. Circle one.

1. If it rains, the game moves to the indoor field. The game did **not** move indoors. So it did not rain. — VALID / NOT VALID
2. If a player is the quarterback, she wears a number under 20. Kai wears #9. So Kai is the quarterback. — VALID / NOT VALID
3. Every Comets lineman lifts weights on Monday. Dev is a Comets lineman. So Dev lifts weights on Monday. — VALID / NOT VALID
4. If the Hawks win Saturday, they make the playoffs. The Hawks lost Saturday. So they did not make the playoffs. — VALID / NOT VALID
5. Pick one **NOT VALID** argument. Describe a case where its first two sentences are true but its conclusion is false.

BONUS · NOT SCORED

Write your own logic clue about your favorite team. Trade with a friend: can they tell if it is valid?

# Answer Key (for teachers & parents)

Answers for **Draft Day Logic**, with the reasoning shown. Print pages 1 and 2 for students and keep this page for checking. The league, teams and players are made up. Accept any clear explanation that reaches the right answer.

## Page 1 Problems

1. Answer: **Otters**
   Order: Lynx, Otters, Hawks, Comets
2. Answer: **2 players**
   18 + 15 – 5 = 28 play offense or defense; 30 – 28 = 2
3. Answer: **25 players**
   24 players could be exactly 2 per month; the 25th makes 3
4. Answer: **#18**
   Round 2 runs 10 to 1: picks 11–20; slot 3 is 8th in line, 10 + 8 = 18
5. Answer: **15 pairs**
   6 × 5 ÷ 2 = 15 (each pair counted twice)
6. Answer: **#56**
   Multiples of 7: only 56 has digits that add to 11
7. Answer: **Cy**
   If Cy did it, only Bo is truthful; Ari or Bo as the culprit gives 2 truths
8. Answer: **12 games**
   Each game knocks out 1 team; 12 teams must lose

## A · Logic Grid

1. Answer: **Maya: Receiver, pick 1, Jonah: Center, pick 2, Priya: QB, pick 3, Theo: Rusher, pick 4**
   Clues 1, 2, 4, 5: the 4th pick (rusher) can only be Theo. Clue 3: the QB is 3rd. If Jonah were 3rd he'd be QB and the center would be Maya or Priya (✗ clue 4). So Jonah 2nd, Maya 1st, Priya 3rd (QB); Jonah is center, Maya receiver.

## Quick score

| | |
|---|---|
| Page 1 problems | _____ / 8 |
| A · Logic Grid (8 boxes) | _____ / 8 |
| B · Board (2) + 2 questions | _____ / 4 |
| C · Valid or Not? (4 + 1) | _____ / 5 |
| **Total** | _____ **/ 25** |

## Skills practiced

Deductive reasoning · Logic grids · Conditional statements · Converse & inverse · Venn diagrams · Pigeonhole principle · Combinations · Patterns

**Teaching tip:** For Part C, have students act out a counterexample: one student is "Kai," wearing #9 but playing receiver. If you can build a counterexample, the argument isn't valid.

## B · Snake Draft Board

**Board:** Answer: **R2 (Teams 1–5): 12, 11, 10, 9, 8; R3: 13–18; R4: 24, 23, 22, 21, 20, 19**

1. Answer: **#12 and #13**
   end of Round 2, start of Round 3
2. Answer: **4 picks**
   Team 4's next pick is #9; picks 5, 6, 7, 8 come between

## C · Valid or Not?

1. Answer: **VALID**
   rain would have moved it indoors; it wasn't, so no rain
2. Answer: **NOT VALID**
   others can wear numbers under 20 too (converse)
3. Answer: **VALID**
   the rule applies to Dev
4. Answer: **NOT VALID**
   they might get in another way (inverse)
5. Answer: **Answers vary**
   e.g. Kai wears #9 but plays receiver; or the Hawks lose but clinch on a tiebreaker



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