

What a Game Needs to Remember Task Cards

Print double-sided, flipping on the long edge. Cut along the frames.

Game A

Tic-Tac-Toe, for two players.

Draw a 3-by-3 grid. One player is X, the other is O. Take turns writing your mark in an empty square. Three of your marks in a row, across, down or corner to corner, wins. If all nine squares fill up first, it is a draw.

One thing it remembers: whose turn it is.

Game B

Rock Paper Scissors, best of five.

Count to three. Each player shows rock, paper or scissors. Rock beats scissors, scissors beats paper, paper beats rock. The same on both sides is a tie: play that round again. The first player to win three rounds wins the match.

One thing it remembers: each player's number of wins.

Game C

Snakes and Ladders, two or more players.

The board has squares 1 to 100. Each player has a counter of their own colour. Roll a die and move your counter forward that many squares. Land at the foot of a ladder: climb up it. Land on a snake's head: slide down to its tail. The first to reach square 100 wins.

One thing it remembers: the square each counter is on.

Game D

Pig, a dice game for two players.

On your turn, roll a die as many times as you like, adding up the rolls. Roll a 1 and you lose this turn's points, and your turn ends. Stop whenever you like to add this turn's points to your score. The first player to reach 100 points wins.

One thing it remembers: each player's score.

Game E

Memory, two or more players.

Lay 20 cards face down: 10 pairs of matching pictures. On your turn, turn over any two cards. If they match, keep them and go again. If not, turn them back face down. The next player goes. When every card is taken, the player with the most pairs wins.

One thing it remembers: how many pairs each player has.

1

Pick one of the five game cards, A to E.

Read its rules until you could play it in your head.

List everything that game has to **remember** while it is being played.

The game card gives you one thing to start.

What a Game Needs to Remember Task Cards — Backs

Answers for the cards on the other side of this sheet.

Game B — answer

Check this after card 4.

Changes: each player's wins (whole number); which round it is (whole number); what each player showed (text); is the match over? (yes or no).

Never changes: it takes 3 wins to take the match (whole number).

Game A — answer

Check this after card 4.

Changes: what is in each square (X, O or empty: text); whose turn it is (text); how many moves so far (whole number); has someone won? (yes or no).

Never changes: the grid is 3 by 3, and it takes 3 in a row (whole numbers).

Game D — answer

Check this after card 4.

Changes: each player's score (whole number); this turn's points (whole number); the last roll (whole number); whose turn it is (text); has someone won? (yes or no).

Never changes: 100 points to win (whole number).

Game C — answer

Check this after card 4.

Changes: each counter's square (whole number); whose turn it is (text); the last roll (whole number); has someone reached 100? (yes or no).

Never changes: each player's colour (a colour); 100 squares and where each snake and ladder is (whole numbers).

1 — answer

Different for each game. Anything the game would break without: scores, whose turn it is, where things are, the last roll.

Game E — answer

Check this after card 4.

Changes: each player's pairs (whole number); which cards are still down (yes or no for each); whose turn it is (text).

Never changes: 10 pairs (whole number); the picture on each card (text); the colour of the card backs (a colour).

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2

Circle the things on your list that **change** during a game.

3

Put a box around the things that **never change** during a game.

4

Beside each thing, write what **kind** of value it is:

- a whole number
- a number with a decimal point
- some text
- a colour
- a yes-or-no answer

5

Now take the **code sheet**.

Find the two lines near the top that start with **let**.

What do they hold? Could they change in the middle of a game?

6

Find **secretNumber**.

Does its line start with **let** or **var**?

What is the word after the colon?

What does it hold?

7

Find **guess** and **guessCount**.

Answer the same three questions for each:
let or **var**? The word after the colon?
What does it hold?

What a Game Needs to Remember Task Cards — Backs

Answers for the cards on the other side of this sheet.

3 — answer

The numbers in the rules: the size of the board, the score that wins, how many wins it takes. The colours each player uses.

2 — answer

Scores, whose turn it is, where things are, the last roll, whether someone has won.

5 — answer

`lowestNumber` is 1 and `highestNumber` is 100: the range of numbers.
No. They never change while the game runs.

4 — answer

Scores, rolls, squares: whole numbers. Whose turn: text. Has someone won? yes or no. Counters: a colour. A timer would need a decimal.

7 — answer

Both `var`, both `Int`.
`guess`: the guess on the screen, before you click Guess. `guessCount`: how many guesses in this game.

6 — answer

`var.` `Int`.
The number the player is trying to find.

What a Game Needs to Remember Task Cards

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8

Find `message` and `messageColor`.
The same three questions for each.
What **kind** of value is each one?

9

Find `gameIsOver`.
What are the **only two** values it could ever hold?

10

Copy this table onto your board. Fill in a row for `lowestNumber`, `secretNumber`, `message`, `messageColor` and `gameIsOver`.

Name	let or var	After the colon	What it holds

Which change while you play? Which never do? What do the `let` ones have in common?

11

In your own words, what do you think these mean?

`Int`
`String`
`Color`
`Bool`

12

What would go wrong if the line for `secretNumber` started with `let`?
There is a hint on the back.

Bonus

The game is going to show a **high score**: the fewest guesses anyone has ever needed.
Write the line it would need, in the same style as the others.

What a Game Needs to Remember Task Cards — Backs

Answers for the cards on the other side of this sheet.

9 — answer

`true` or `false`.
It is a `Bool`: a yes-or-no answer.

8 — answer

Both `var`.
`message`: `String`, the
text the card shows.
`messageColor`: `Color`, the card's colour.

11 — answer

`Int`: a whole number.
`String`: text.
`Color`: a colour.
`Bool`: yes or no, `true` or `false`.

10 — answer

```
lowestNumber let Int    the range
secretNumber var Int    number to find
message       var String card's text
messageColor  var Color  card's colour
gameIsOver    var Bool   found yet?
```

The `var` ones change. The `let` one never does:
it is a setting, at the top, outside the game.

Bonus — answer

```
@State var bestGuessCount: Int = 0
```

Any sensible name. It must be
`var`, since the record changes,
and `Int`, a whole number.

12 — answer

Hint: a new game needs
a new secret number.

Starting a new game must
change `secretNumber`, but a
`let` can never change. Xcode
would refuse to run the game.