H. MAS 170

ch 15

→ Ch 13, 14 first

mutually exclusive

Ch 14 B 2

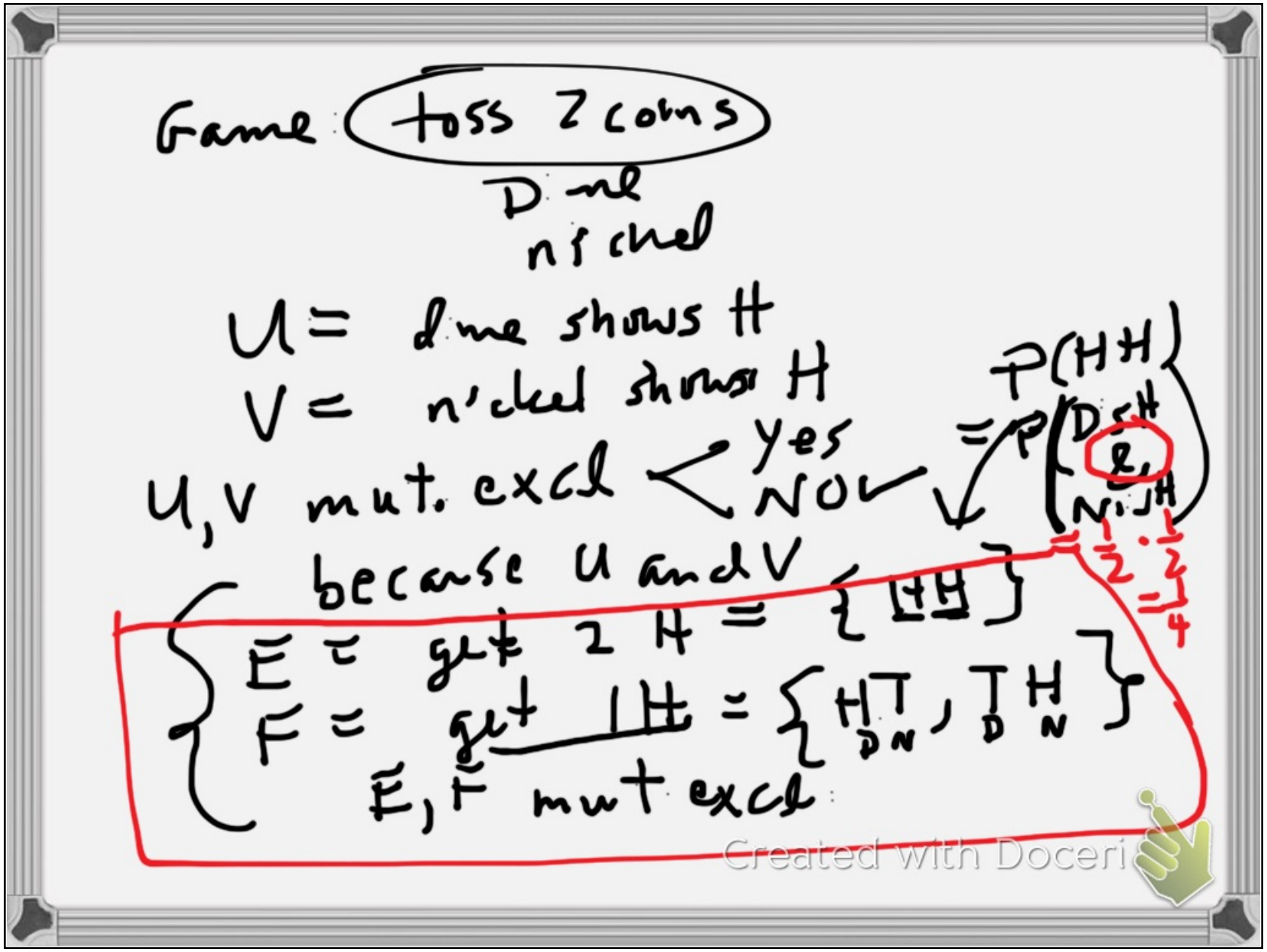
1. Text

2. any notes

Game toss fair coin once

u = "get H"

V = "get T"


