



UC IRVINE MATH CEO

Community Educational Outreach




Meeting 3 Student's Booklet

TOYS

October 14 2015 © UCI

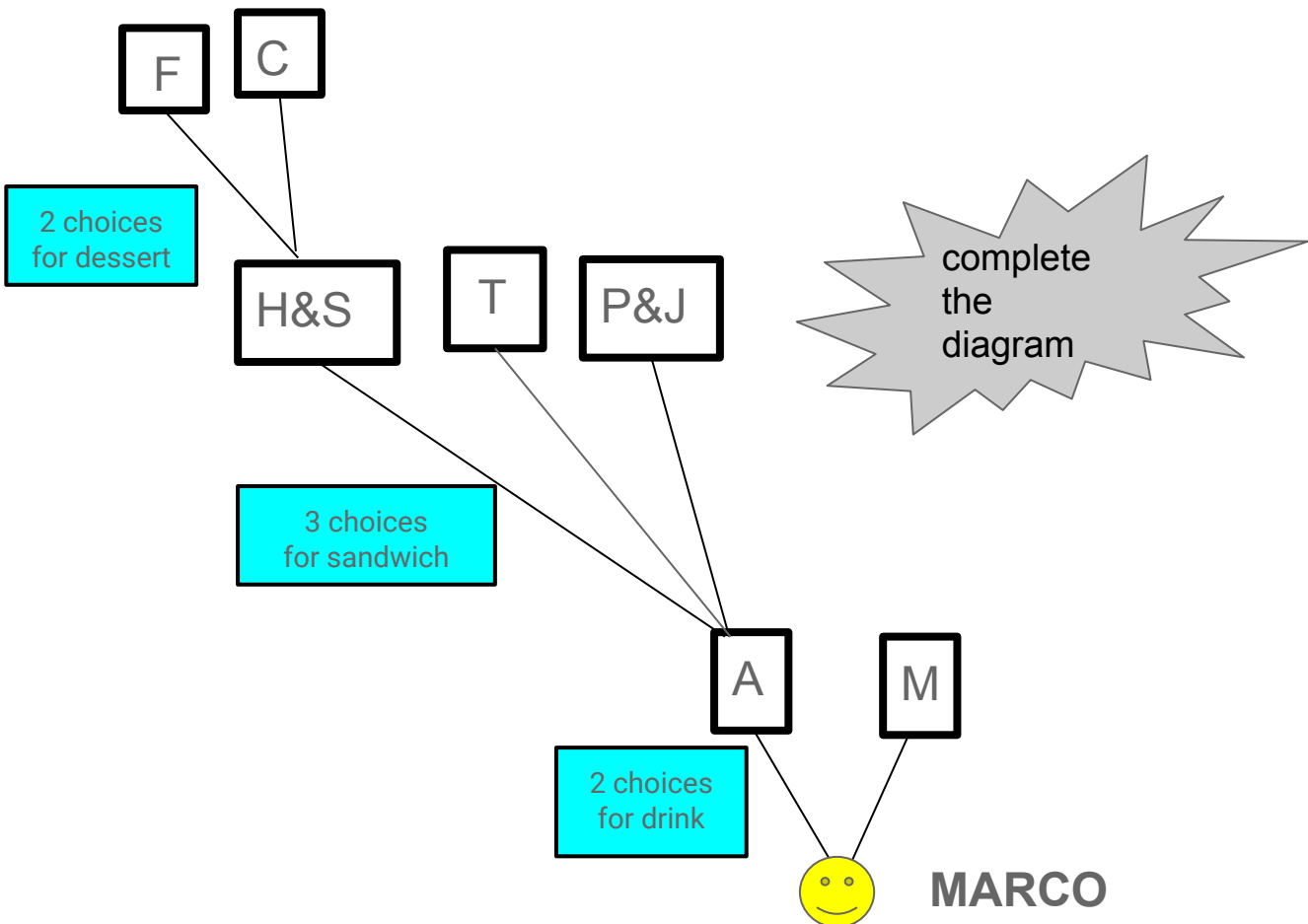
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- 1 Cars
- 2 Toy parts
- 3 Sum of fractions
- 4 Tentacles



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<http://www.math.uci.edu/mathceo/>

