

# Division and Remainders

# High School Math 11th grade

Number and Quantity-The Real Number System

CCSS N.RN.1- Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation

Essential Element EE.N.RN.1- Solve division problems with remainders using concrete objects.

## **Mild Cognitive Impairment**

**EE.N.RN.1 Essential Element: Solve division problems with remainders using concrete objects.**

**Test Item 1-When teacher gives student 1 of 2 worksheets with 5, 1-3 sentence division word problems on each worksheet, and asks student to “Solve the word problem.”, the student will make the correct response.**

**Test Item 2-When teacher shows a flash card with a number represented by pictures (e.g., 33 footballs) attached to the flash card, and asks the student to divide the number \_\_\_ into equal groups with a remainder.”, the student will make the correct response by moving the pictures into groups.**

**Test Item 3- When teacher gives student 1 of 2 worksheets with 5, division with remainder problems, a laminated figure with circles representing the dividend, and asks student to “Solve the division with remainder problem using the figure for each problem.” the student will make the correct response.**

## Examples of Test Items

**Test item 1: Jake has 17 pieces of candy. He wants to give half of his candy to his brother and keep the other half. How much candy is left over?**

**Test item 2: Split up 17 footballs into even groups. (using flash card with number of items attached)**

**Test item 3: Divide 13 into equal groups with remainders. (using a laminated figure with circles corresponding to the number)**

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## General Procedures:

1. Teacher approaches student for 1:1 instruction.
2. Teacher shows book to student and explains what will be taught using the book.
3. Teacher asks student to read book (Stella will read using symbols and sight words, Jonah and Ava will read grade level sentences paired with symbols).
4. Teacher asks questions about math content (aligned with the student's specific objectives for standard).
5. Teacher using teaching procedure specific to student including type of question or probe using student's response mode and material presentation.
6. Teacher repeats for each student differentiating lesson.

Division can be shown as:

division

$$\div$$

$$32 \overline{)487}$$

$$\frac{1}{2}$$

Division  
Equation

Division with  
Remainder  
Equation

$$12 \div 3 = 4$$

twelve divided by three equal four

$$13 \div 3 = 4_R 1$$

thirteen divided by three equal four one

# Division with Remainder Vocabulary

Divisor: the number you divide  
by

$$12 \div 3 = 4$$

Divisor

Dividend: the number you want  
to divide

$$12 \div 3 = 4$$

Dividend

Quotient: the answer after  
dividing

$$12 \div 3 = 4$$

Quotient

Remainder: the number  
left over after dividing

$$16 \div 3 = 5R1$$

Remainder



# Division with Remainder

$$\begin{array}{r} \text{quotient} \rightarrow 5 \\ \text{divisor} \rightarrow 3 \overline{) 16} \\ \text{dividend} \nearrow 15 \\ \hline \text{remainder} \rightarrow 1 \end{array}$$

$$16 \div 3 = 5R1$$

division



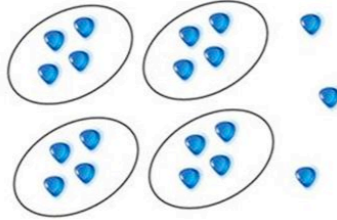
$$\begin{array}{r} 2 \\ 3 \overline{) 7} \\ 6 \\ \hline 1 \end{array} \leftarrow \text{Remainder}$$

“Show me the remainder.”

# Division with Remainder

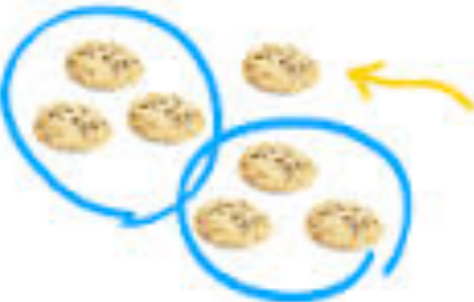


We can use the  $\div$  or the  $/$  symbol to divide

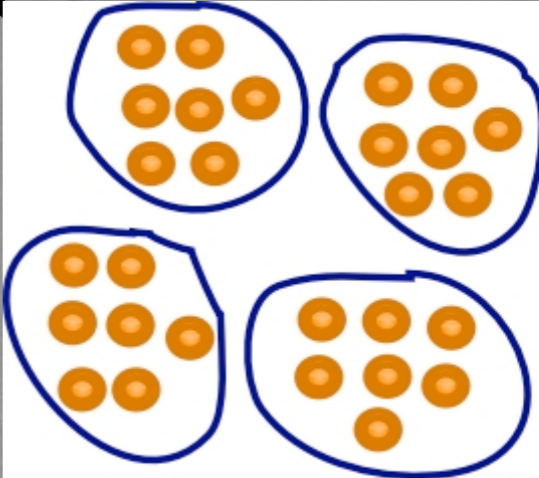
$19 \div 4$  

---

$$\begin{array}{r} 4 \\ 4 \overline{)19} \\ \underline{-16} \\ 3 \end{array}$$

  
Remainder

$7 \div 2 = 3 \text{ R } 1$

  
Leftovers

$30 \div 7 = 4 \text{ R } 2$

“Find the remainder in each picture.”