Game: toss 2 coins
Dime
nickel
U = dime shows H
V = nickel shows H
U, V mut. excl
yes
NO
because U and V
E = get 2 H = {HH}
F = get 1 H = {HT, TH}
E, F mut excl
P(H H) = P(D H & N H)
1/2 · 1/2 = 1/4
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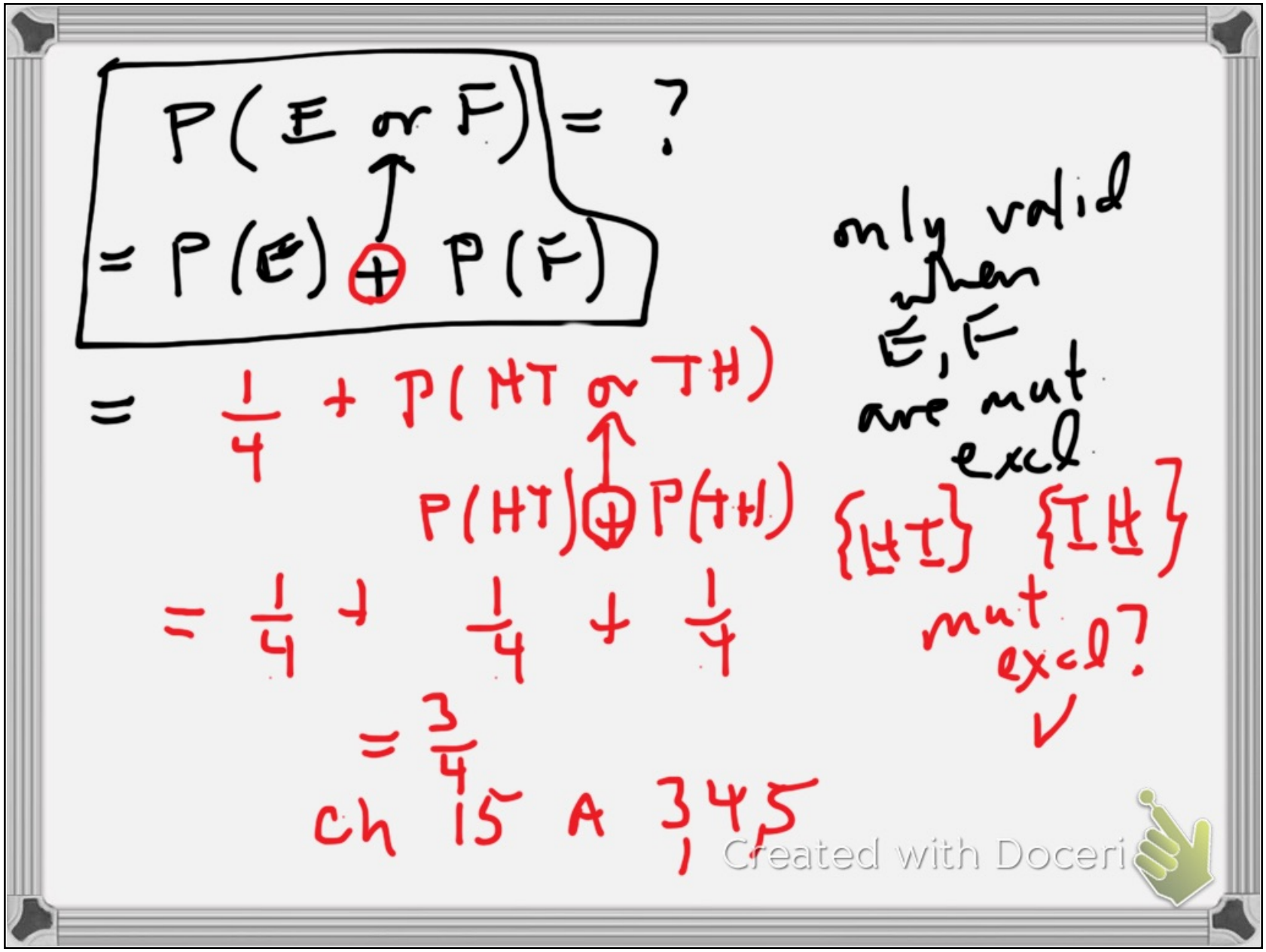
P(E or F) = ?
= P(E) ⊕ P(F)
only valid when E, F are mut excl
= 1/4 + P(HT or TH)
P(HT) ⊕ P(TH)
{HT} {TH}
= 1/4 + 1/4 + 1/4
mut excl? ✓
= 3/4
ch 15 A 3, 4, 5
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Ch 15 comments $7! = 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$

formula p 259

~~$p = 1/2$~~

$p = \frac{3}{5}$

Game
Draw 1 ticket

Repeat n times

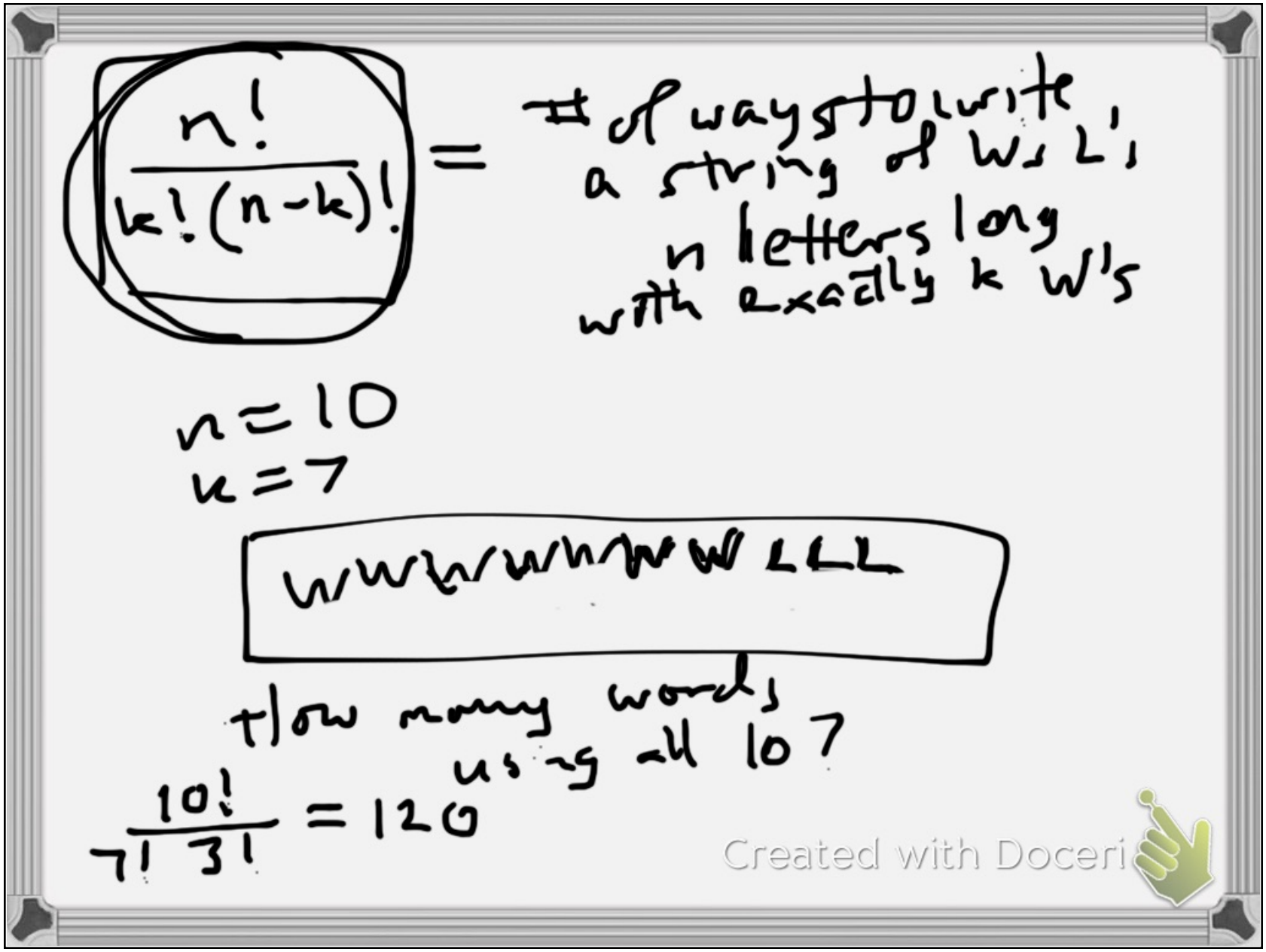
focus → count of W

P(get exactly k W in n draws)

