

# 2007 AMC 8 Solutions

Typeset by:  
[https://live...](https://livecode.com)

Problems ©



1 of 3 errors      ⚠️ Next.js (14.2.3) out of date ([learn more](#)) X

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

popHydrationState

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

performUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

1. Theresa's parents have agreed to buy her tickets to see her favorite band if she spends an average of 10 hours per week helping around the house for 6 weeks. For the first 5 weeks she helps around the house for 8, 11, 7, 12 and 10 hours. How many hours must she work for the final week to earn the tickets?

A

B

C

D

E

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

### Solution

throwOnHydrationMismatch

### During

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

### hours.

popHydrationState

### She, ho

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

### hours.

completeWork

### This me

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

### hours d

completeUnitOfWork

### Thus, D

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

2. 650 students were surveyed about their pasta preferences. The choices were lasagna, manicotti, ravioli and spaghetti. The results of the survey are displayed in the bar graph. What is the ratio of the number of students who preferred spaghetti to the number of students who preferred manicotti?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

A

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

B

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

C

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

D

performUnitOfWork

manicotti.

The rat

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

100 2

Thus, E is the correct answer.

3. What is the sum of the two smallest prime factors of 250?

A

2

B

5

C

7

D

11

E

13

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Solution

We can

From th  
these is

Thus, C

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

4. A haunted house has six windows. In how many ways can Georgie the Ghost enter the house by one window and leave by a different window?

A

12

B

1

C

1

D

3

E

3

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.

See more info here:

<https://nextjs.org/docs/messages/react-hydration-error>

## Solution

Georgie

5 options

The tot

Thus, D

## Call Stack

throwOnHydrationMismatch

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

popHydrationState

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

performUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

5. Chandler wants to buy a 500 dollar mountain bike. For his birthday, his grandparents send him 50 dollars, his aunt sends him 35 dollars and his cousin gives him 15 dollars. He earns 16 dollars per week for his paper route. He will use all of his ~~birthday money and all of the money he earns from his paper route~~. In how many weeks will he have enough money?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

A

B

C

D

E

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Thus, B

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

6. The average cost of a long-distance call in the USA in 1985 was 41 cents per minute, and the average cost of a long-distance call in the USA in 2005 was 7 cents per minute. Find the approximate percent decrease in the cost per minute of a long-distance call

A

B

C

D

E

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

### Solution

throwOnHydrationMismatch

The difference in cost  
decreased by approximately 85%

percent

./../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-  
dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

completeWork

Thus, E

./../node\_modules/.pnpm/react-  
dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-  
dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-  
dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

7. The average age of 5 people in a room is 30 years. An 18-year-old person leaves the room. What is the average age of the four remaining people?

A

25

B

22

C

22

D

22

E

30

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Solution

Initially

After the

remaining

Thus, D

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

8. In trapezoid  $ABCD$ ,  $\overline{AD}$  is perpendicular to  $\overline{DC}$ ,  $AD = AB = 3$ , and  $DC = 6$ . In addition,  $E$  is on  $\overline{DC}$ , and  $\overline{BE}$  is parallel to  $\overline{AD}$ . Find the area of  $\triangle BEC$ .

A      3      B

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.

See more info here:

<https://nextjs.org/docs/messages/react-hydration-error>

A

B

C

D

E

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

We also

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Thus, B

9. To complete the grid below, each of the digits 1 through 4 must occur once in each row and once in each column. What number will occupy the lower right-hand square?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

A

B

C

D

E

## Call Stack

throwOnHydrationMismatch

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

cannot be

## Solution

Consider

in that

Then, the

This for

Thus, B

completeWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

10. For any positive integer  $n$ , define  $\boxed{n}$  to be the sum of the positive factors of  $n$ .

For example,

$$\boxed{6} = 1 + 2 + 3 + 6 = 12.$$

Find

1

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

A

B

C

D

E

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

11. Tiles I, II, III and IV are translated so one tile coincides with each of the rectangles A, B, C and D. In the final arrangement, the two numbers on any side common to two adjacent tiles must be the same. Which of the tiles is translated to Rectangle C?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

A

B

C

D

E

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

or D.

IV is C.

Solution

Note that

This tile

The only

Similar

completework

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Thus, the

12. A unit hexagram is composed of a regular hexagon of side length 1 and its 6 equilateral triangular extensions, as shown in the diagram. What is the ratio of the area of the extensions to the area of the original hexagon?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

A

B

C

D

E

## Call Stack

throwOnHydrationMismatch

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Since e

ngles are

congrue

ngles are

Thus, A

performUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

13. Sets  $A$  and  $B$ , shown in the Venn diagram, have the same number of elements. Their union has 2007 elements and their intersection has 1001 elements. Find the number of elements in  $A$ .

