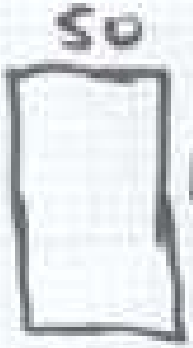
Pemodelan:

Dari "Dunia Nyata" Menuju "Dunia Matematika"

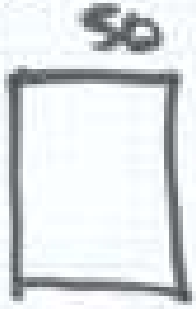
Ariyadi Wijaya dan Tim PMRI UNY

2010



3/4 of lot → playground

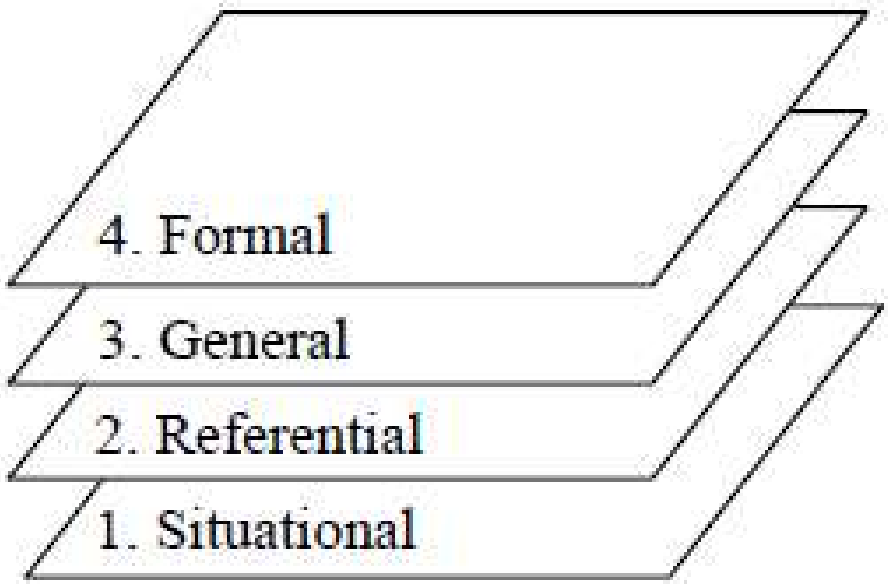
2/5 of playground → black top



2/5 of lot → playground

3/4 of playground → black top

Emergent Modeling

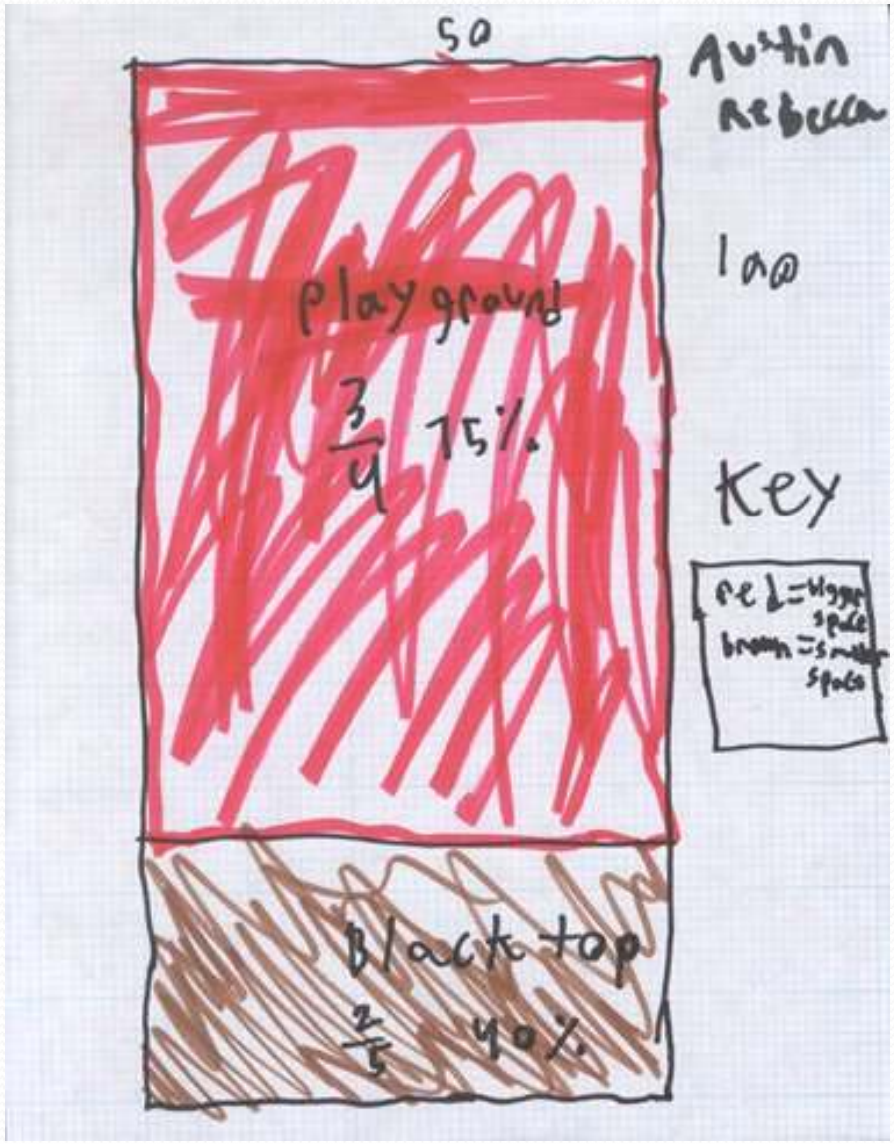


Levels of emergent modeling from situational to formal reasoning

Emergent Modeling

1. Situational: masih bekerja dalam konteks
2. Referential: menggunakan representasi → *model of*
3. General: sudah lebih fokus pada masalah matematika daripada konteks → *model for*
4. Formal: bekerja dalam matematika dan lepas dari konteks