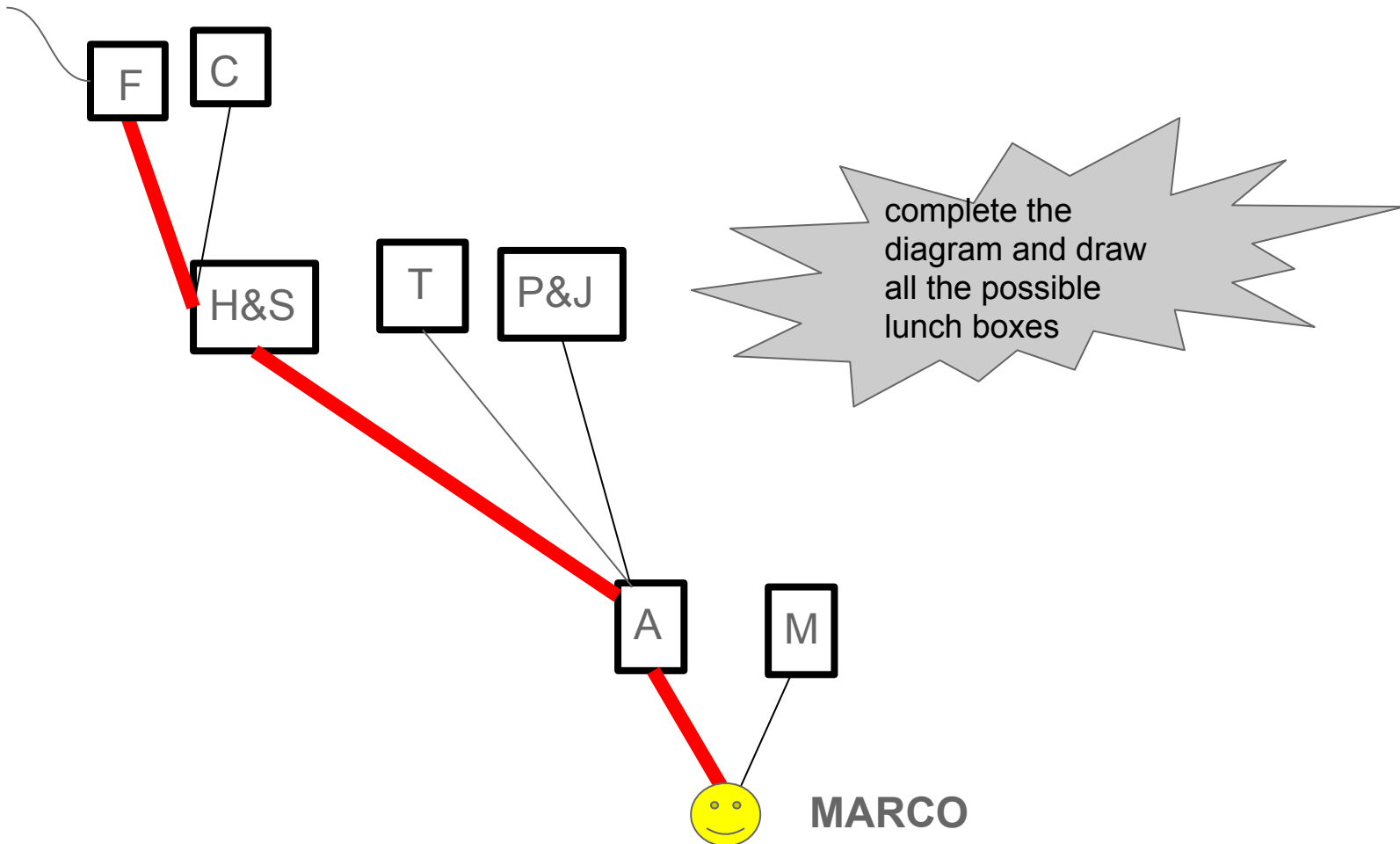
Marco is deciding on what snacks to pack in his lunch box. He can have milk (M) or apple juice (A), with a Peanut butter & Jelly sandwich (P&J), a ham and cheese sandwich (H&C) or a tuna sandwich (T), followed by chocolate chip cookies (C) or fruits (F). **Draw a tree diagram that shows the different choices that Marco has.** We draw the beginning of the tree for you...Please complete the diagram.





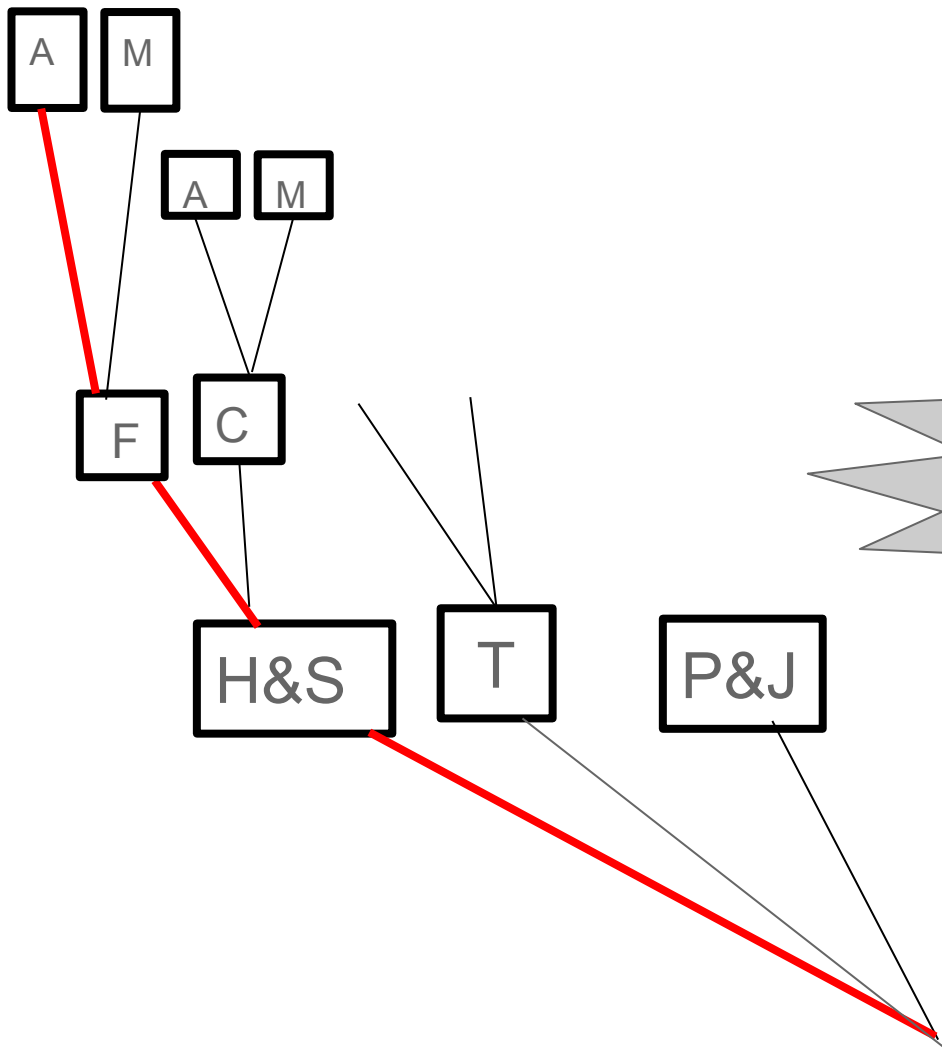
Note how each branch of the tree corresponds to a different combination of snacks for lunch box.