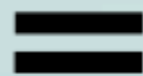
# Divide with Fair Share

Division is splitting into equal groups.

Division is “fair sharing”.



Divide

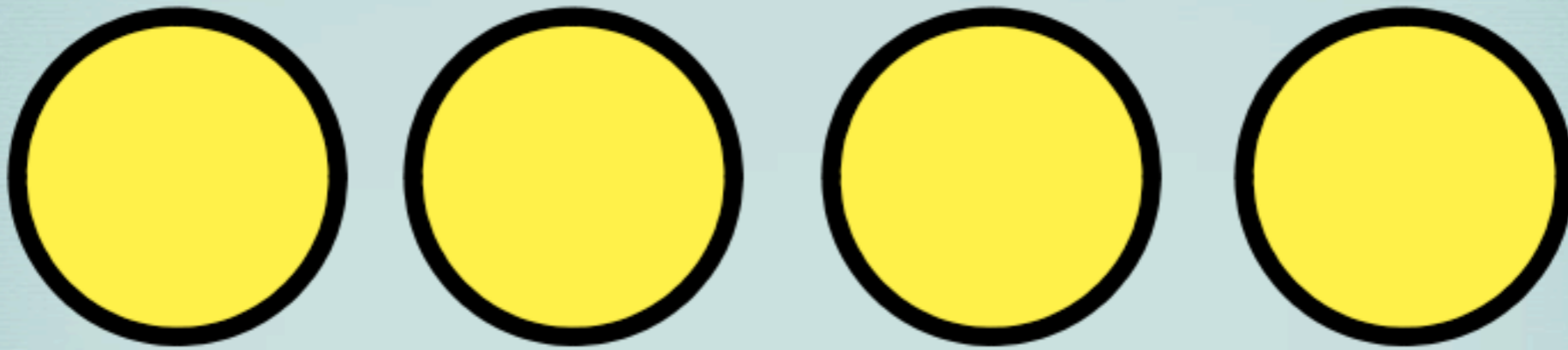


Equal



groups

Divide 30 eggs into 4 circles.