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

A

B

C

D

E

## Call Stack

throwOnHydrationMismatch

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

popHydrationState

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

## Solution

Let  $x$  be the number of elements in  $A \cap B$ .

The common elements are  $x$ .

The common elements are  $x$ .

The common elements are  $x$ .

and

completeUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Plugging in the values:

completeUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Thus, C is the correct answer.

14. The base of isosceles  $\triangle ABC$  is 24 and its area is 60. What is the length of one of the congruent sides?

A

5

B

8

C

10

D

12

E

14

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

Soluti

Constru

Then

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

which g

From th

This give

Thus, C

popHydrationState

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

15. Let  $a$ ,  $b$  and  $c$  be numbers with  $0 < a < b < c$ . Which of the following is impossible?

A

$a + c < b$

B

$a + c > b$

1 of 3 errors      ⚠️ Next.js (14.2.3) out of date ([learn more](#))

C

$a + c = b$

D

$a + c > c$

Error: Hydration failed because the initial UI does not

match what was rendered on the server.

See more info here:

<https://nextjs.org/docs/messages/react-hydration-error>

Soluti

## Call Stack

We kno

throwOnHydrationMismatch

yields

./../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

This sho

ssible.

To ensu

popHydrationState

ssible.

**B** and **C**

./../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

**D**:  $a =$

completeWork

./../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

Thus, **A**

completeUnitOfWork

./../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

16. Amanda Reckonwith draws five circles with radii 1, 2, 3, 4 and 5. Then for each circle she plots the point  $(C, A)$ , where  $C$  is its circumference and  $A$  is its area. Which of the following could be her graph?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

A

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

B

throwOnHydrationMismatch

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

popHydrationState

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

C

completeWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

D

performUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

E

A

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

### Solution

The circu

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

Their re

### Call Stack

throwOnHydrationMismatch

The onl

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

er.

This is t

popHydrationState

Thus, A

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

17. A mixture of 30 liters of paint is 25% red tint, 30% yellow tint and 45% water. Five liters of yellow tint are added to the original mixture. What is the percent of yellow tint in the new mixture?

A

B

C

D

E

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Solution

The amount of yellow tint remains the same.

Thus, the amount of yellow tint in the new mixture is:

$$\frac{30 \text{ liters}}{100\%} \times 30\% = 9 \text{ liters}$$

Thus, the amount of yellow tint in the new mixture is:

$$\frac{9 \text{ liters}}{35 \text{ liters}} \times 100\% = 25.71\%$$

Thus, the amount of yellow tint in the new mixture is:

$$\frac{9 \text{ liters}}{35 \text{ liters}} \times 100\% = 25.71\%$$

Thus, the amount of yellow tint in the new mixture is:

$$\frac{9 \text{ liters}}{35 \text{ liters}} \times 100\% = 25.71\%$$

Thus, the amount of yellow tint in the new mixture is:

$$\frac{9 \text{ liters}}{35 \text{ liters}} \times 100\% = 25.71\%$$

## 18. The product of the two 99-digit numbers

303,030,303,...,030,303

and

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

has tho

### Unhandled Runtime Error

A

B

C

D

E

Error: Hydration failed because the initial UI does not match what was rendered on the server.

See more info here:

<https://nextjs.org/docs/messages/react-hydration-error>

### Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

Soluti

We onl

popHydrationState

d them

(the th

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

This give

completeUnitOfWork

Thus, D

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

19. Pick two consecutive positive integers whose sum is less than 100. Square both of those integers and then find the difference of the squares. Which of the following could be the difference?

A

B

C

D

E

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.

See more info here:

<https://nextjs.org/docs/messages/react-hydration-error>

## Solution Call Stack

Let  $x$  and  $y$  be the consecutive integers.

squares =  $x^2 + y^2$

```
./..../node_modules/.pnpm/react-dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-dom.development.js
```

popHydrationState

```
./..../node_modules/.pnpm/react-dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-dom.development.js
```

From the stack trace, we can see that the error occurred in the `popHydrationState` function.

Thus, the error occurred during the `completeWork` phase.

```
./..../node_modules/.pnpm/react-dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-dom.development.js
```

completeUnitOfWork

```
./..../node_modules/.pnpm/react-dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-dom.development.js
```

performUnitOfWork

```
./..../node_modules/.pnpm/react-dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-dom.development.js
```

20. Before district play, the Unicorns had won 45% of their basketball games. During district play, they won six more games and lost two, to finish the season having won half their games. How many games did the Unicorns play in all?

A

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

B

## Unhandled Runtime Error

C

D

E

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Solution Call Stack

Let  $x$  be the number of games played by the Unicorns before district play. Then  
after the district play, they will have won  $x + 6$  games and lost  $2$  games.  
In total, they will have played  $x + 6 + 2 = x + 8$  games.