How many different lunch boxes can Marco pack?

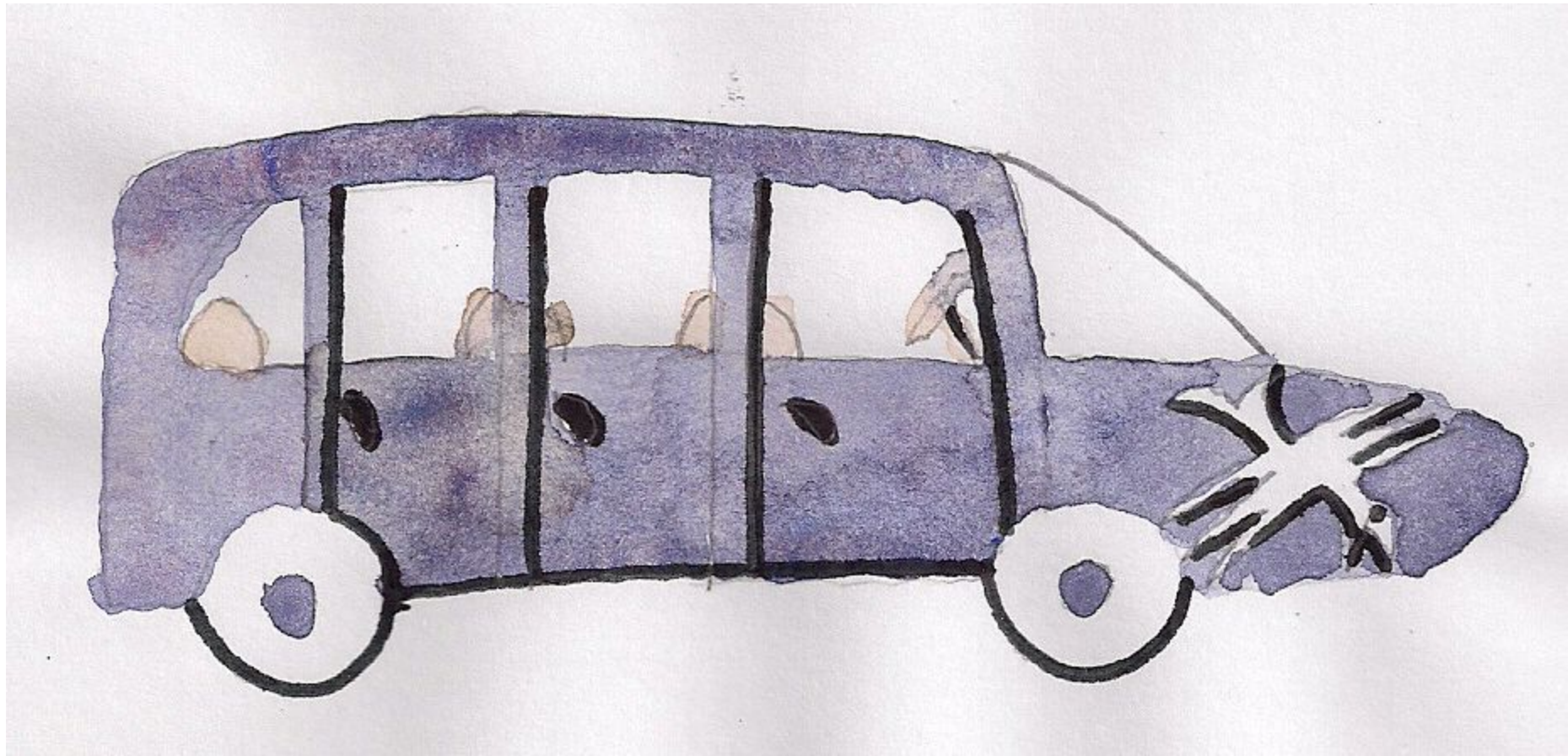


What if you choose the type of sandwich first?

Draw the new tree diagram. *Is the number of different lunches the same?*



complete the diagram and count all the possible lunches



1 Cars

Will it have 1 door? Maybe more? Will it be orange? Or maybe black? And which logo will it have?

Marco just got great news: his uncle, the great engineer Enzo, has just opened a Toy Store and will gift him any remote control car he wants!

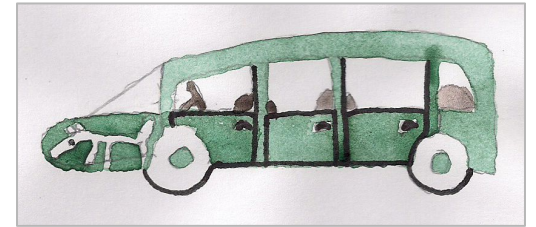
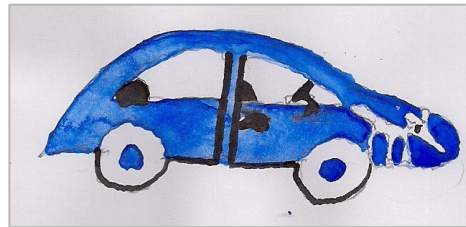
As Marco enters the toy store, he is amazed by the number of options that are presented to him: should he get a car with **one door, two doors** or the largest one with **three doors**?