VIDEO



Austin
Rebecca

2nd park

3/4 out of 100 is 75

since 1/4 is 25 and 25 x 3 = 75

1st park

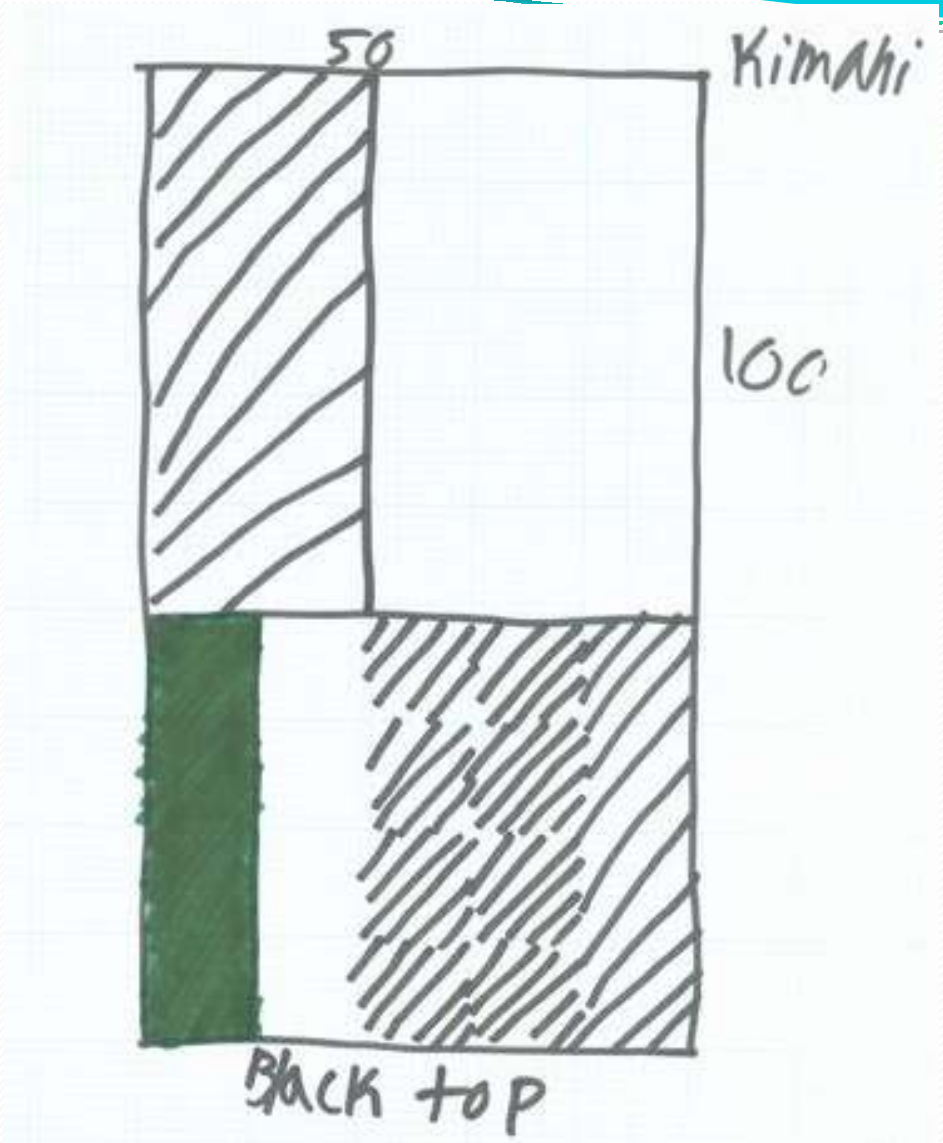
2/5 out of 100 is 40

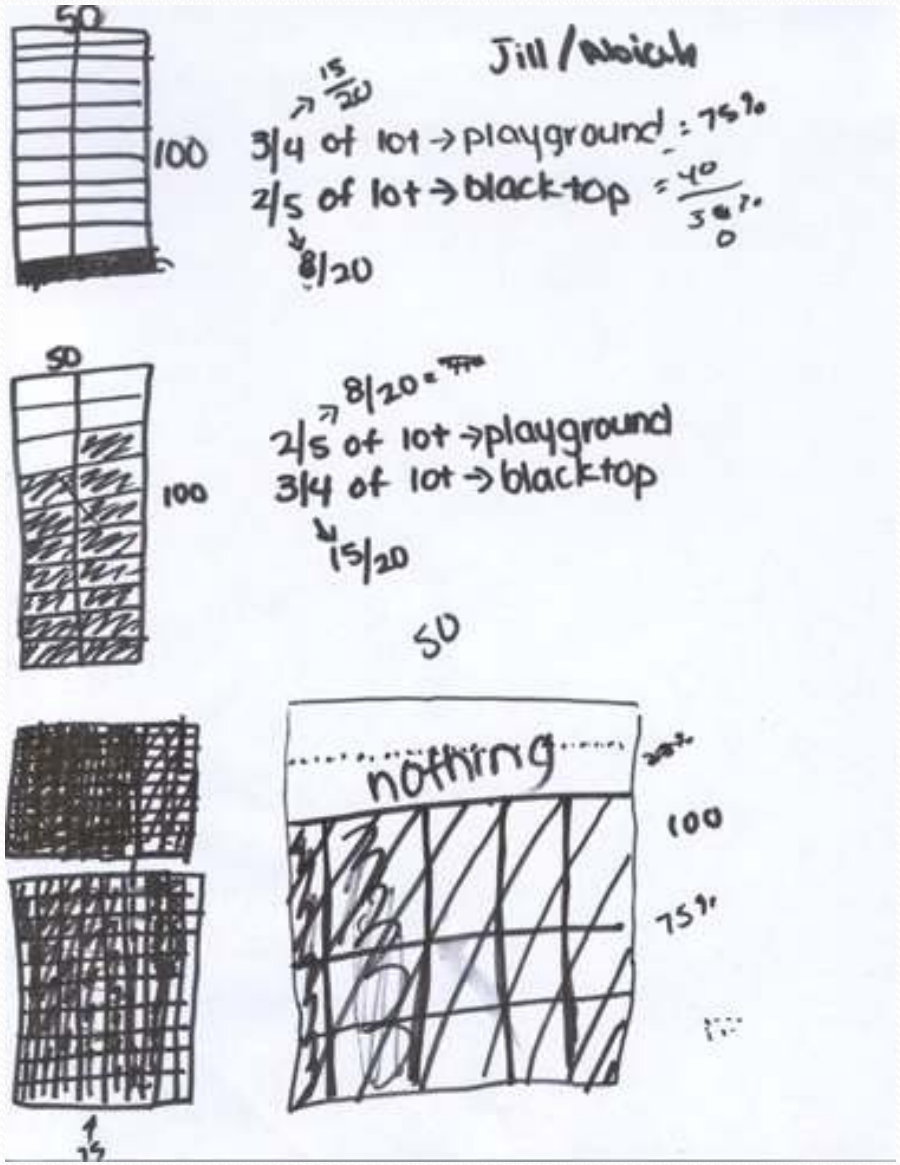
since 1/5 is 20

