Lucky Dip 1

Dominic has devised a simple game.
Inside a bag he places 3 black and 3 white balls. He then shakes the bag.

He asks Amy to take two balls from the bag without looking.

If the two balls are the same color then you win.
If they are different colors then I win.

OK.
That sounds fair to me.

Is Amy right? Is the game fair?

If Amy is wrong, then who is most likely to win?

Show all your reasoning clearly.

There is
There are
and if amy
has too
The she
Getting the

BB WB
BB WB
BB WB
WW
WW
WW
BW
BW

Workshop Set of Student Work for

Modeling Conditional Probabilities 1: Lucky Dip

Pre-lesson assessment: *Lucky Dip 1*

For Professional Learning Modules developed with funding from the Bill & Melinda Gates Foundation

Pre-lesson assessment

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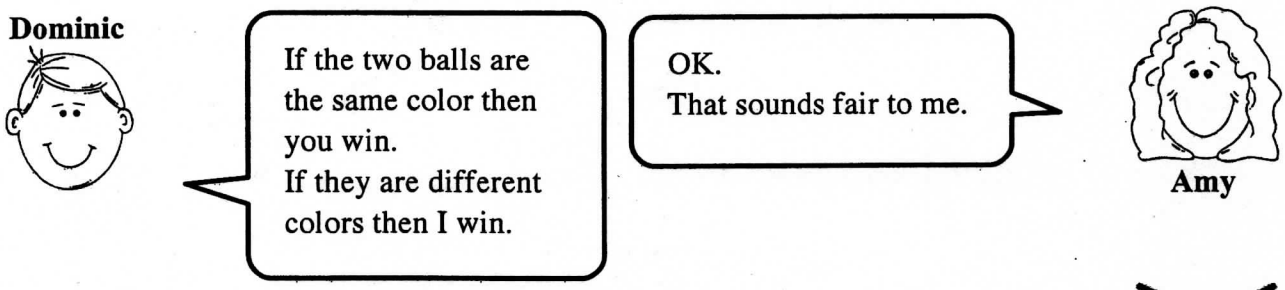

Is Amy right? Is the game fair?

If Amy is wrong, then who is most likely to win?

Show all your reasoning clearly.

Yes she is right. Each chance is equally likely each time. The game is an independent even. The chance of getting a black and white or a black and black is the same probability. Each chance is $\frac{1}{3}$.

Pre-lesson assessment

Student Materials

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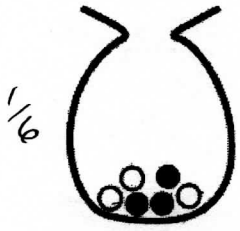


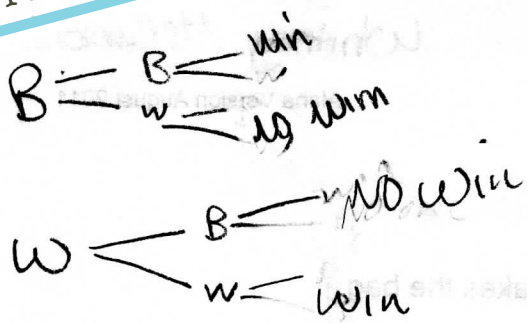
Is Amy right? Is the game fair?

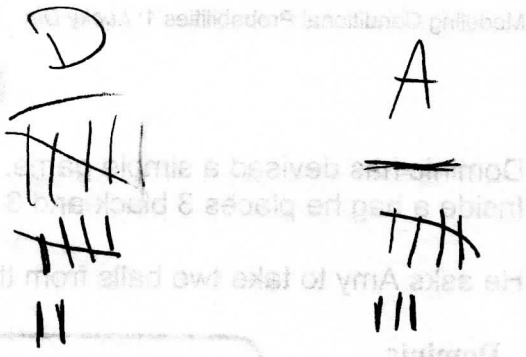
If Amy is wrong, then who is most likely to win?

Show all your reasoning clearly.

it would be fair because while pulling one out its more likely you get the same color than the other color. After putting one back.