÷

30



4



Divide

thirty

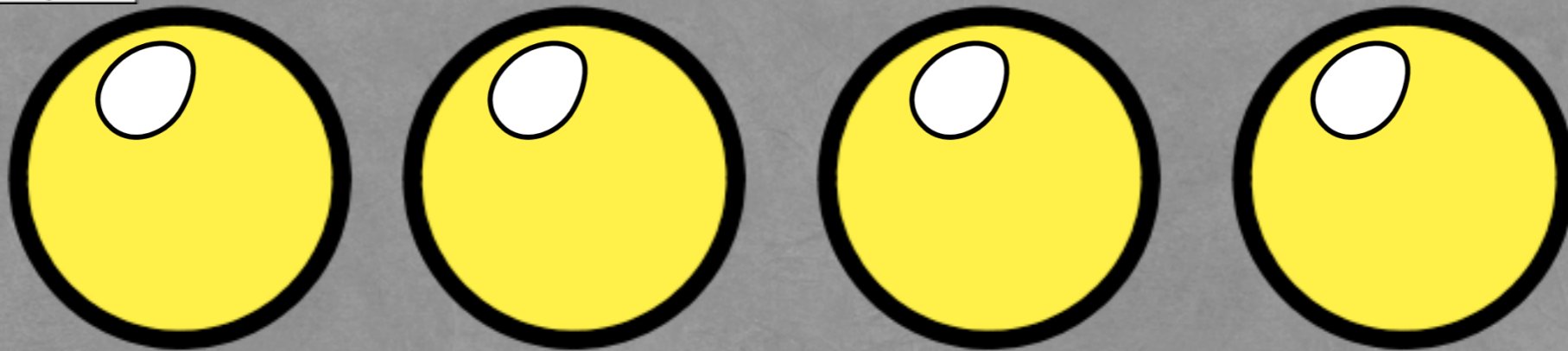
eggs

four

circle

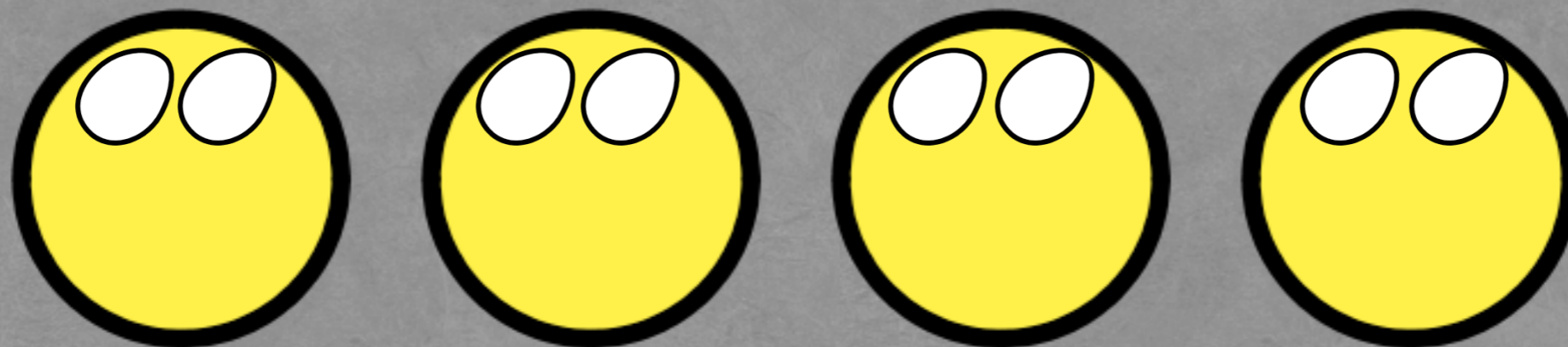
$\div$   
Divide 30 eggs into 4 circles.

step 1



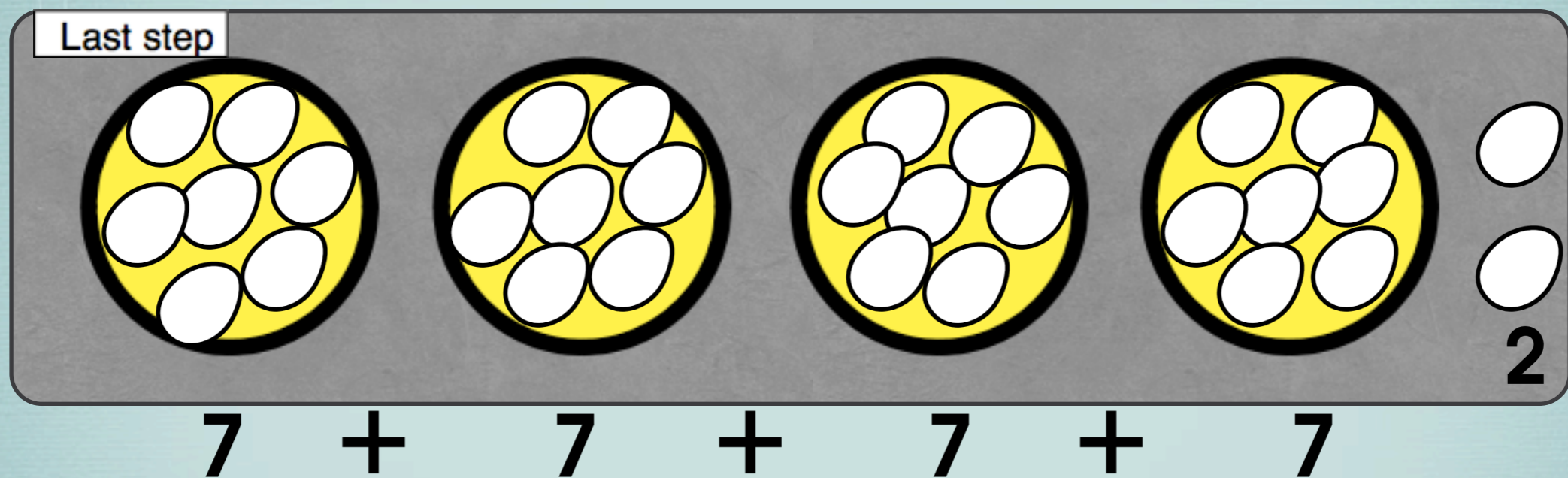
Use Fair Share strategy

step 2



Repeat until all eggs have been evenly divided.

÷  
Divide 30 eggs into 4 circles.