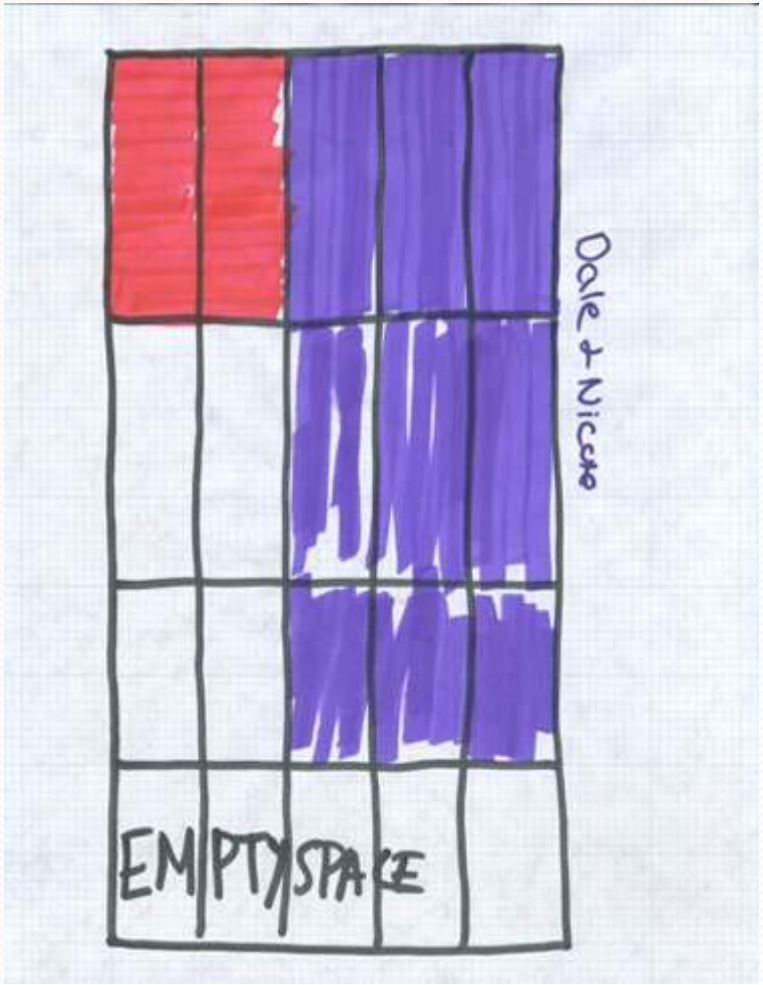
5 x 20 = 100

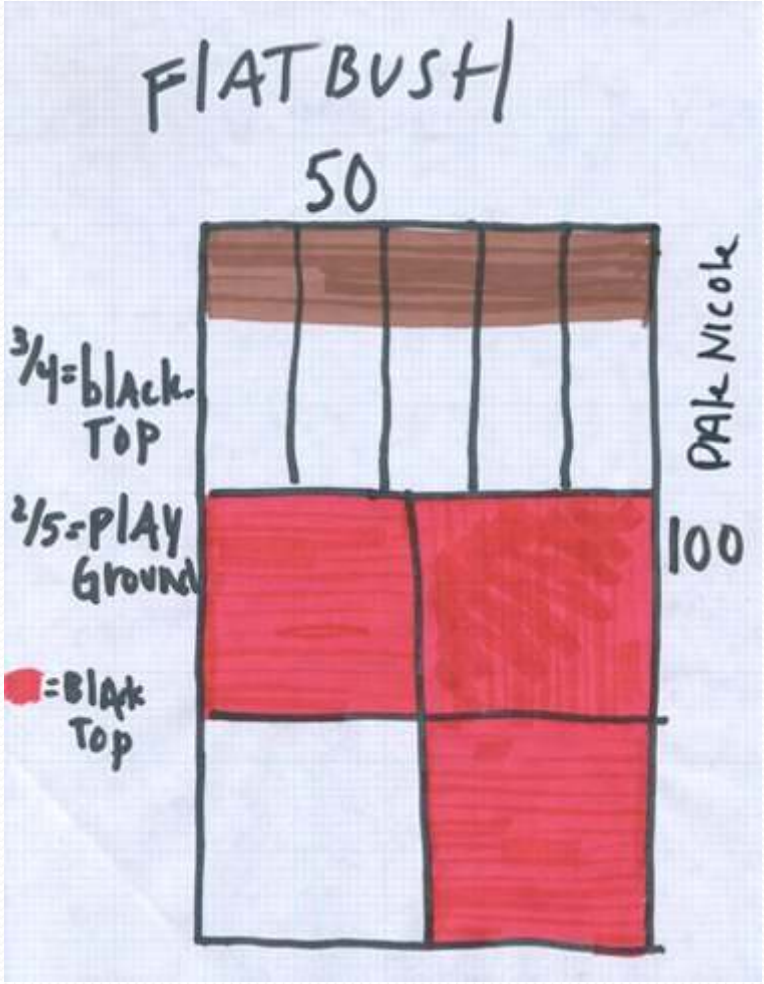
40

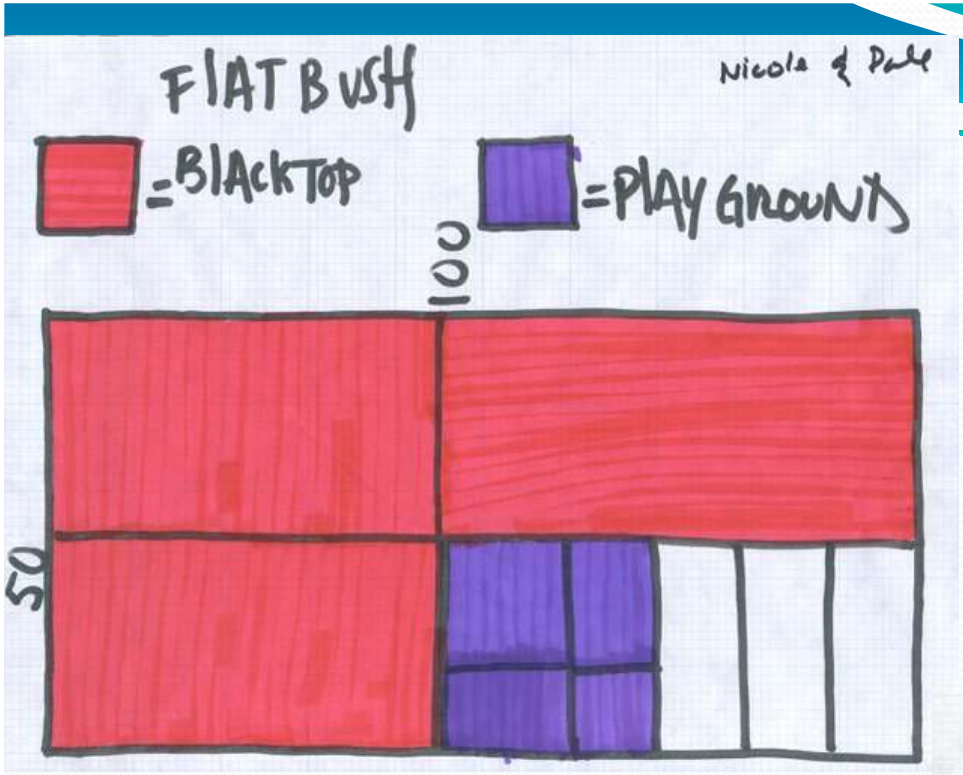
since 75 is bigger than 40 the second park has a bigger blacktop since 3/4 is bigger than 2/5