$= \frac{n!}{k!(n-k)!} p^k (1-p)^k$

n, k, p

p = P(get W on 1 draw)


n!
k!(n-k)!
= # of ways to write a string of W's L's n letters long with exactly k W's
n=10
k=7
WWWWWWWLLL
How many words using all 10?
10!
7! 3!
= 120
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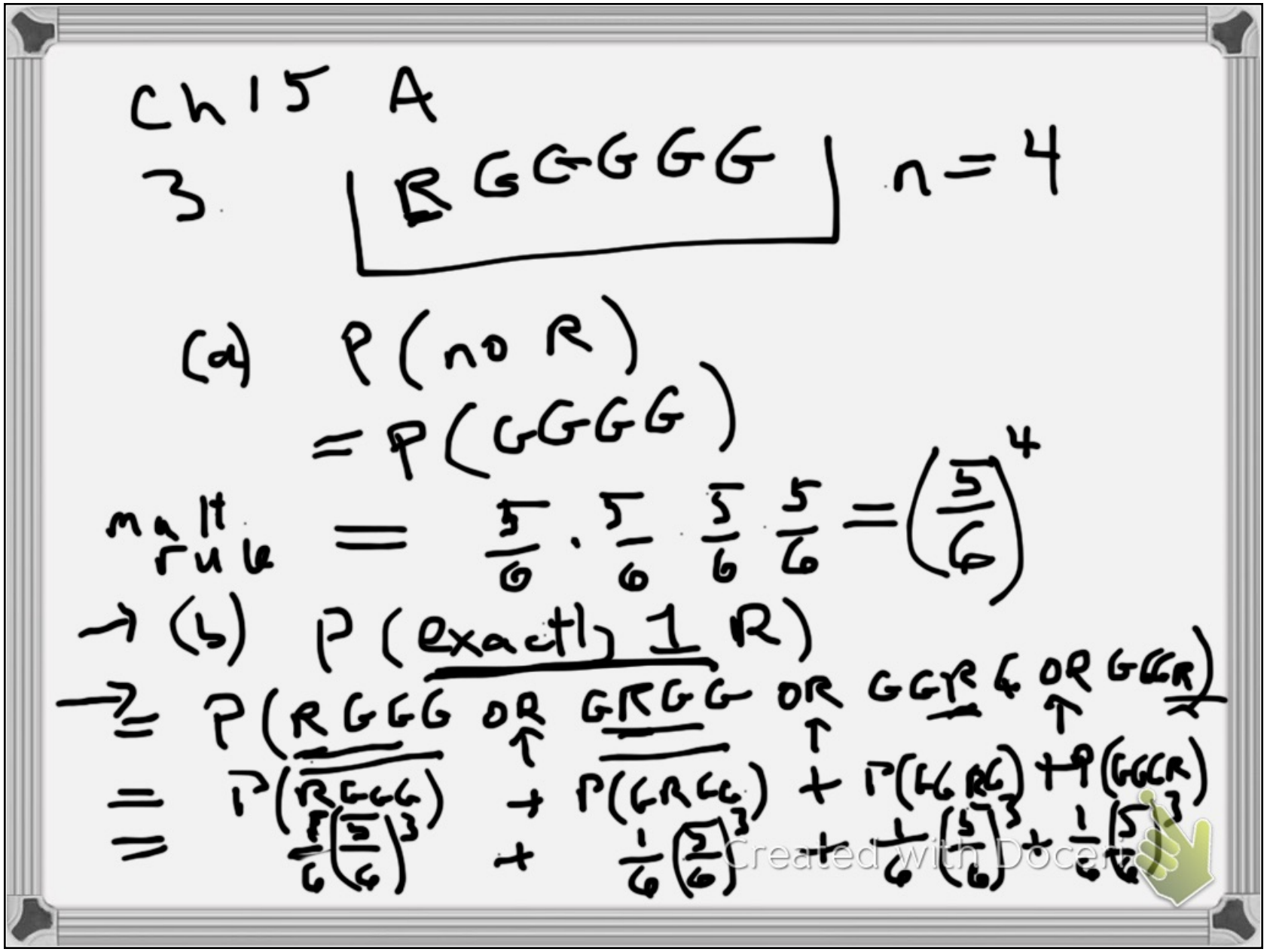
Ch 15 A
3
RGGGGG
n = 4
(a) P(no R)
= P(GGGG)
mult rule = 5/6 · 5/6 · 5/6 · 5/6 = (5/6)^4
(b) P(exactly 1 R)
= P(RGGG OR GRGG OR GGRG OR GGGR)
= P(RGGG) + P(GRGG) + P(GGRG) + P(GGGR)