Call stack when the hydration error occurs:

Solving the hydration error:

Therefore, the hydration error occurs at:

Thus, A is the correct answer.

completeWork

./node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

21. Two cards are dealt from a deck of four red cards labeled  $A, B, C, D$  and four green cards labeled  $A, B, C, D$ . A winning pair is two of the same color or two of the same letter. What is the probability of drawing a winning pair?

A

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

B

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

C

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

color, and 1  
that result

## Solution

After dealing with the error, we can see that the stack trace shows that the hydration mismatch occurred in the `popHydrationState` function.

The problem is that the `popHydrationState` function is being called in a worker thread.

Thus, **D** is the correct answer.

completeWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

completeUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

performUnitOfWork

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

22. A lemming sits at a corner of a square with side length 10 meters. The lemming runs 6.2 meters along a diagonal toward the opposite corner. It stops, makes a  $90^\circ$  right turn and runs 2 more meters. A scientist measures the shortest distance between the lemming and each side of the square. What is the average of these four distances?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

A

B

C

D

E

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

Since the sum of the four sides is 40, the total distance is 10.

popHydrationState

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

Thus, C is the correct answer.

completeWork

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

completeUnitOfWork

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

performUnitOfWork

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-  
dom.development.js

23. What is the area of the shaded pinwheel shown in the  $5 \times 5$  grid?



1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

A

B

C

D

E

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

## Soluti

popHydrationState

We can  
part fro

inshaded  
ded area,

There a  
for a to

completework

There a  
of

total area

completeUnitOfWork

The tot  
The tot

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

as the a

performUnitOfWork

Thus, B

./../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

$19 = 6$

24. A bag contains four pieces of paper, each labeled with one of the digits 1, 2, 3 or 4, with no repeats. Three of these pieces are drawn, one at a time without replacement, to construct a three-digit number. What is the probability that the three-digit number is a multiple of 3?

A

B

C

D

E

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

throwOnHydrationMismatch

./..../node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

## Solution

Recall

popHydrationState

The ones  
(2, 3, 4)

./..../node\_modules/.pnpm/react-

This me

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

in the k

dom.development.js

Each o

completeWork

Thus, C

./..../node\_modules/.pnpm/react-

3) and

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

4 is left

dom.development.js

$$\frac{3}{4} \cdot \frac{1}{4} = \frac{1}{2}$$

completeUnitOfWork

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

performUnitOfWork

./..../node\_modules/.pnpm/react-

dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-

dom.development.js

25. On the dart board shown in the figure below, the outer circle has radius 6 and the inner circle has radius 3. Three radii divide each circle into three congruent regions, with point values shown. The probability that a dart will hit a given region is proportional to the area of the region. When two darts hit this board, the score is the sum of the point values of the regions hit. What is the probability that the score is 10 or greater?

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

probability

## Unhandled Runtime Error

Error: Hydration failed because the initial UI does not match what was rendered on the server.  
See more info here:  
<https://nextjs.org/docs/messages/react-hydration-error>

## Call Stack

A throwOnHydrationMismatch

B ./node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

C popHydrationState

D ./node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

E completeWork

./node\_modules/.pnpm/react-dom@18.3.1\_react@18.3.1/node\_modules/react-dom/cjs/react-dom.development.js

## Solution

The area of the outer circle is  $36\pi$ .

$$3^2\pi = 9\pi$$

This means

the probability

Summary

of hitting the outer ring is  $\frac{27}{36}\pi = \frac{3}{4}\pi$ .

Similarly, the probability of hitting the inner ring is  $\frac{9}{36}\pi = \frac{1}{4}\pi$ .

of hitting the center is  $\frac{9}{36}\pi = \frac{1}{4}\pi$ .

of performing a unit of work is  $\frac{1}{4}\pi$ .

of performing a unit of work is  $\frac{1}{4}\pi$ .

of performing a unit of work is  $\frac{1}{4}\pi$ .

Similarly, the probability of hitting a 2 is

$$2 \cdot \frac{1}{12} + \frac{1}{4} = \frac{5}{12}.$$

The only way to get an odd score is to hit one 1 and one 2

The problem

1 of 3 errors

● Next.js (14.2.3) out of date ([learn more](#))

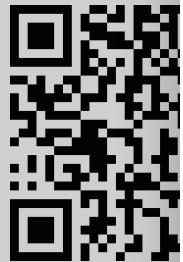
## Unhandled Runtime Error

Thus, B

Error: Hydration failed because the initial UI does not match what was rendered on the server.

See more info here:

<https://nextjs.org/docs/messages/react-hydration-error>



## Call Stack

throwOnHydrationMismatch

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

popHydrationState

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

completeUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```

performUnitOfWork

```
./../node_modules/.pnpm/react-
dom@18.3.1_react@18.3.1/node_modules/react-dom/cjs/react-
dom.development.js
```