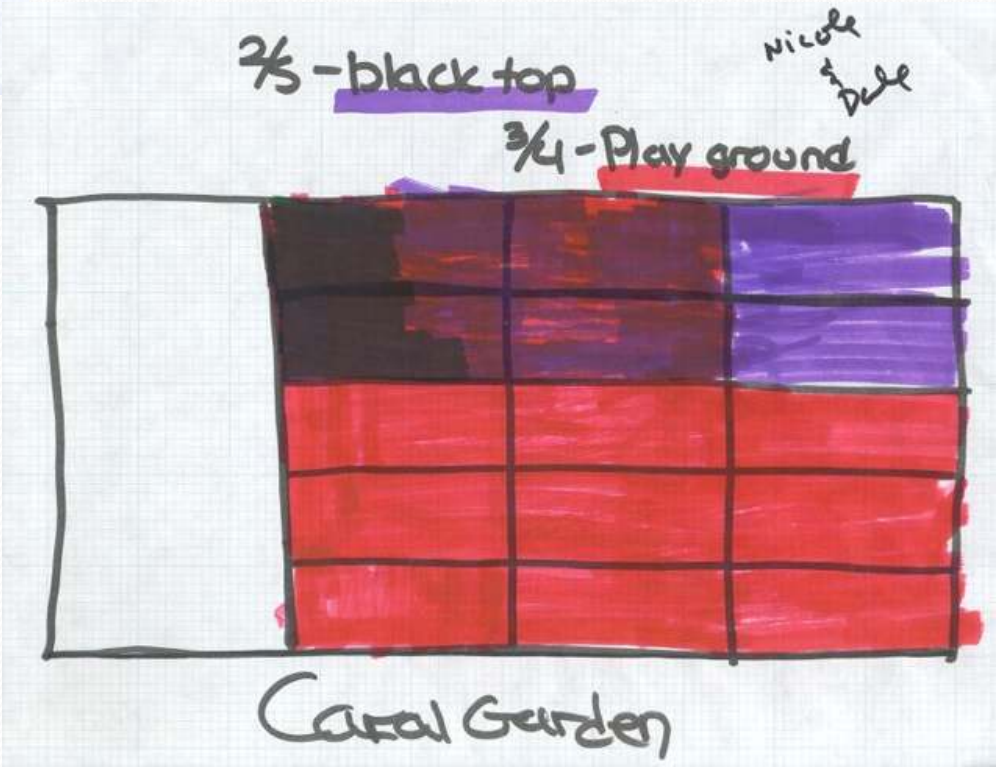

50
Kimahi
100
Black top


50
100
Jill / Nicole
15/20
3/4 of lot → playground = 75%
2/5 of lot → black-top = 40%
8/20
50
100
8/20 = 40%
2/5 of lot → playground
3/4 of lot → black-top
15/20
50
nothing
100
75%


Dale + Nicole
EMPTY SPACE


FLATBUSH
50
3/4=black. TOP
2/5=PLAY Ground
=BLAK Top
100
OAK NICOLE


FLATBUSH
Nicola & Dale
=BLACKTOP
=PLAYGROUND
100
50


2/5 - black top
Nicole & Dale
3/4 - Play ground
Canal Garden

Geomarlin, Chris
Math 761

9/4/03
GVMS

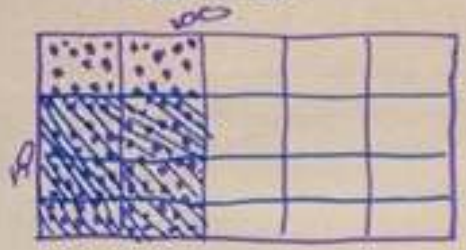
Carroll's Garden

Key:

= Playground

= Black top = 3/10 of the playground

Flatbush

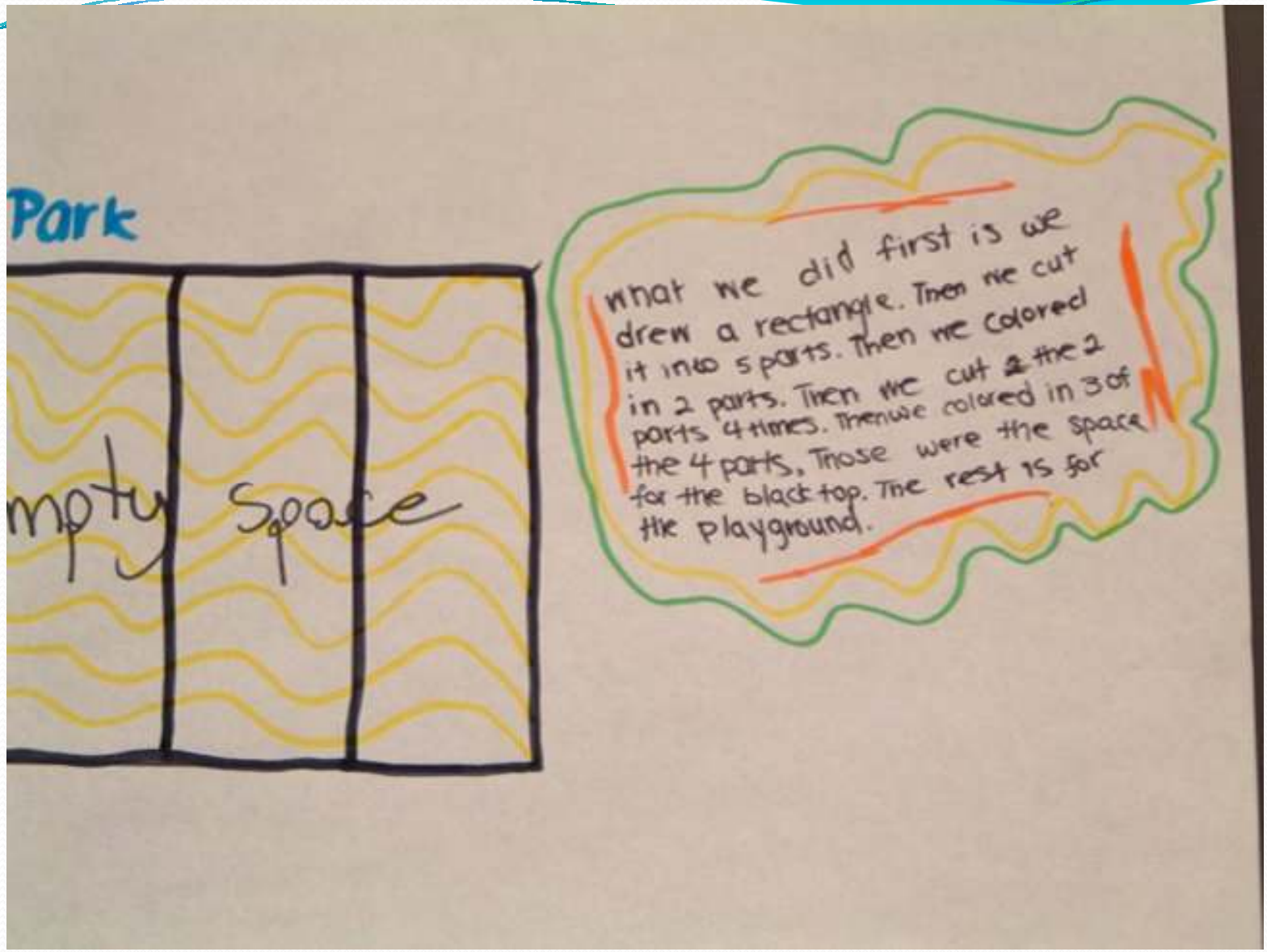


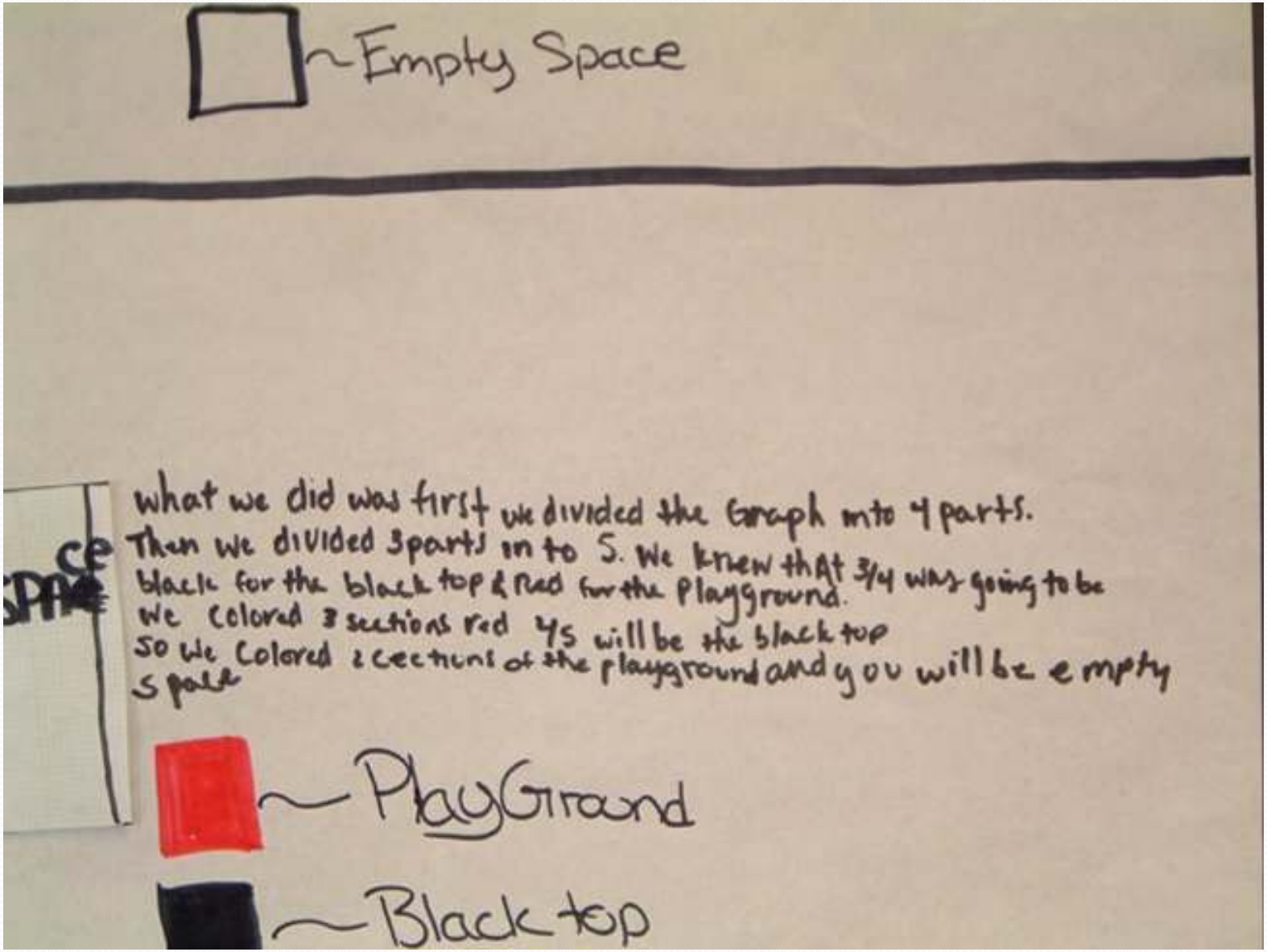
Key:

= playground

= Black top = 3/10 of the playground

There are 20 boxes in the parks and of the 20 boxes 6/20 are Black top. So from this we think that both Black tops are equal.


Park
mpty Space
what we did first is we drew a rectangle. Then we cut it into 5 parts. Then we colored in 2 parts. Then we cut the 2 parts 4 times. Then we colored in 3 of the 4 parts. Those were the space for the blacktop. The rest is for the playground.


~Empty Space
what we did was first we divided the Graph into 4 parts.
Then we divided 3 parts into 5. We knew that 3/4 was going to be
black for the black top & Red for the Playground.
We Colored 3 sections red 4s will be the black top
so we Colored 2 sections of the playground and you will be empty
space
~PlayGround
~Black top

Geomarlin, Chris
Math 701

9/4/03
GVMS

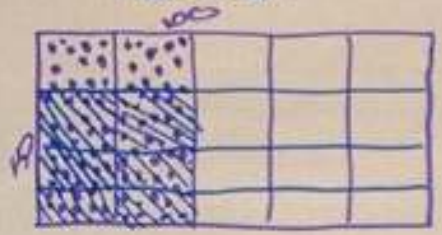
Carroll's Garden

Key:

= Playground

= Black top = 3/10 of the playground.