Every car comes in 6 colors (**blue, green, orange, purple, red** and **yellow**)... Oh and don't forget the logo in the front! Either a fierce **Eagle** or a cute **Anteater**.

a) How many different cars can Marco choose from?

b) Marco wants a toy car that is yellow or has an anteater. What fraction of the total number of options will allow that?

Write your process and answers in your notebook



Did you know...

In mathematics, when we use **OR** we allow the possibility for both things to happen. For example, Marco wants a car that is yellow or has an anteater, so he would be OK if the car he gets is both yellow and has an anteater.

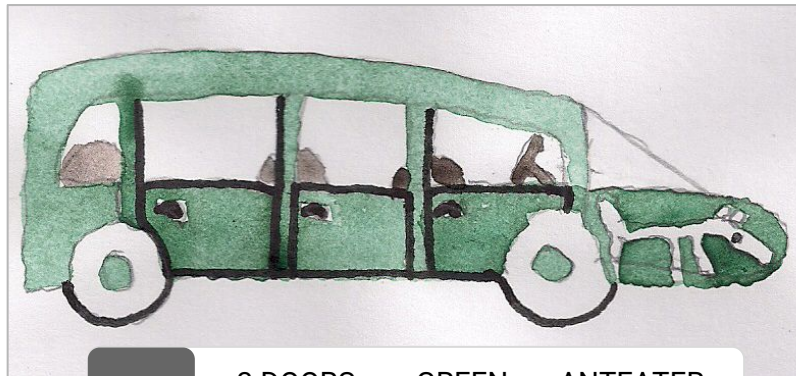
Toy cars: Sample Catalog



2 DOORS YELLOW ANTEATER



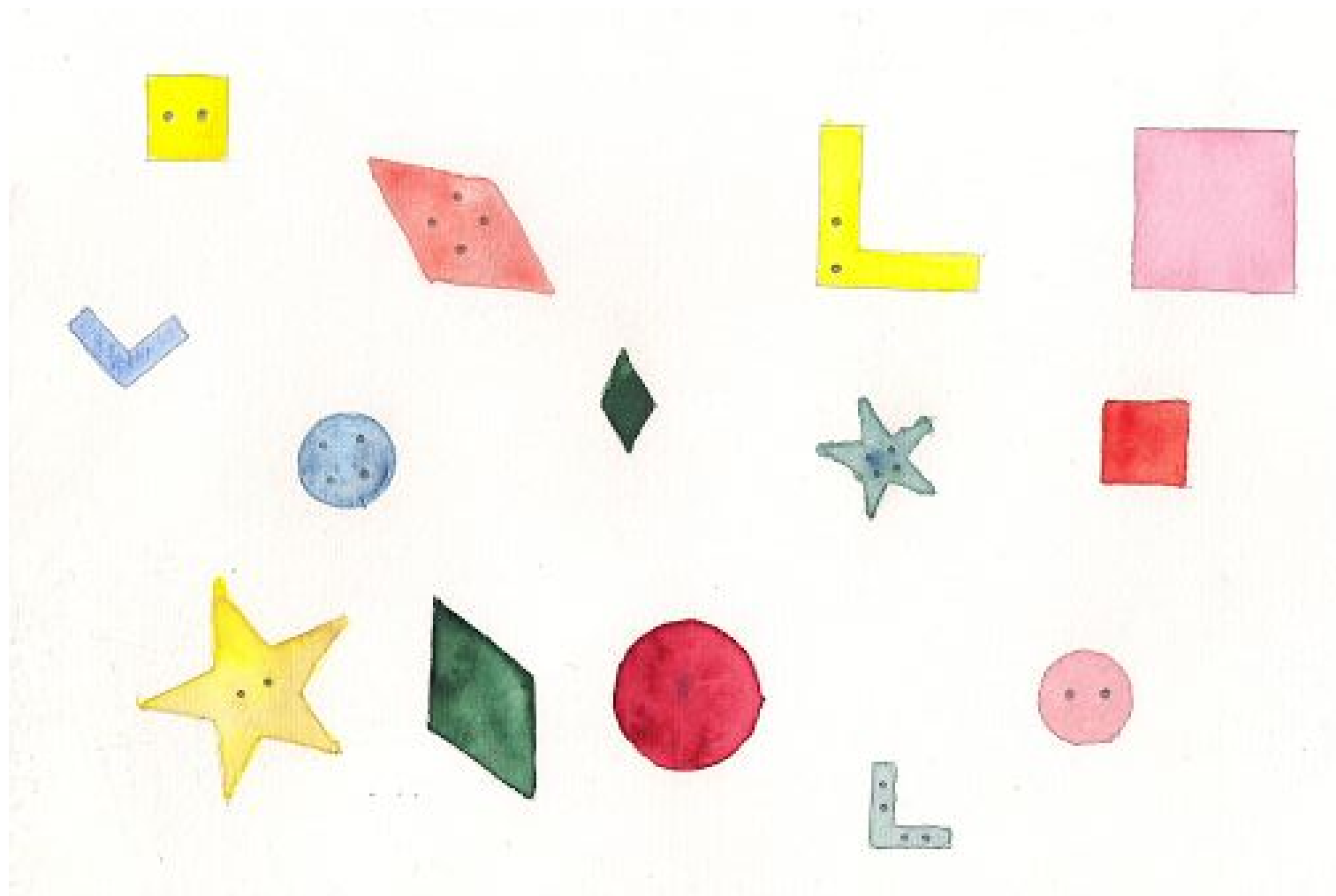
2 DOORS BLUE ANTEATER



3 DOORS GREEN ANTEATER



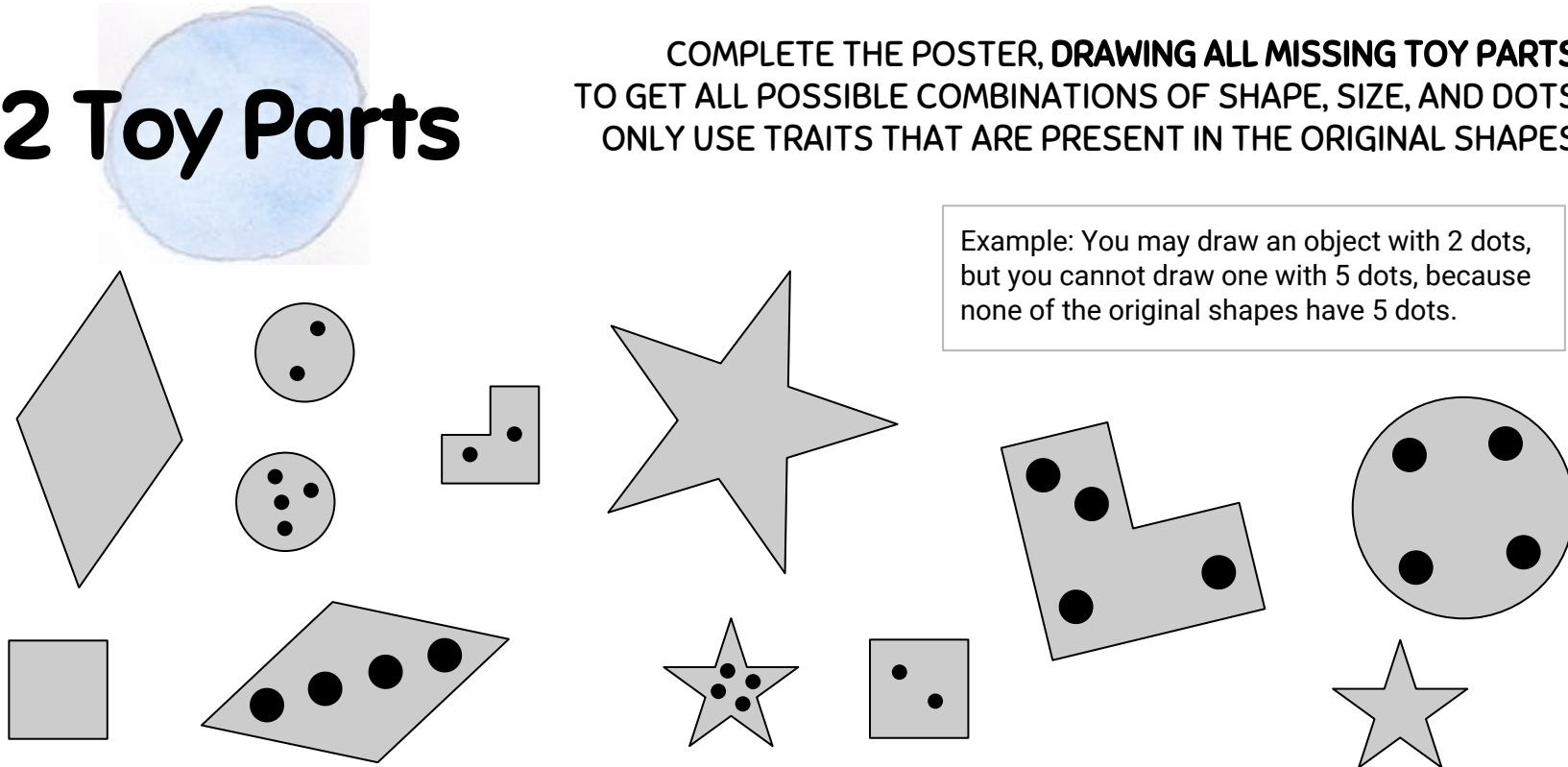
1 DOOR RED EAGLE



2 Toy Parts

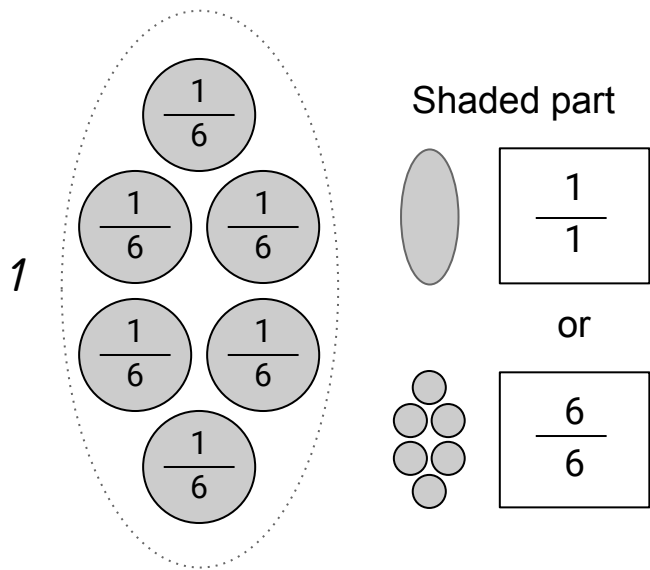
COMPLETE THE POSTER, **DRAWING ALL MISSING TOY PARTS**
TO GET ALL POSSIBLE COMBINATIONS OF SHAPE, SIZE, AND DOTS
ONLY USE TRAITS THAT ARE PRESENT IN THE ORIGINAL SHAPES

Example: You may draw an object with 2 dots, but you cannot draw one with 5 dots, because none of the original shapes have 5 dots.