= 1/6 (5/6)^3 + 1/6 (5/6)^3 + 1/6 (5/6)^3 + 1/6 (5/6)^3
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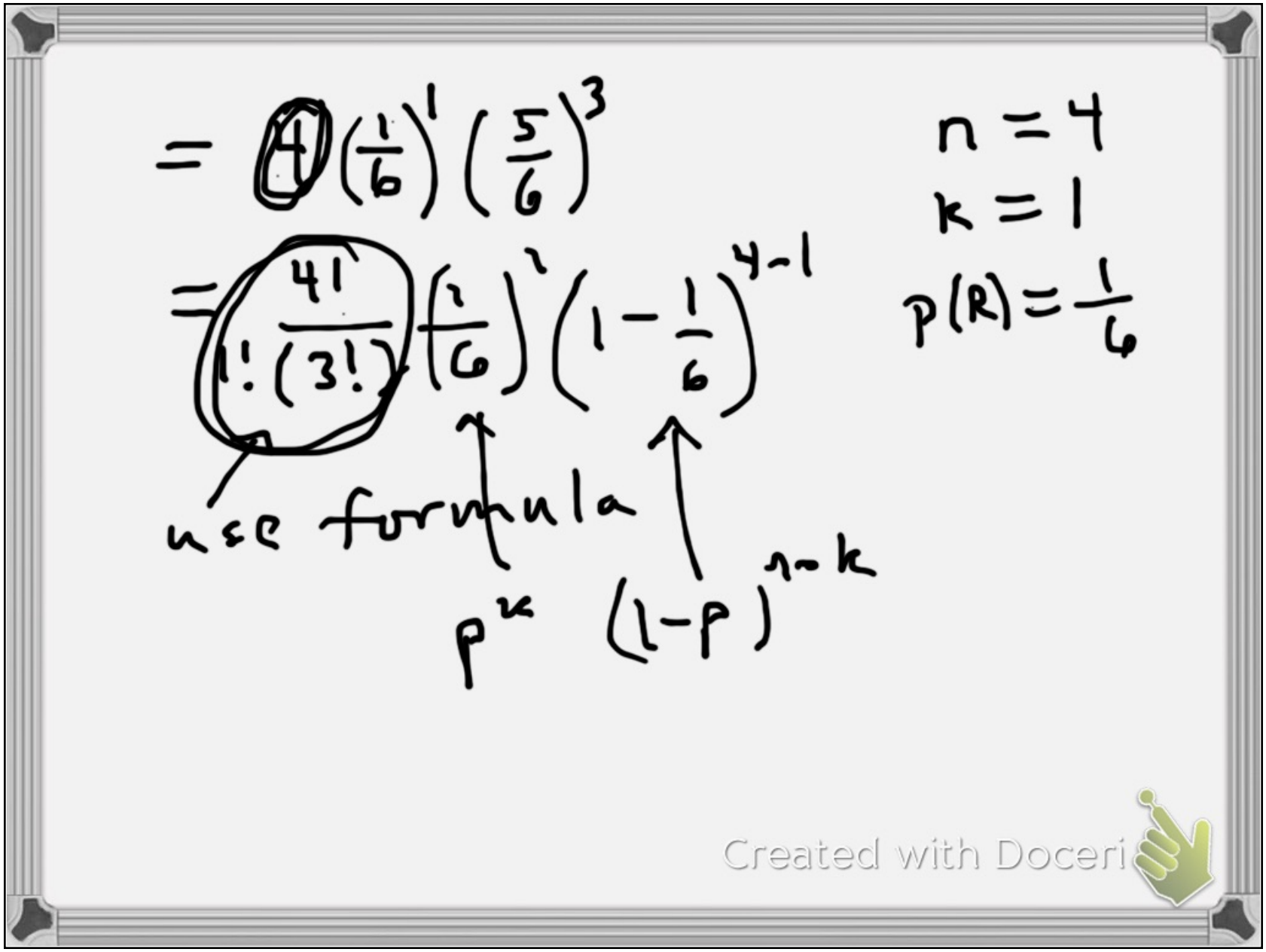
$= 4\left(\frac{1}{6}\right)^1\left(\frac{5}{6}\right)^3$
$= \frac{4!}{1!(3!)}\left(\frac{1}{6}\right)^1\left(1-\frac{1}{6}\right)^{4-1}$
use formula
$p^k \quad (1-p)^{n-k}$
$n = 4$
$k = 1$
$p(R) = \frac{1}{6}$
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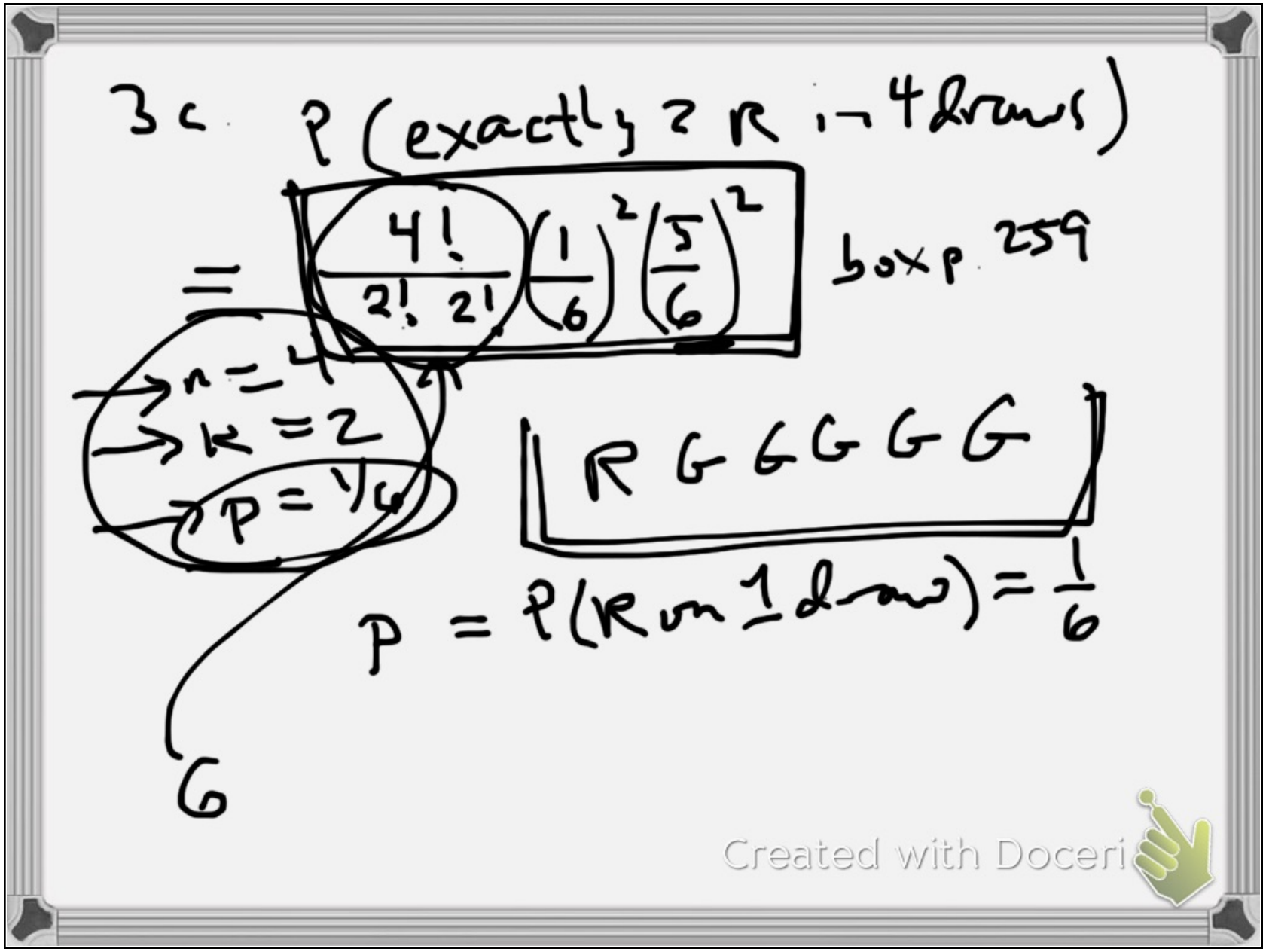
3c P(exactly 2 R in 4 draws)