Flatbush

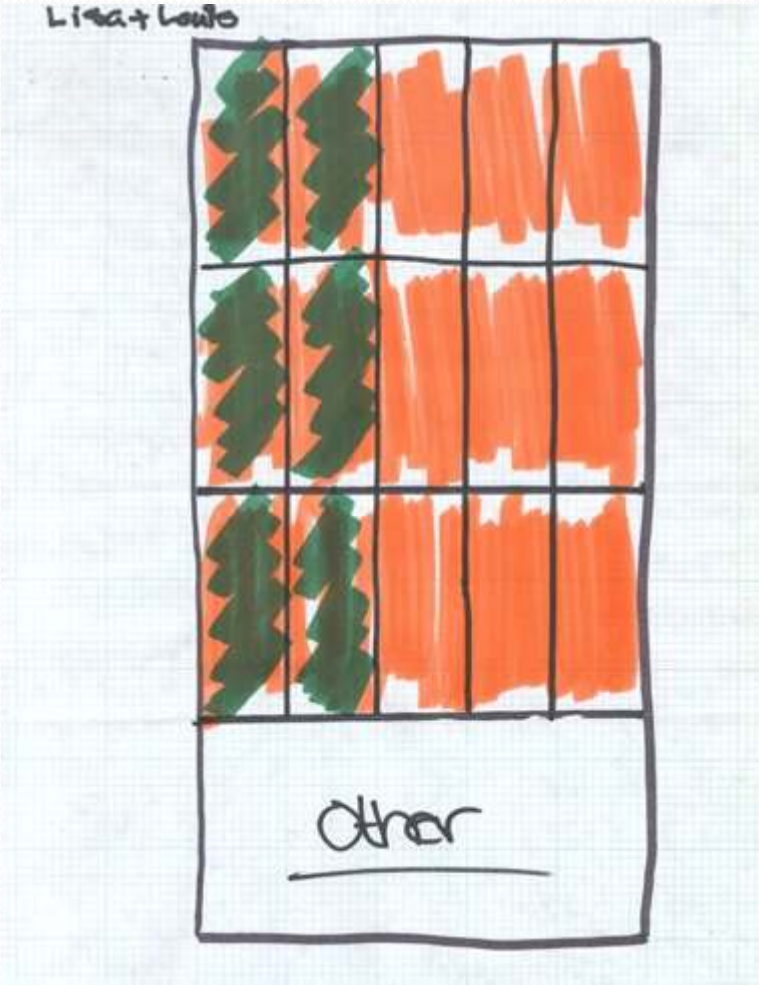


Key:

= playground

= Black top = 3/10 of the playground.

There are 20 boxes in the parks and of the 20 boxes 6/20 are Black top. So from this we think that both Black tops are equal.



Lisa
Math 701

2/3/04
GWMS

Playgrounds

#2) Flatbush Ave Park

100 by 50

$\frac{3}{4}$ = blacktop $\frac{2}{5}$ = Playground

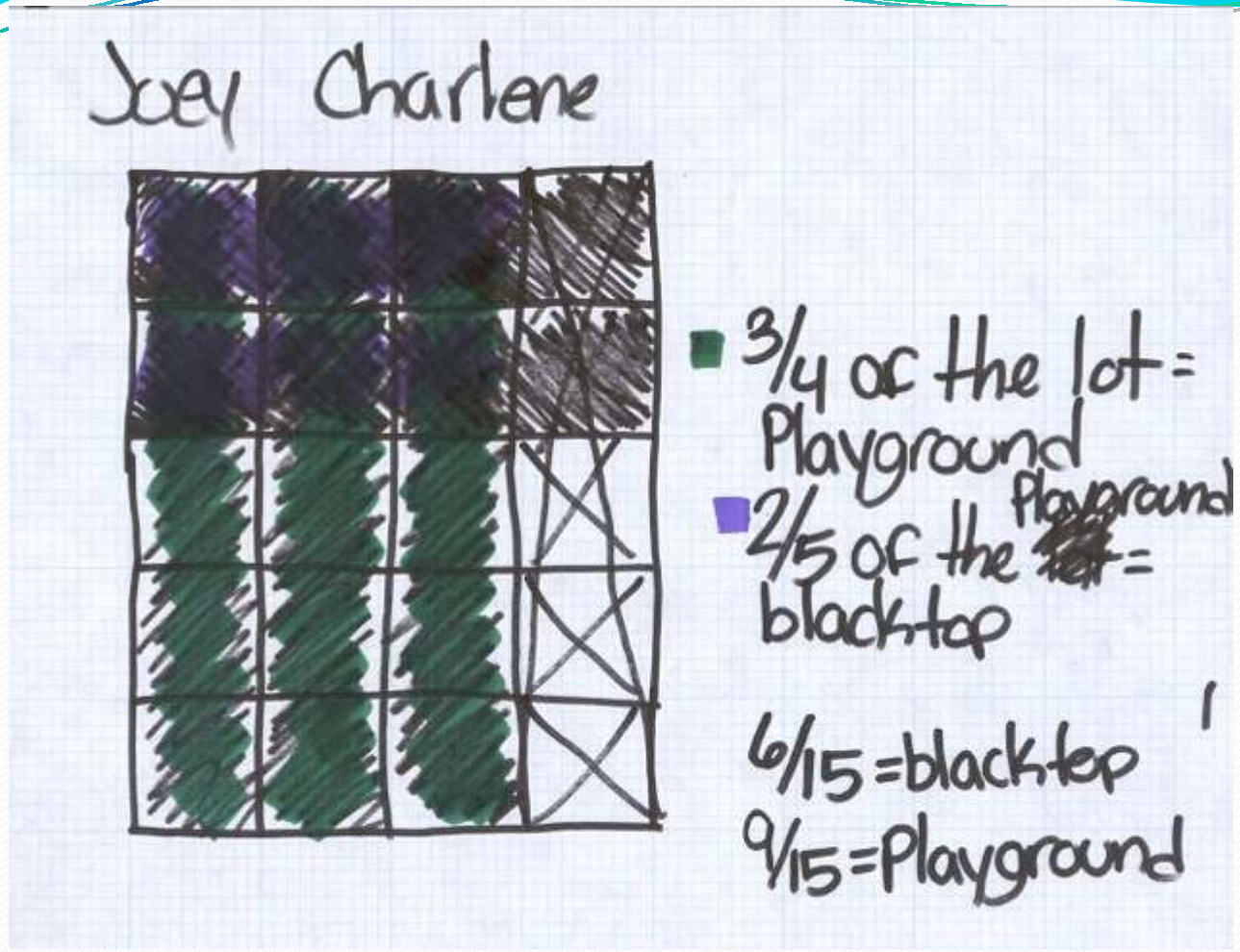
$\frac{3 \times 5}{4 \times 5} = \frac{15}{20}$ / $\frac{2 \times 4}{5 \times 4} = \frac{8}{20}$