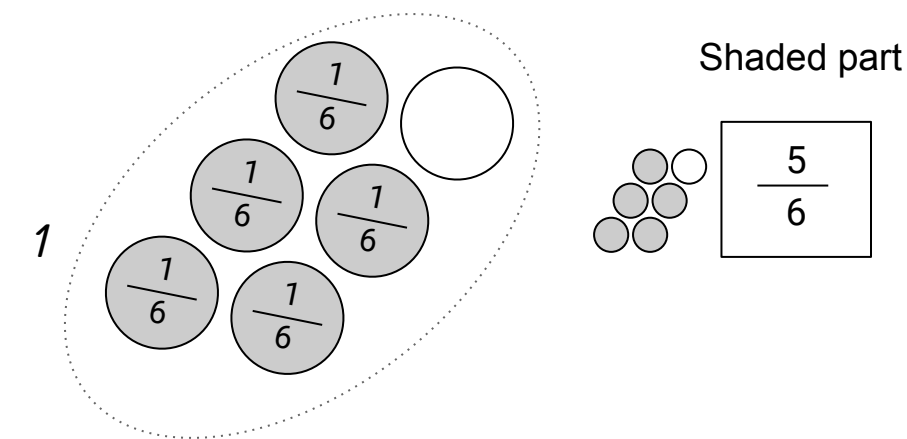


Draw in your notebook

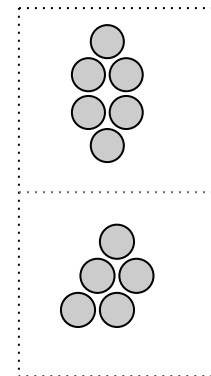
Example 1: Tacos



Dan bought two tacos. He ate the first one, and ate 5/6 of the second one. How much did he eat, in "Taco units"?

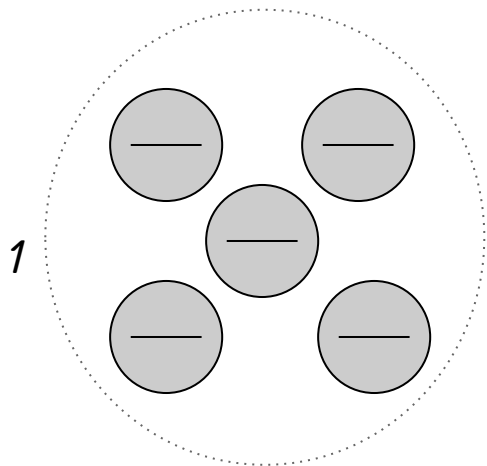


$$\begin{aligned}
 & 1 + \frac{5}{6} \\
 &= \frac{6}{6} + \frac{5}{6} \\
 &= \frac{11}{6}
 \end{aligned}$$

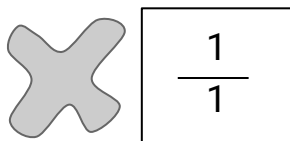


Example 2: Mexican Soup

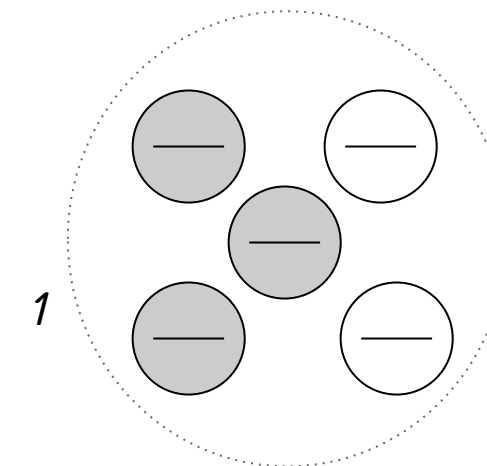
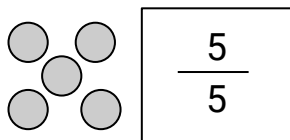
Alf bought two bowls of soups. He ate the first one, and ate 3/5 of the second one. How much soup did he eat, in "Bowl units"?



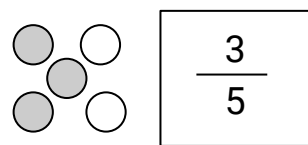
Shaded part



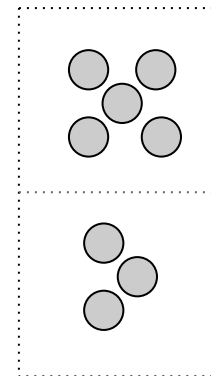
or

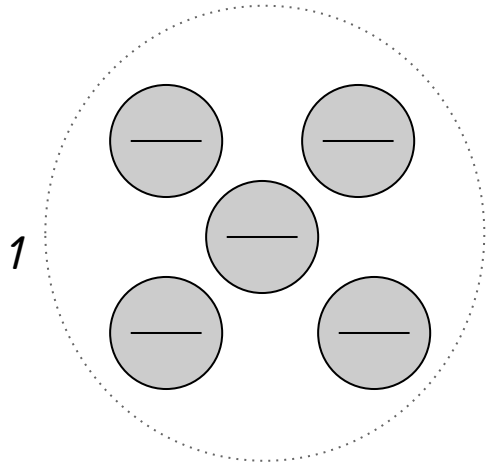


Shaded part

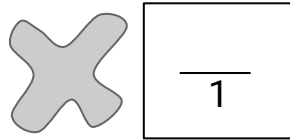


$$\begin{aligned}
 & 1 + \frac{3}{5} \\
 &= \frac{5}{5} + \frac{3}{5} \\
 &= \frac{8}{5}
 \end{aligned}$$