= 4!/2!2! (1/6)^2 (5/6)^2
box p 259
n = 4
k = 2
p = 1/6
R G G G G G
P = P(R on 1 draw) = 1/6
G
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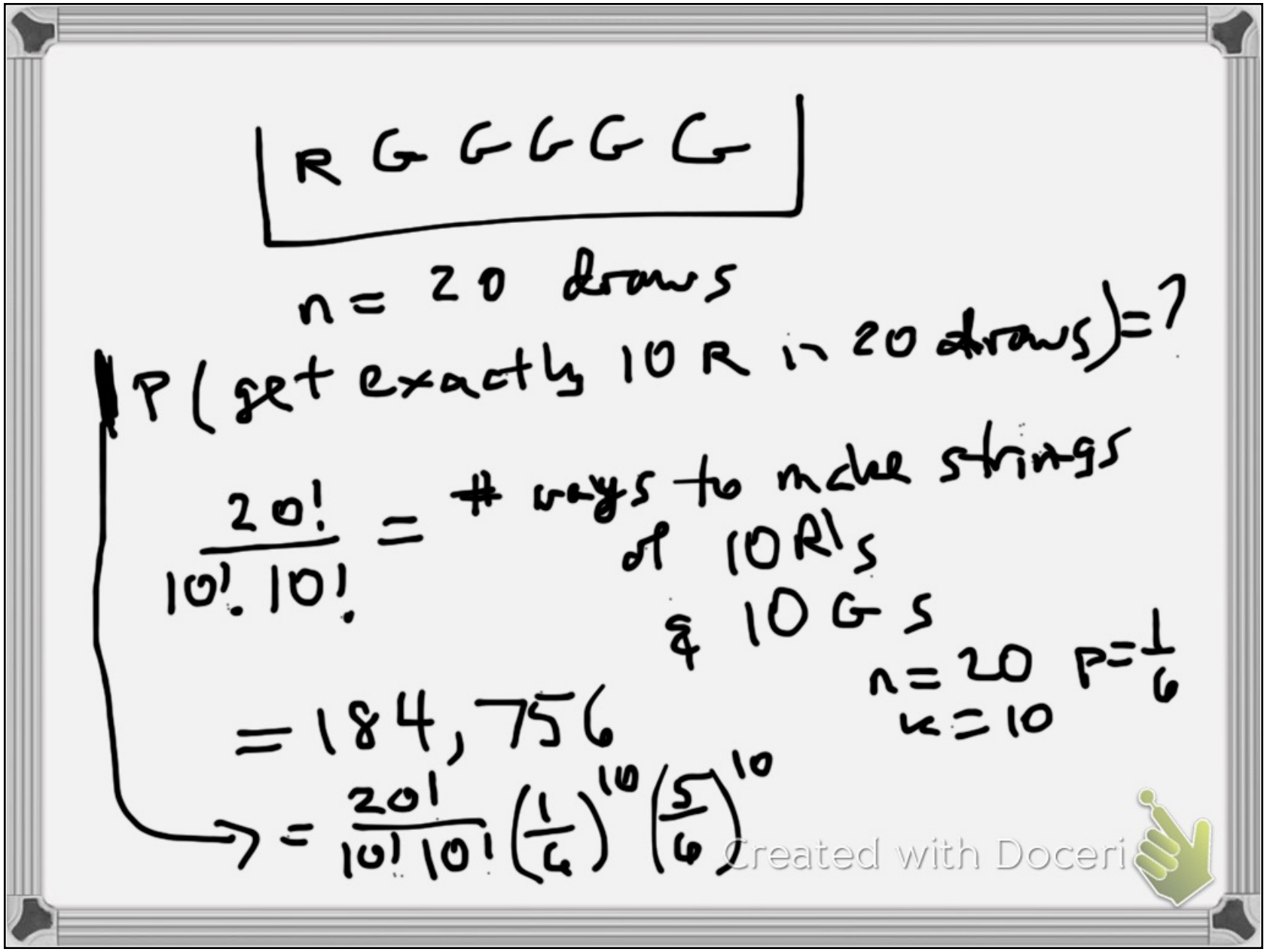
R G G G G G
n = 20 draws
P(get exactly 10 R in 20 draws) = ?
20! / 10! 10! = # ways to make strings of 10 R's & 10 G's
= 184,756
n = 20 p = 1/6
k = 10
= 20! / 10! 10! (1/6)^10 (5/6)^10
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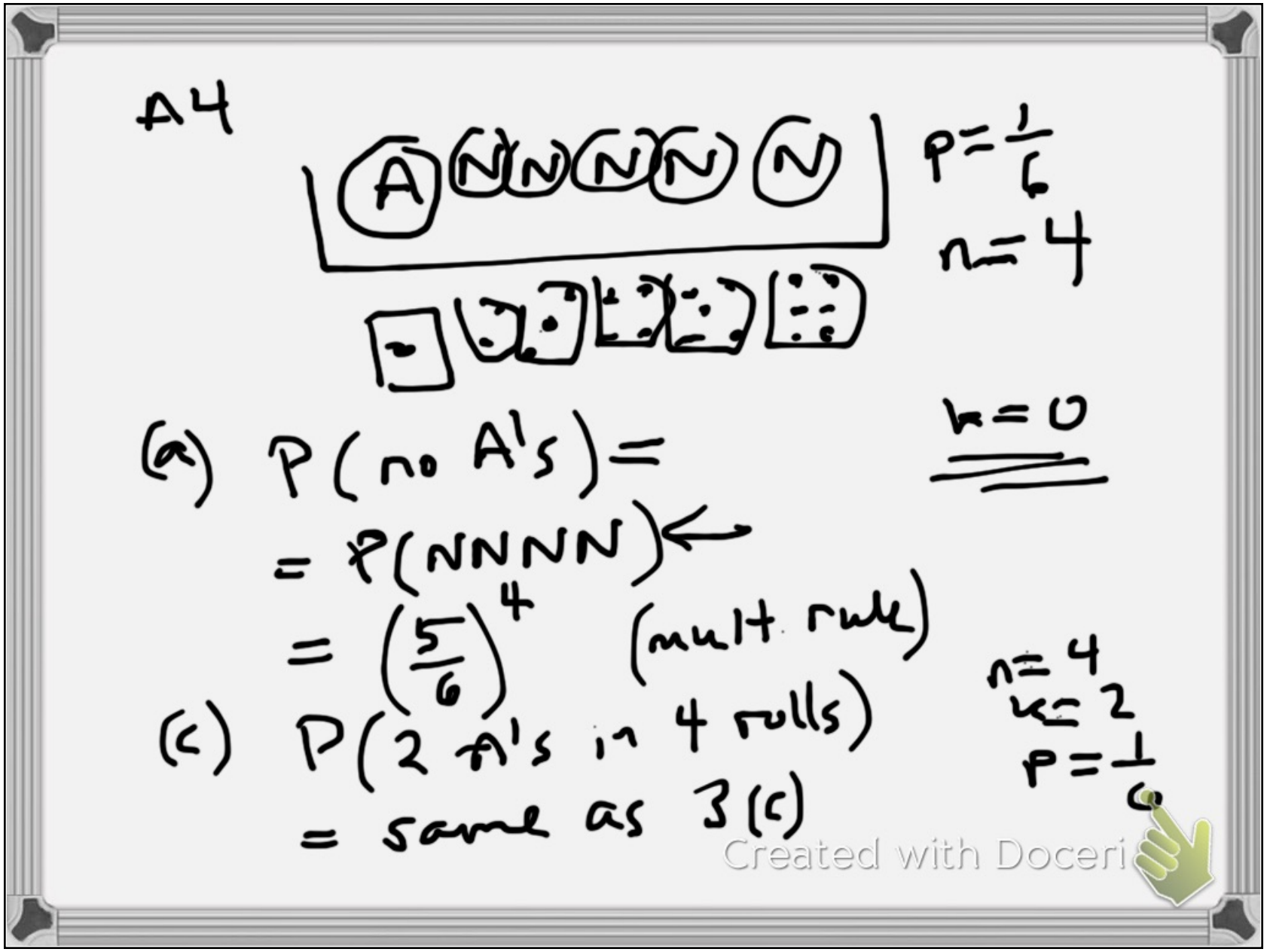
A4