#1) 100 by 50

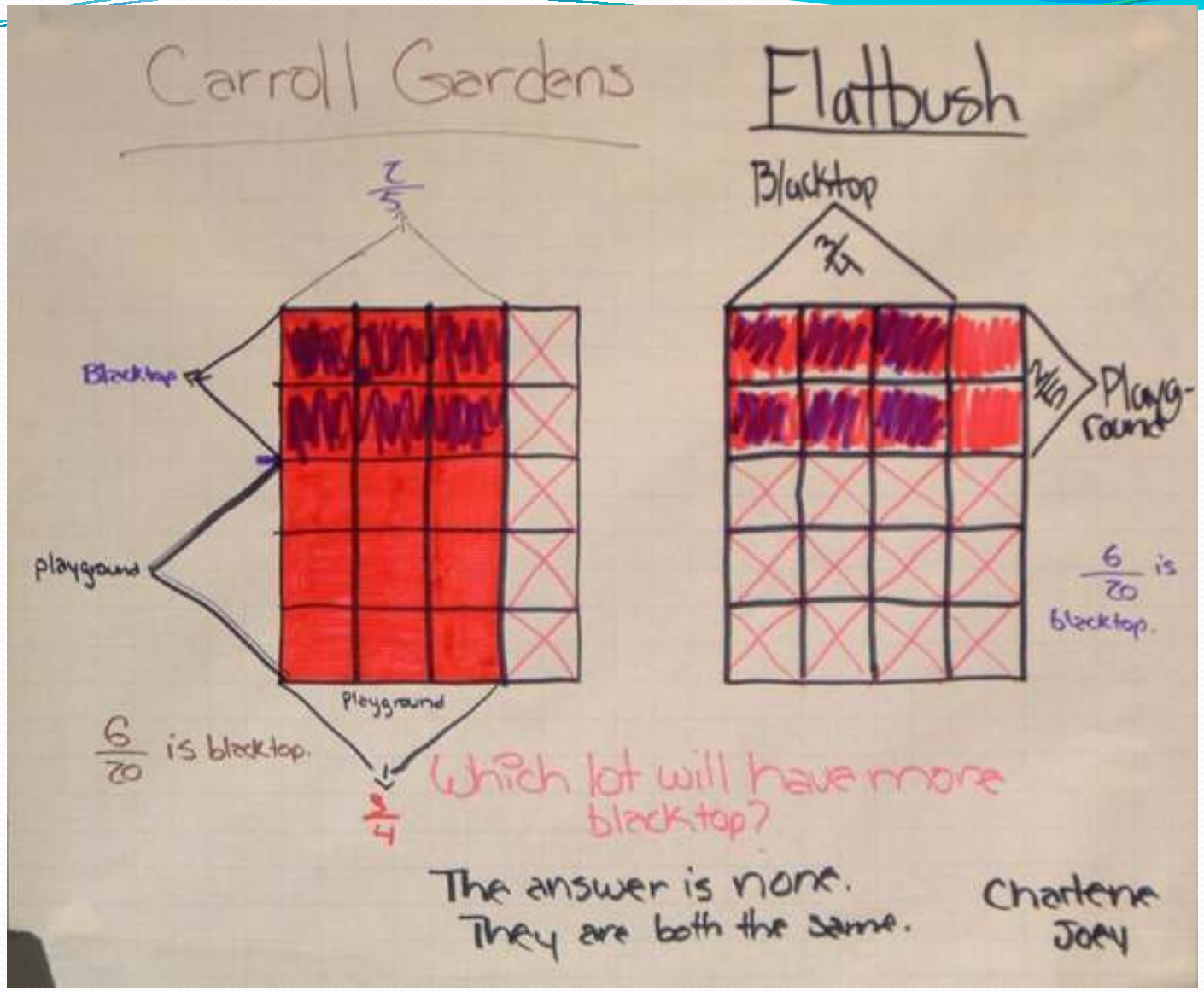
$\frac{3}{4}$ playground $\frac{2}{5}$ blacktop

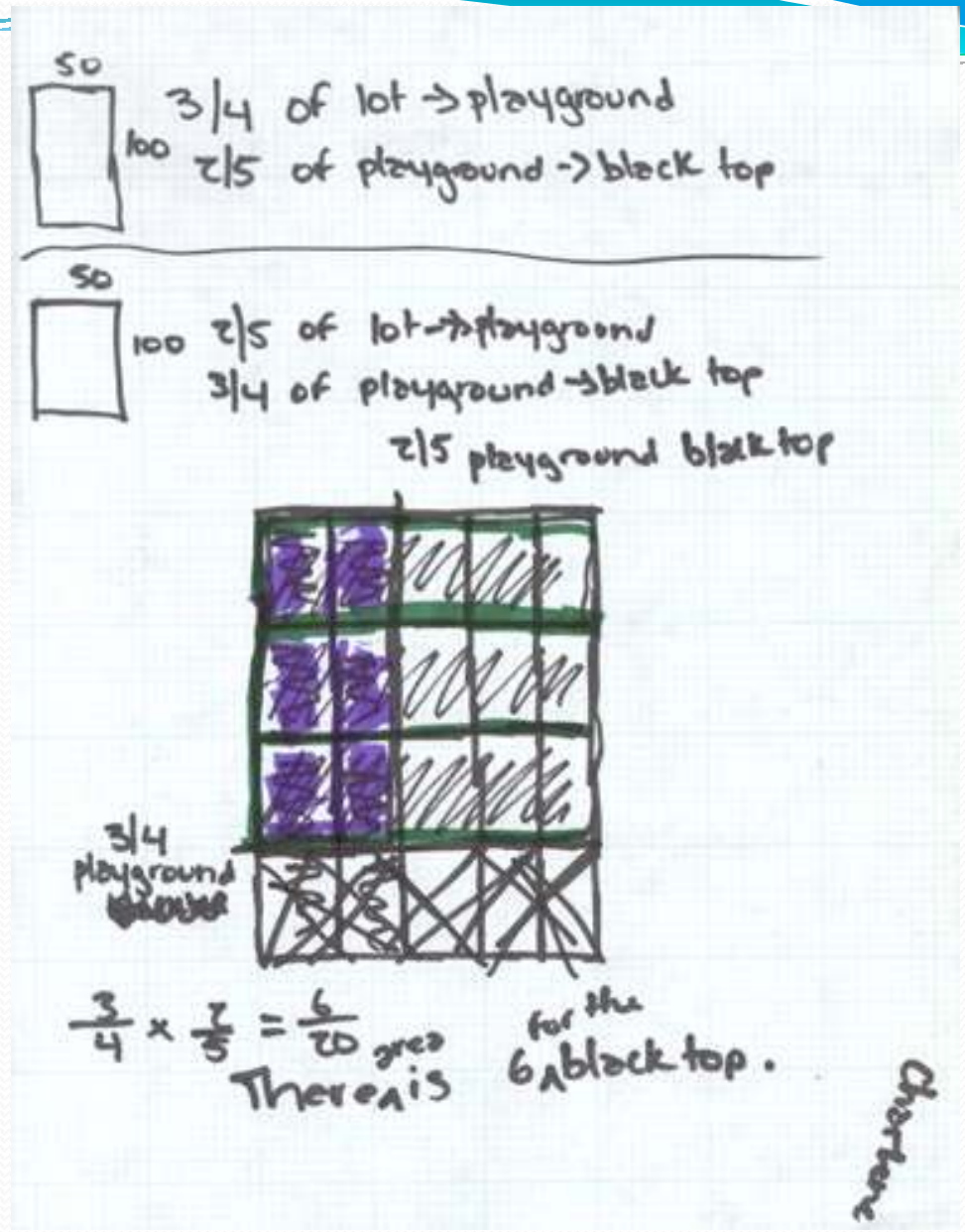
$3 \times 5 = \frac{15}{20}$ $\quad$ $\frac{2 \times 4}{5 \times 4} = \frac{8}{20}$