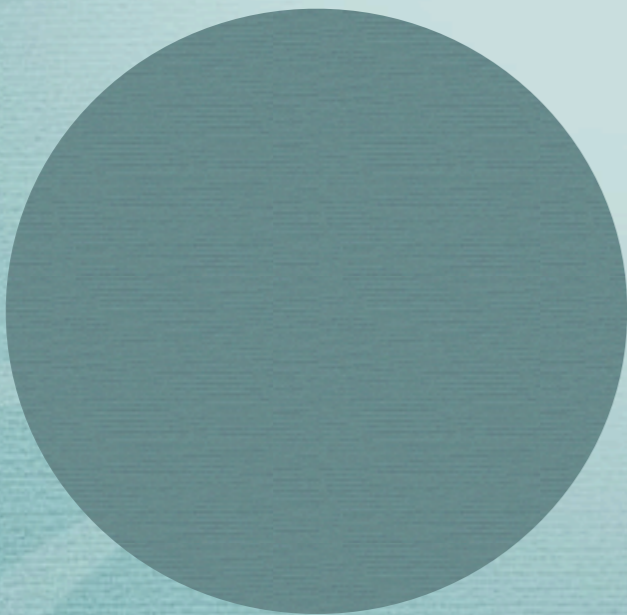
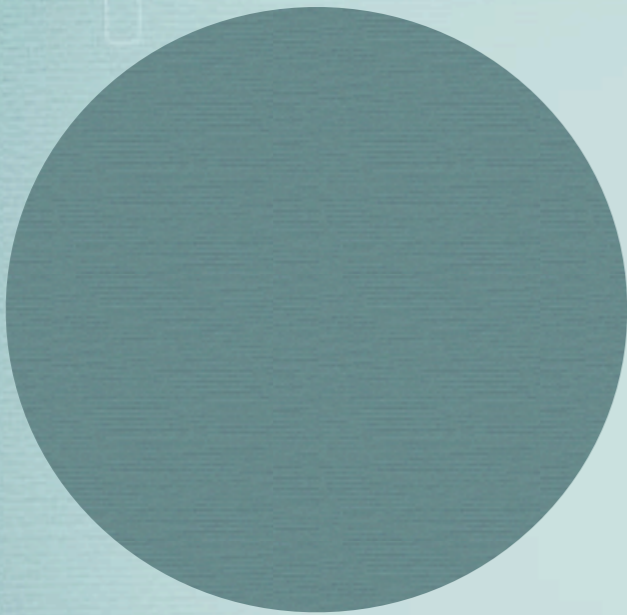


$7+7+7+7=28$  with 2 eggs left

÷  
 $30 \div 4 = 28 \text{ R } 2$



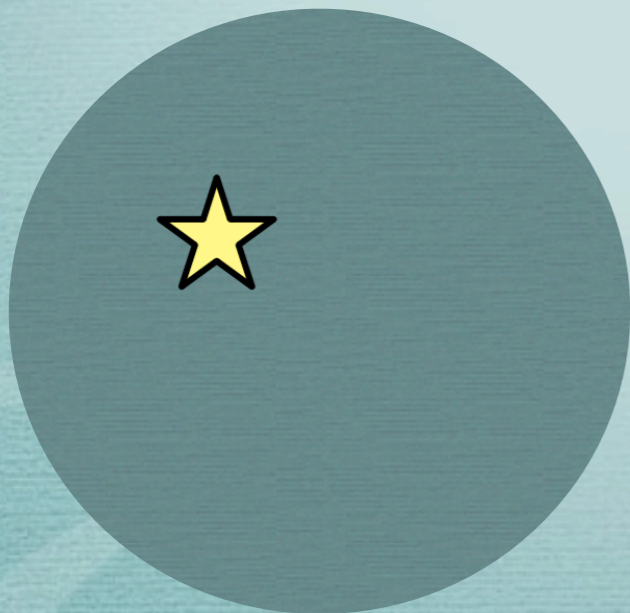
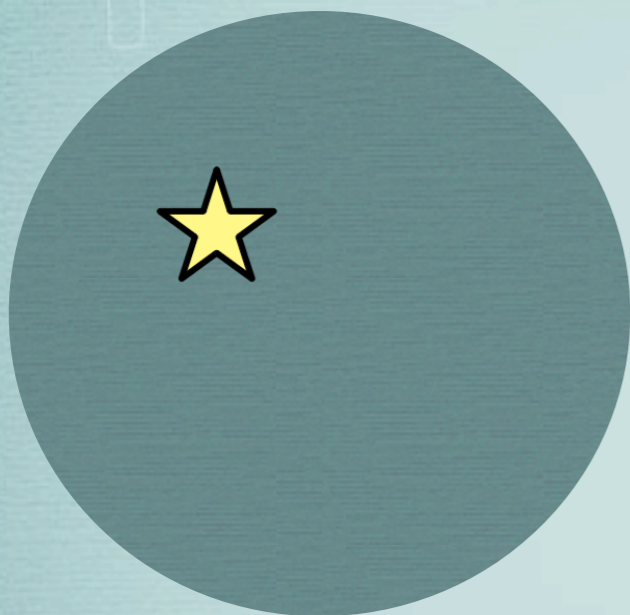
Split up 21 stars into equal groups.