A N N N N N
p = 1/6
n = 4
k = 0
(a) P(no A's) =
= P(NNNN)
= (5/6)^4 (mult rule)
(c) P(2 A's in 4 rolls)
= same as 3(c)
n = 4
k = 2
p = 1/6
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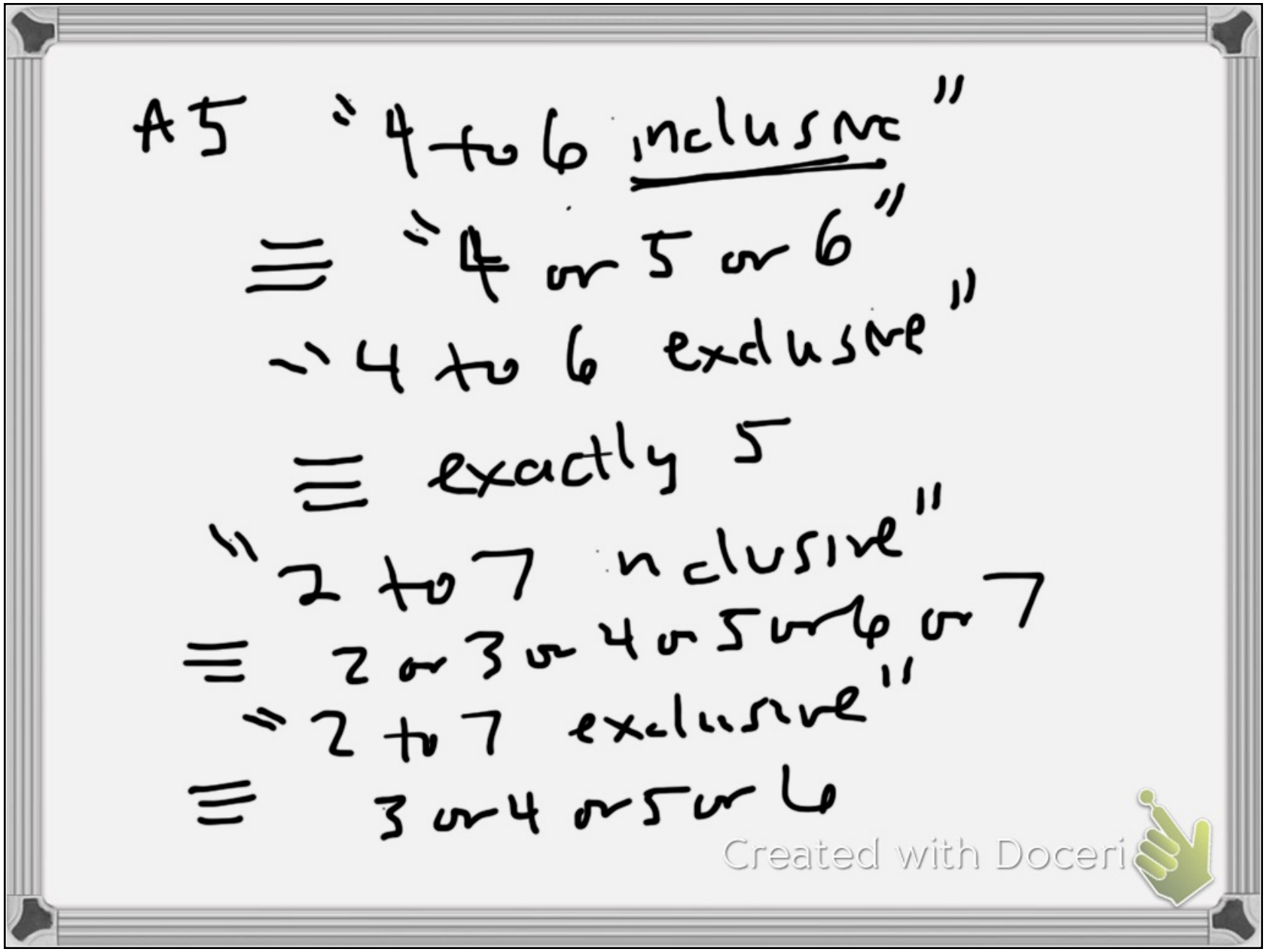
As "4 to 6 inclusive"
≡ "4 or 5 or 6"
"4 to 6 exclusive"
≡ exactly 5
"2 to 7 inclusive"
≡ 2 or 3 or 4 or 5 or 6 or 7
"2 to 7 exclusive"