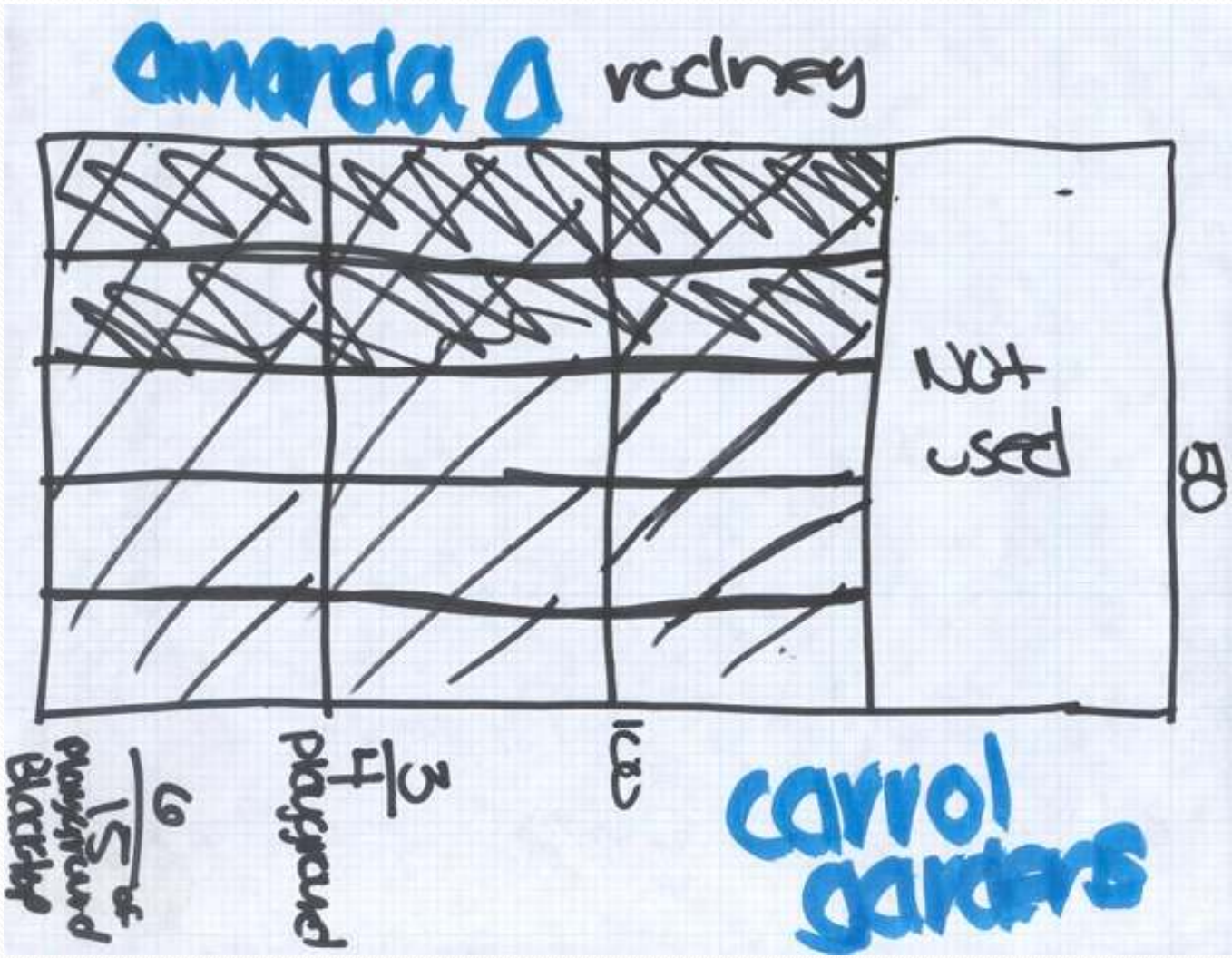
4×5



Siswa kurang memahami “whole” atau unit pecahan


Carroll Gardens
Flatbush
Blacktop
playground
Playground
Blacktop
Playg-
round
6/20 is blacktop.
6/20 is blacktop.
Which lot will have more blacktop?
The answer is none. They are both the same.
Charlene
Joey


50
100
3/4 of lot → playground
2/5 of playground → black top
50
100
2/5 of lot → playground
3/4 of playground → black top
2/5 playground black top
3/4 playground
3/4 x 2/5 = 6/20 of the area is for the black top.
Therefore
Charlene


amanda
rodney
not used
50
6 1st avenue blocks
3/4 playground
ice
carrol gardens

① Rodney

amanda

$\frac{3}{4}$ of lot Playground

$\frac{2}{5}$ of lot Black top

$\frac{3}{4} \times \frac{2}{5} = \frac{6}{20}$

---

② $\frac{2}{5}$ of lot Playground

$\frac{3}{4}$ of lot Black top

$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$

Pembentukan Konsep

- Berdasarkan pada hasil kerja siswa atau pengetahuan awal siswa
- Dengan *questioning* (pengajuan pertanyaan)

Bagaimana guru mengarahkan hasil kerja siswa menuju konsep matematika?