Pre-lesson assessment





Bw
BB
WB
WW

Fair

Pre-lesson assessment

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Is Amy right? Is the game fair?

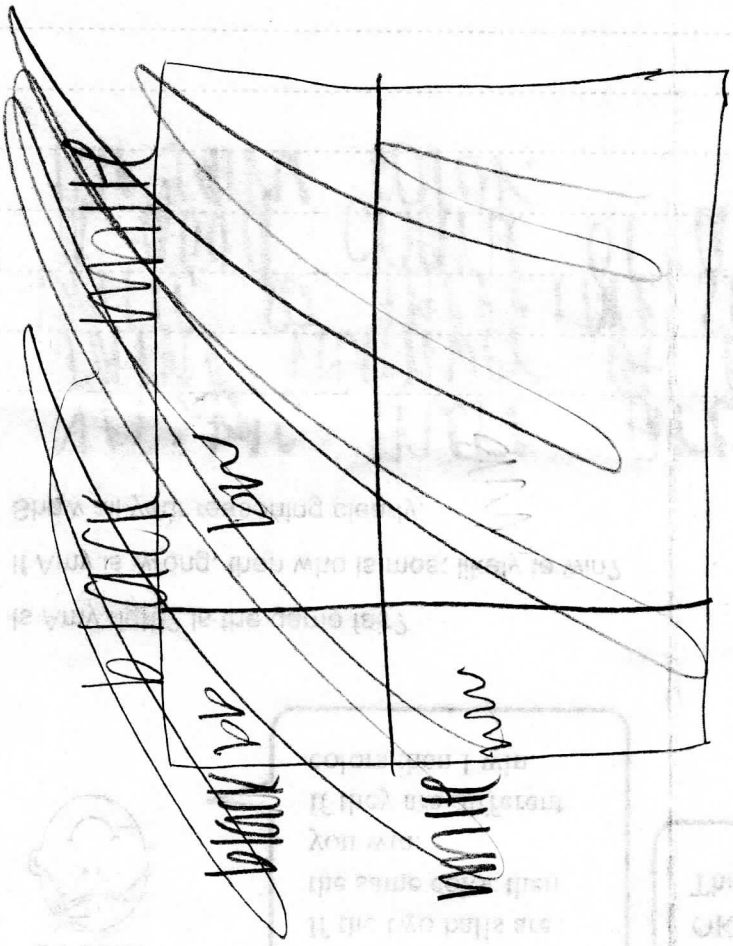
If Amy is wrong, then who is most likely to win?

Show all your reasoning clearly.

Yes; bc there are the same number of each color balls, so therefore she had a good chance of at least getting the same color.

Pre-lesson assessment

BB, BW, WB, WW



W1 WW BW

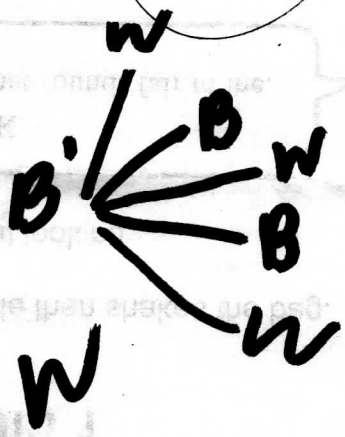
W2 WB WW

W3 WB WW

B1 BB BW

B2 BB BW

B3 BB BW



Pre-lesson assessment

Student Materials

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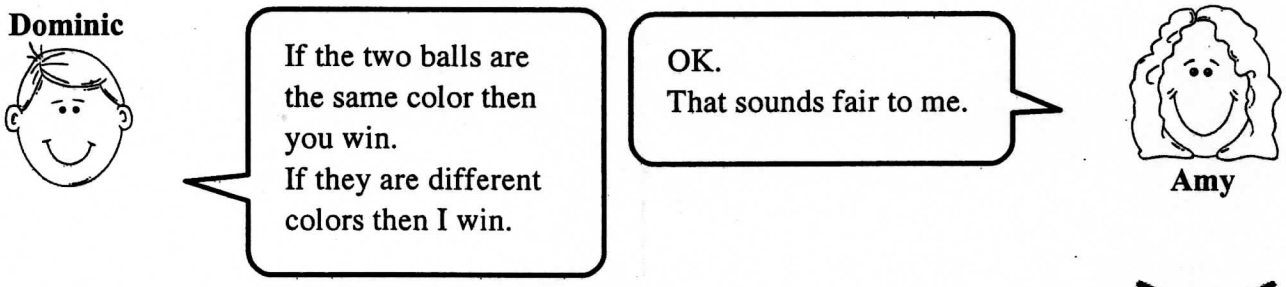