Split up 21 stars into equal groups.

step 1

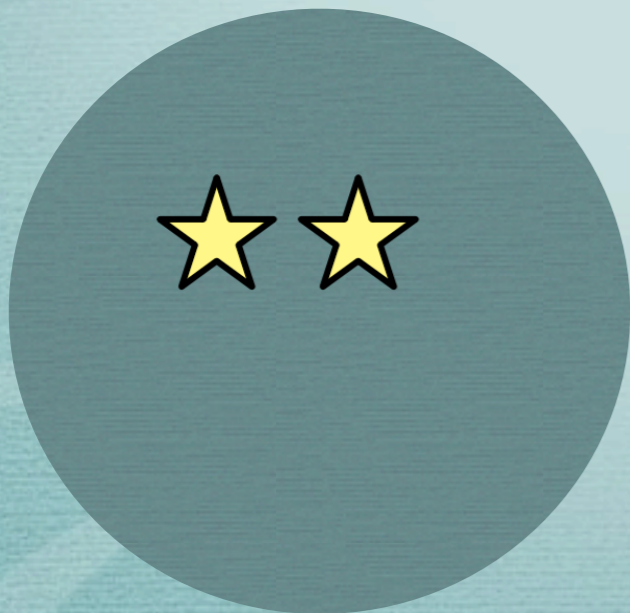






Split up 21 stars into equal groups.

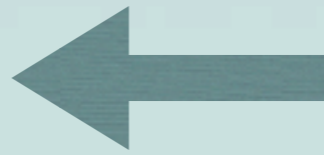
step 2





Split up 21 stars into equal groups.

Last step



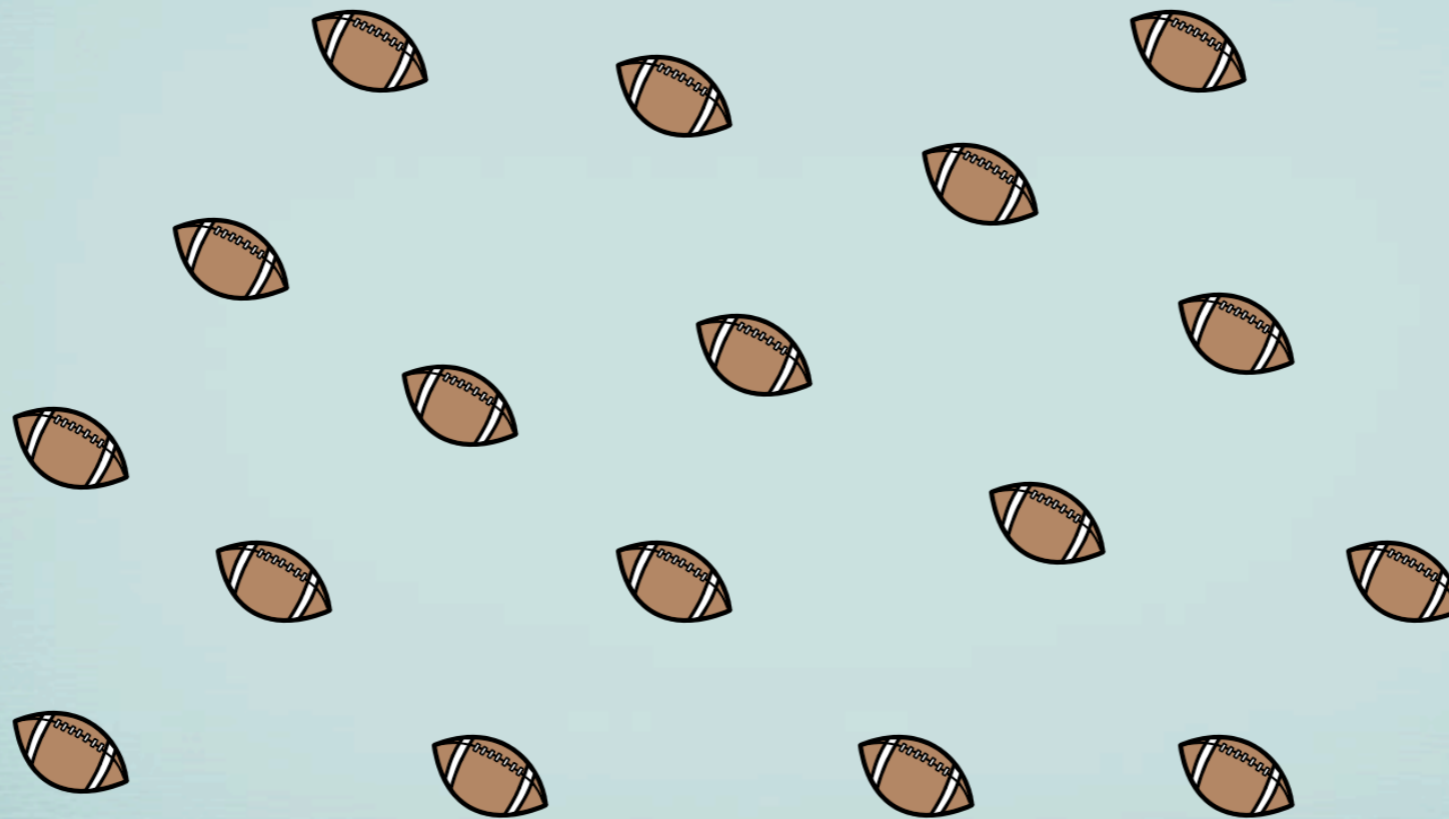
There is 1 star left.