≡ 3 or 4 or 5 or 6
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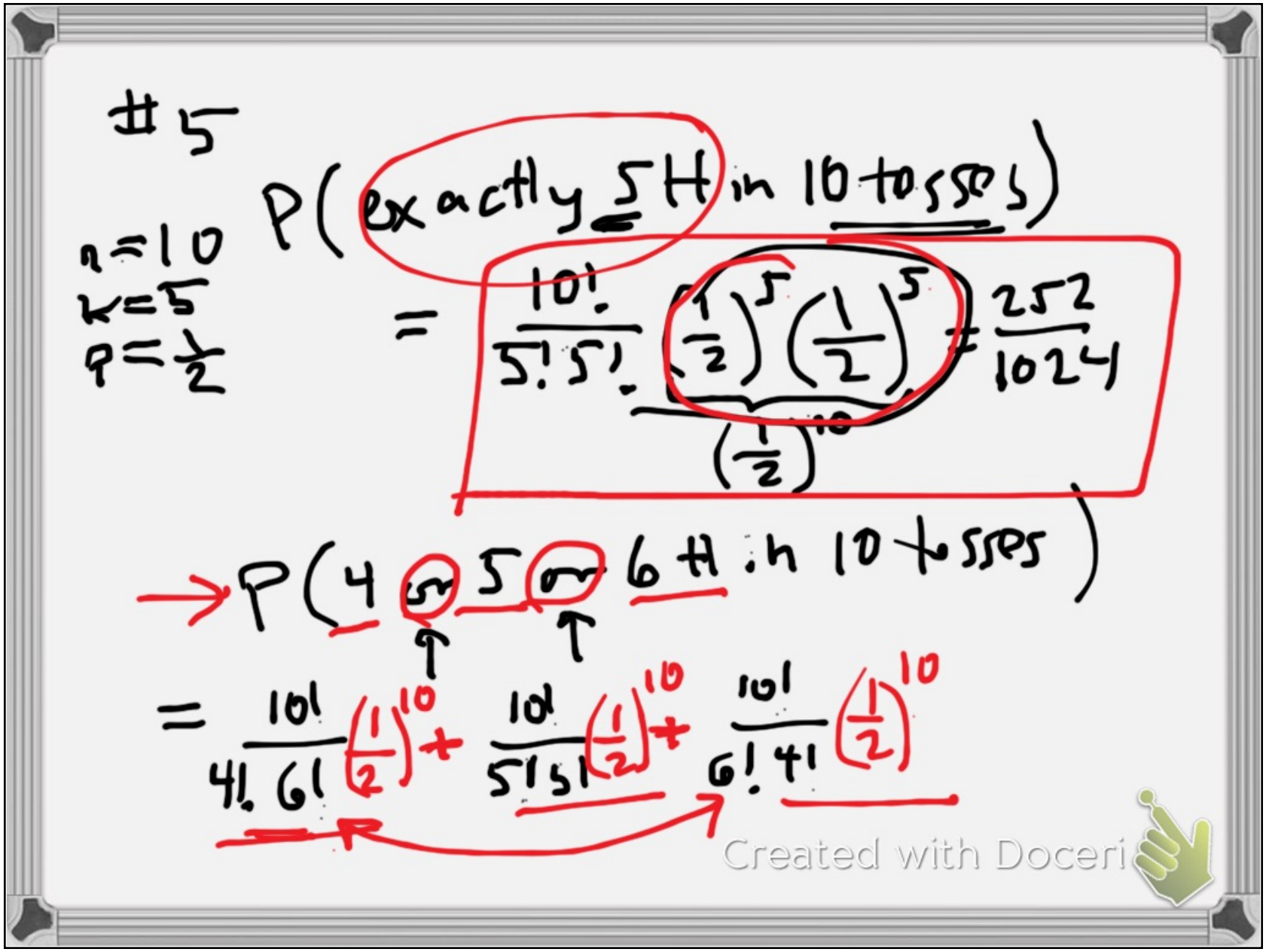
#5
n=10
k=5
p=1/2
P(exactly 5 H in 10 tosses)
= 10!/5!5! (1/2)^5 (1/2)^5 = 252/1024
(1/2)^10
→ P(4 or 5 or 6 H in 10 tosses)
= 10!/4!6! (1/2)^10 + 10!/5!5! (1/2)^10 + 10!/6!4! (1/2)^10
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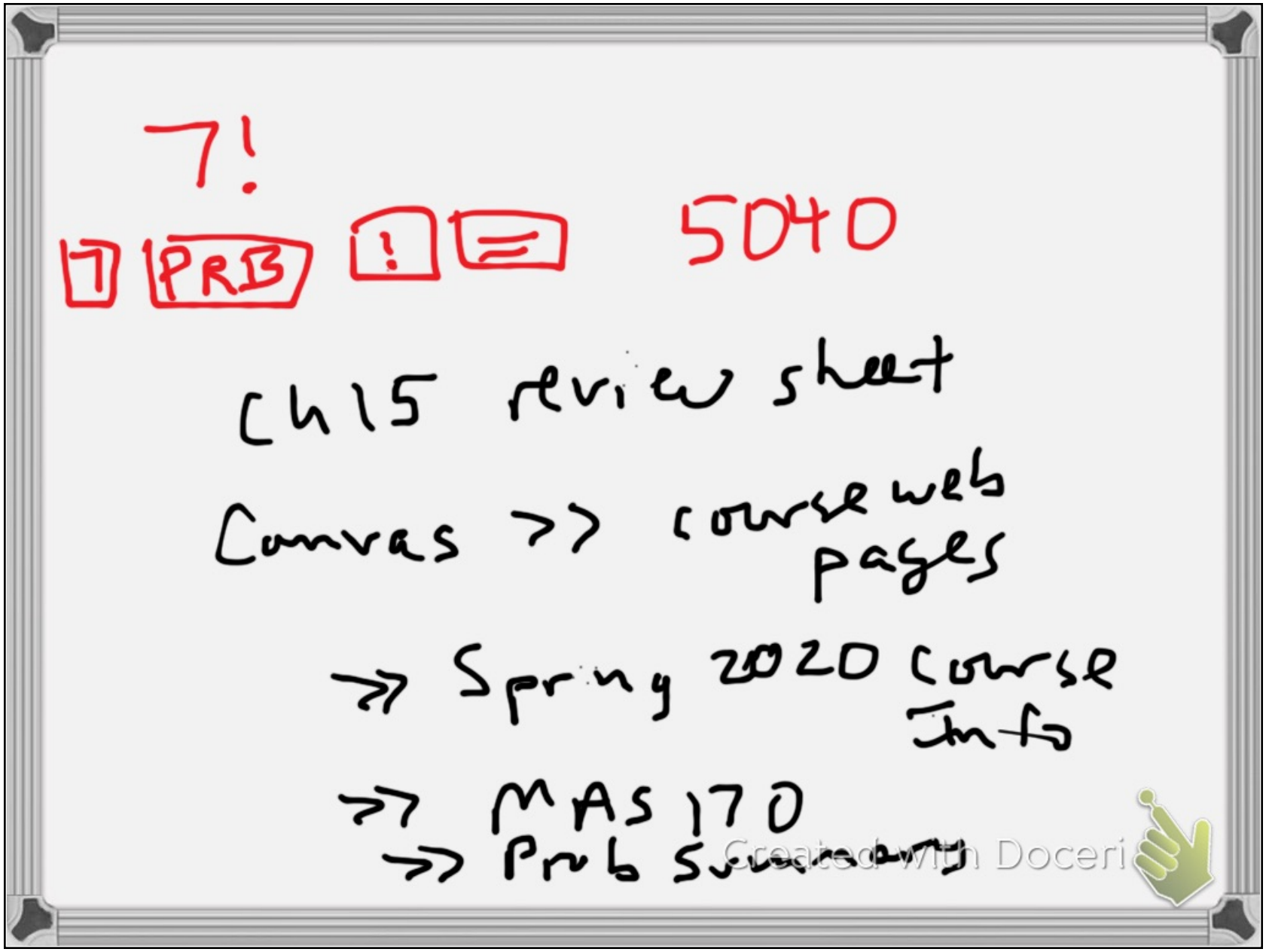