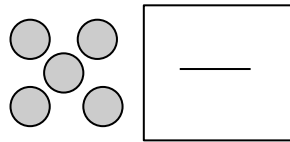




Shaded part



or



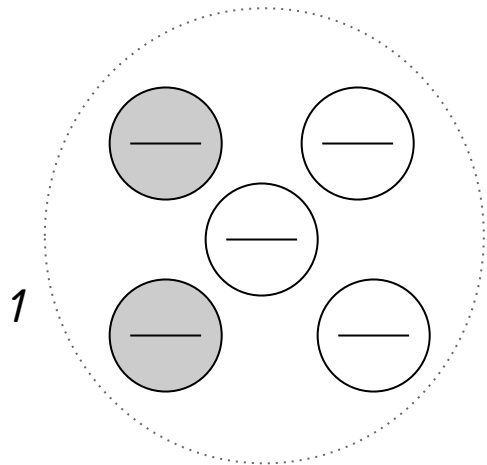
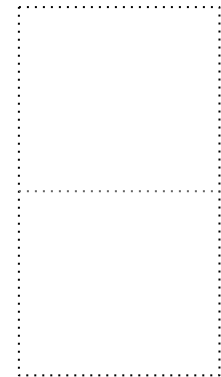
Drill A: Nachos

Hector got two nacho plates. He ate the first one, and ate part of the second one, as indicated in the picture. How much nacho did he eat, in "plate units"?

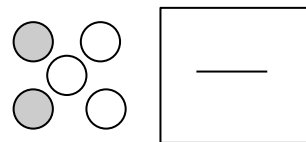
$$1 + \underline{\quad}$$

$$= \underline{\quad} + \underline{\quad}$$

$$= \underline{\quad}$$



Shaded part



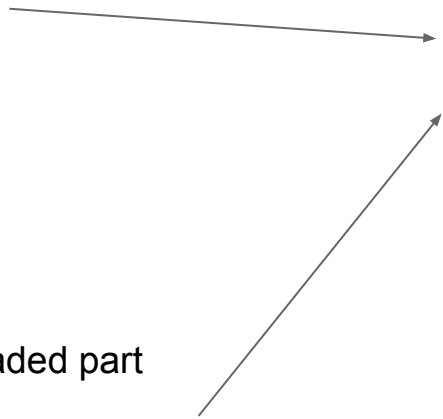
Drill B: Enchiladas

1

Shaded part

or

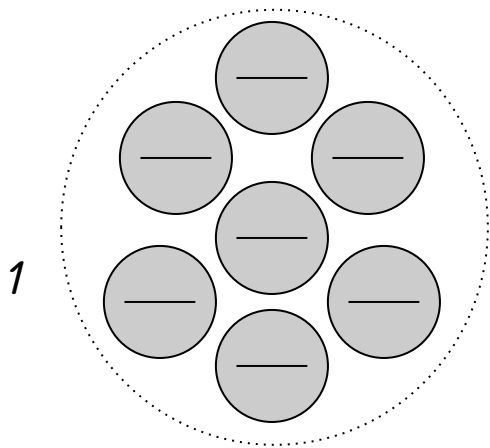
Marta bought two enchiladas: She ate the first one, and part of the second one, as indicated in the picture. How much enchilada did she eat, in "Enchilada units"?