$$21 \div 2 = 10 R 1$$

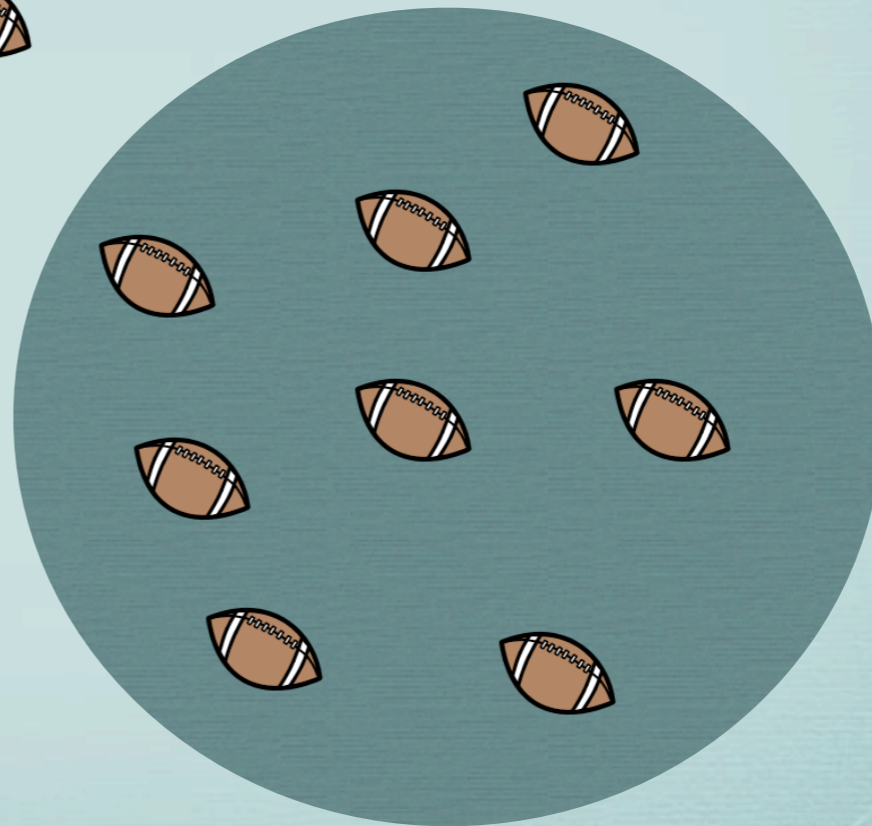
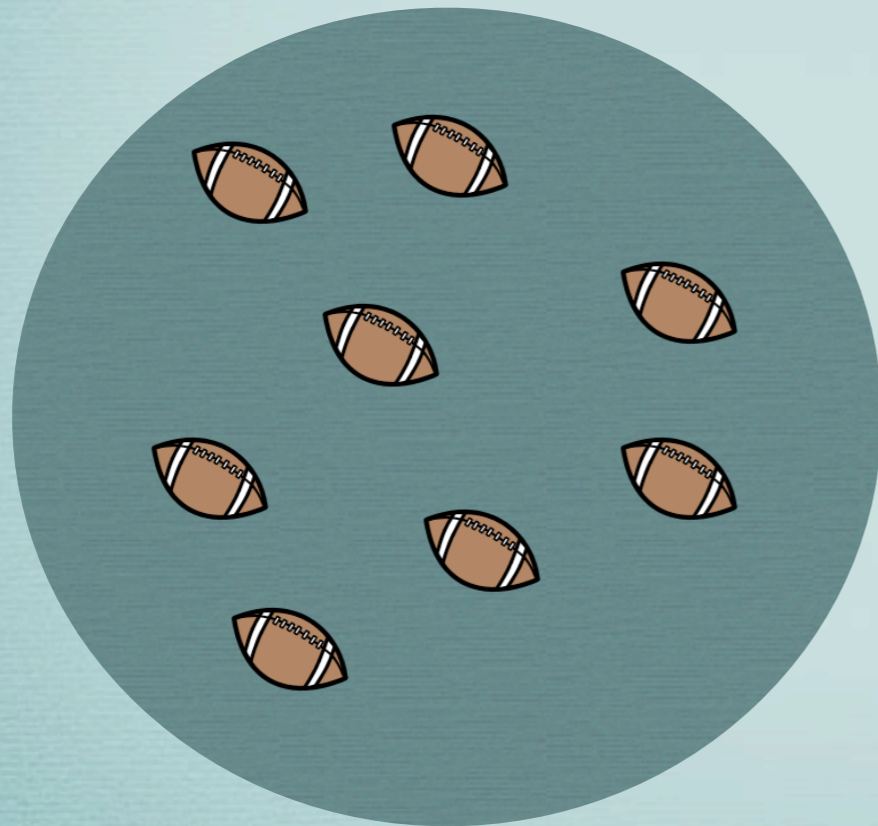


Divide 17 footballs into even groups.