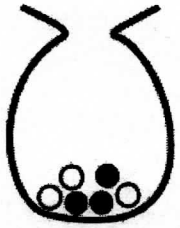

Is Amy right? Is the game fair?

If Amy is wrong, then who is most likely to win?

Show all your reasoning clearly.

Yes, it is an even chance everytime. each time amy puts the Ball Back in the Bag. There are 3 & 3 so it is a 50% chance of Drawing either one.

Pre-lesson assessment

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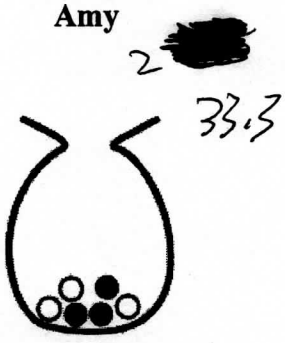

white 16.65
white 16.65
white 16.65

Black 16.65
Black 16.65
Black 16.65

Is Amy right? Is the game fair?

If Amy is wrong, then who is most likely to win?

Show all your reasoning clearly.

There is a 50% on winning since There are 3 white balls and 3 black bloss and if amy does not win. The dominic has too win or if he shake the bag up The she would have a 33.3 percent of Getting the same color.

BB WB
BB WB
BB WB
WW
WW
WW
BW
BW
BW

W B
WW BW
WW BW
WB BB
WB BB
WB BB

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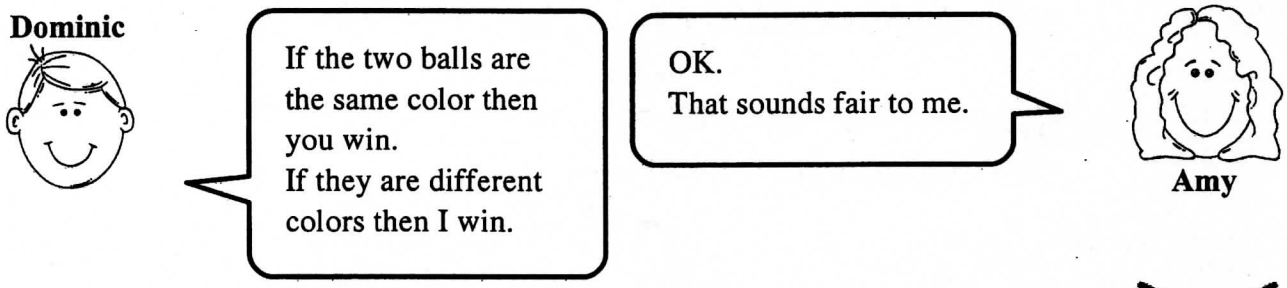

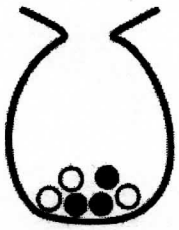

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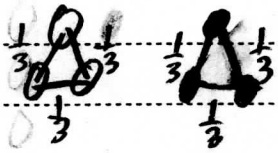

WB BW BB WW

WWW BBB
WWB BBW
WBB BWW
WBW BWB

Amy is right.
Each ball has an equal amount to the opposite color.
There's a $\frac{1}{3}$ chance of taking either two of the same color or two of a different color.

W1	W2	W2	W1	W3	W1
W1	W3	W2	W3	W3	W2
W1	B1	W2	B1	W3	B1
W1	B2	W2	B2	W3	B2
W1	B3	W2	B3	W3	B3