1

Shaded part

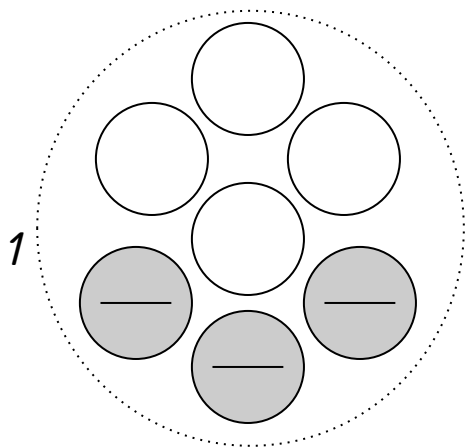
Drill C: Candies



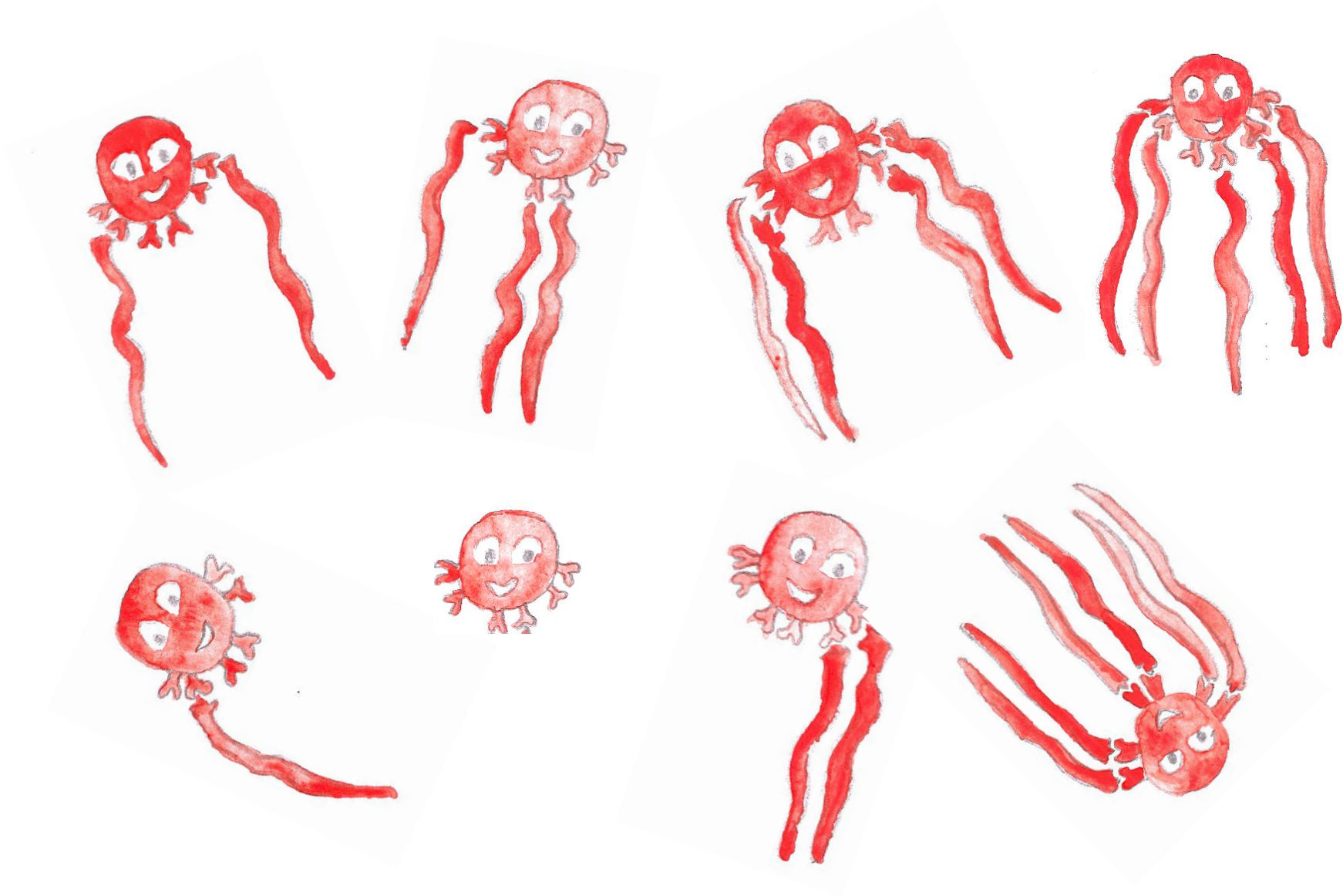
Shaded part

or

Alicia bought two candy bags: She ate all candies from the first one, and some of the second one, as indicated in the picture. How much candy did she eat, in “bag units”?



Shaded part



4 Tentacles

Meet mario, the 6-tentacle octopus...

Mario the Octopus is an old octopus toy which has a total of 6 tentacles that can be assembled and disassembled. Two close tentacles can be put together to form a BITENTACLE, and thus Mike the Octopus has three bitentacles.

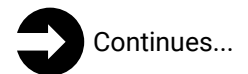
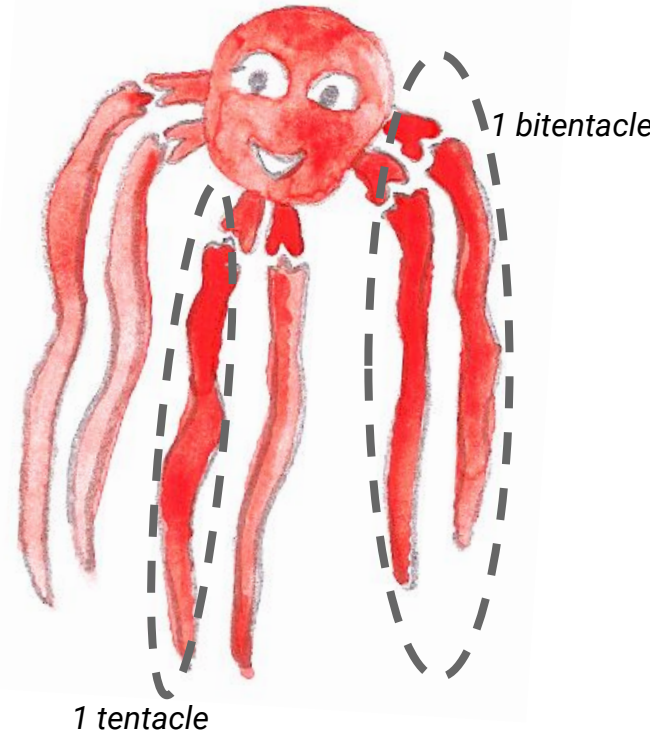
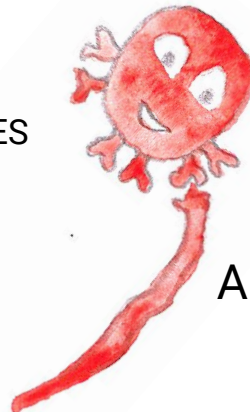
One day, Alessia went to an abandoned School from 200 years ago, and found six Mario the Octopus toys. Unfortunately, all except one of them were incomplete:

- Octopus A Only had one tentacle
- Octopus B Had one third of its BITENTACLES
- Octopus C Had one third of its tentacles
- Octopus D Had half of its tentacles
- Octopus E Was missing one BITENTACLE
- Octopus F Was complete

Redistributing tentacles

- a** Alessia uses all the tentacles she found to make as many complete octopuses as possible. How many can she make, and how many tentacles are left?

Write your process and answers in your notebook



Completing all octopuses

b Alessia decided to put all the tentacles together, and distribute them equally among the octopus toys. She would like each toy to have $\frac{2}{3}$ of its tentacle capacity... but realizes she does not have enough. How many extra tentacles does she need to do this?

Write your process and answers in your notebook



- c** Recall the original distribution:
- Octopus A Only had one tentacle
 - Octopus B Had one third of its BITENTACLES
 - Octopus C Had one third of its tentacles
 - Octopus D Had half of its tentacles
 - Octopus E Was missing one BITENTACLE
 - Octopus F Was complete

Given the original distribution, Complete the following table:

OCTOPUS	FRACTION OF TENTACLES PRESENT	FRACTION OF BITENTACLES MISSING
A		
B		
C		
D		
E		
F		