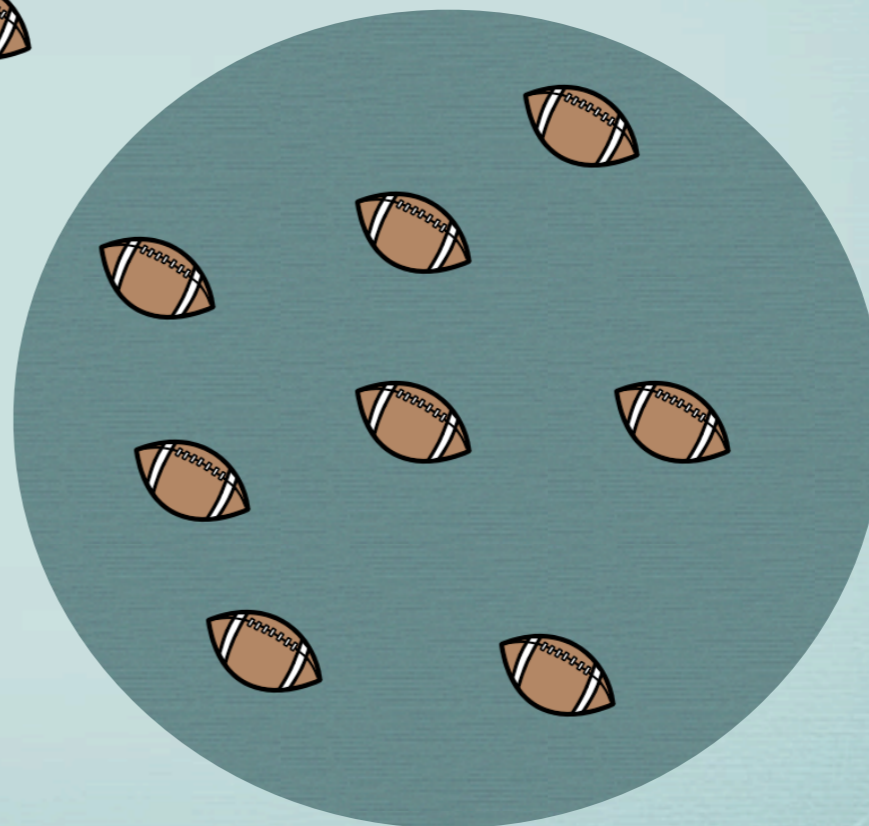
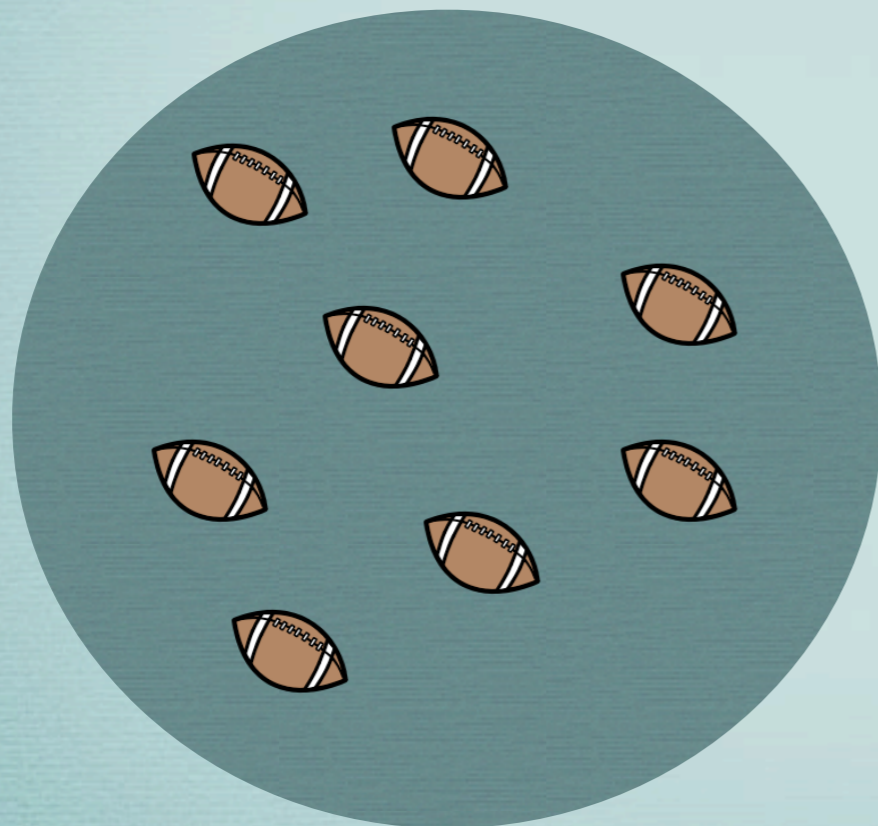
Divide 17 footballs into even groups.