7!
7 PRB
! =
5040
Ch 5 review sheet
Canvas >> course web pages
>> Spring 2020 course info
>> MAS 170
>> Prob Sheet
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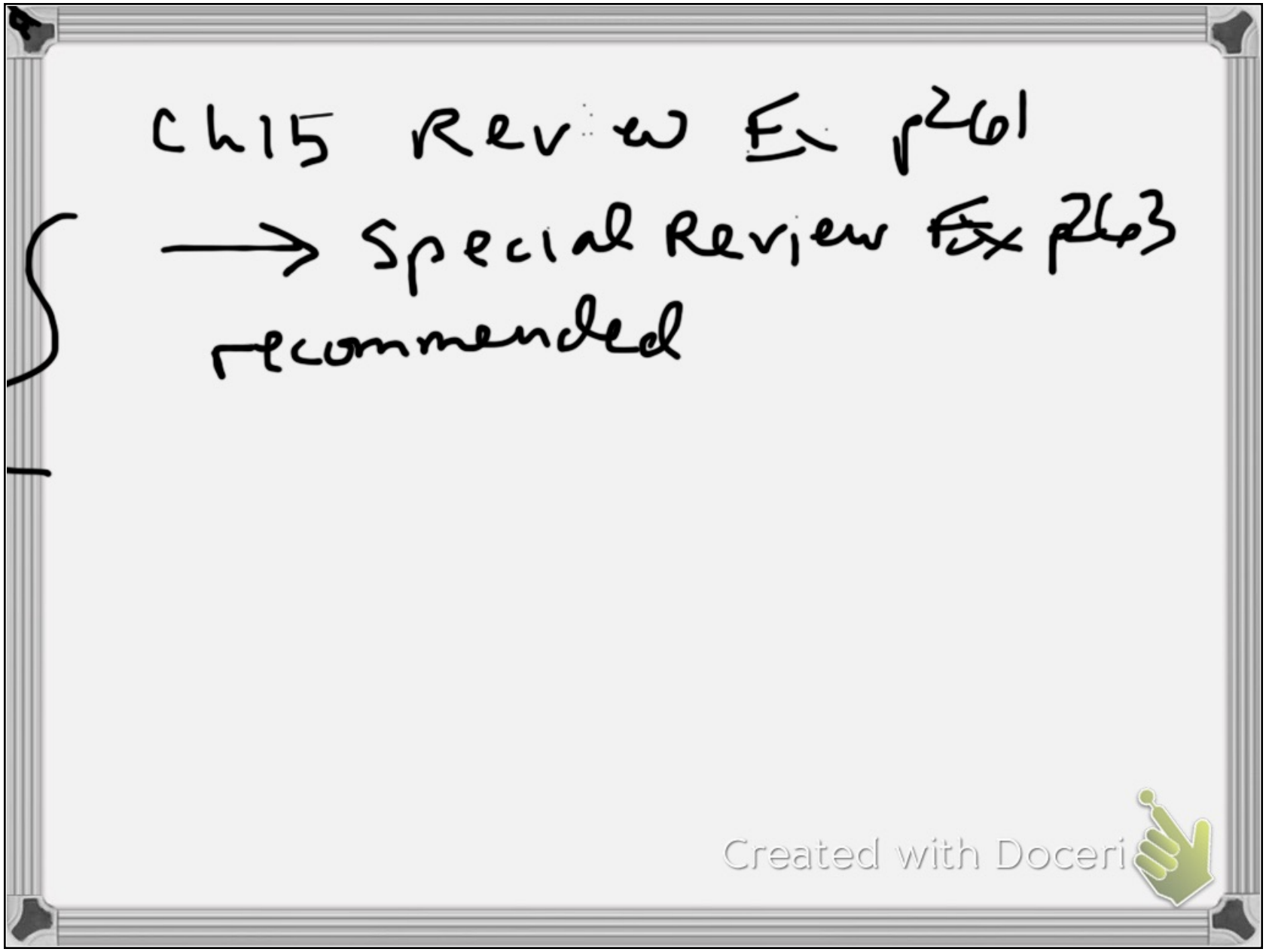
Ch 15 Review Ex p261
→ Special Review Ex p263
recommended
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