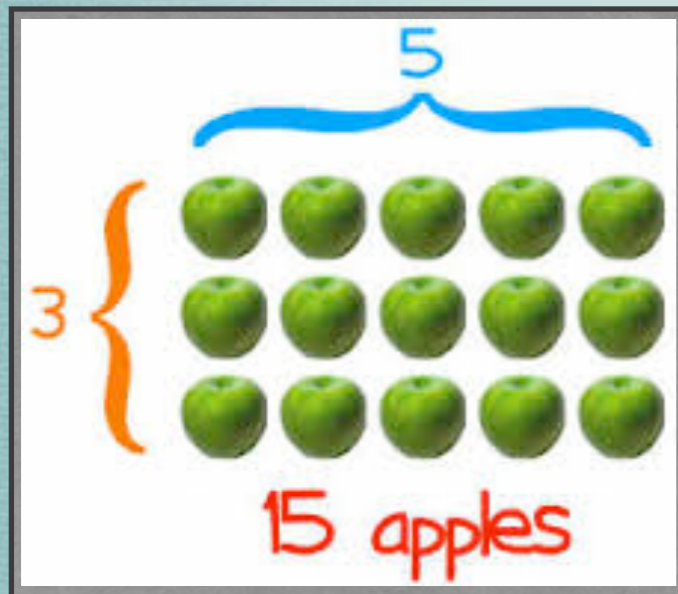
Divide 17 footballs into even groups.

There is 1 football left.

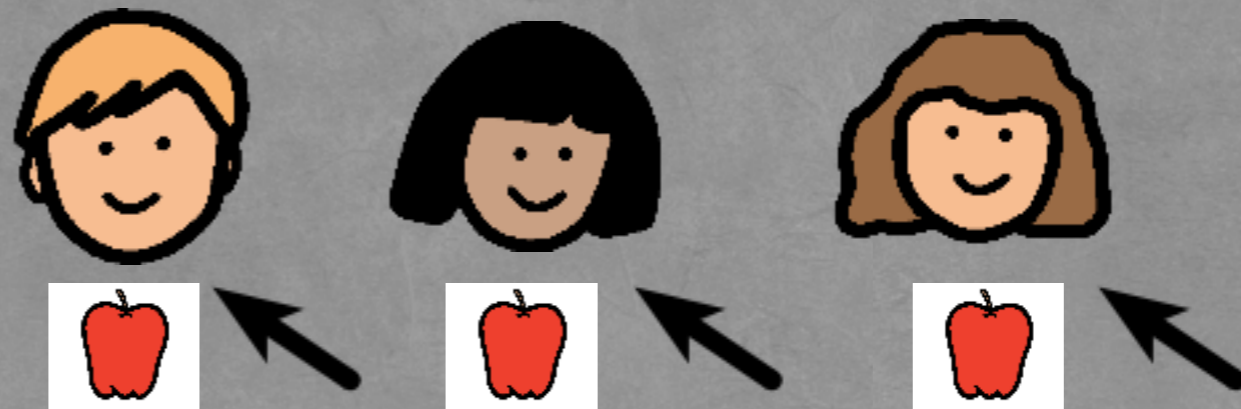


$$17 \div 2 = 8 R 1$$

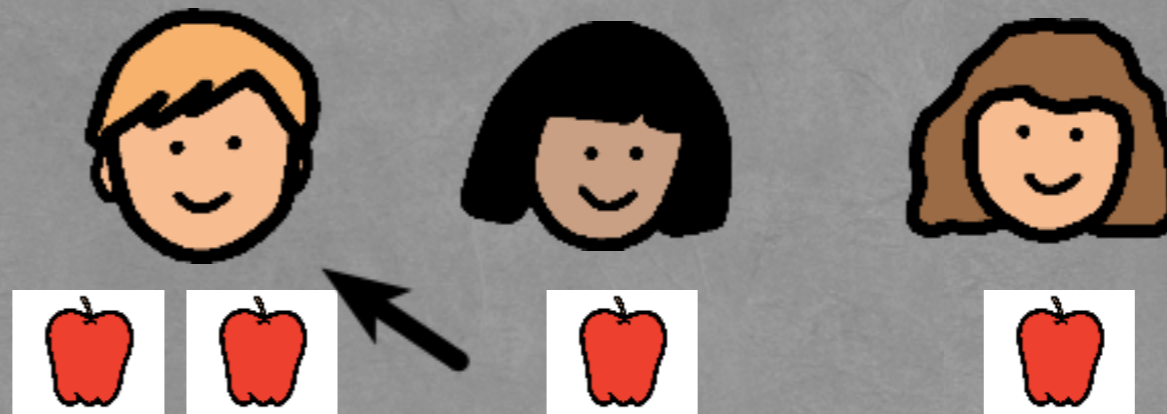
There are 15  apples and    3 kids.  
Each kid wants the same <sup>#</sup> number of  apples.






step 1 Divide apples evenly by giving each kid one apple

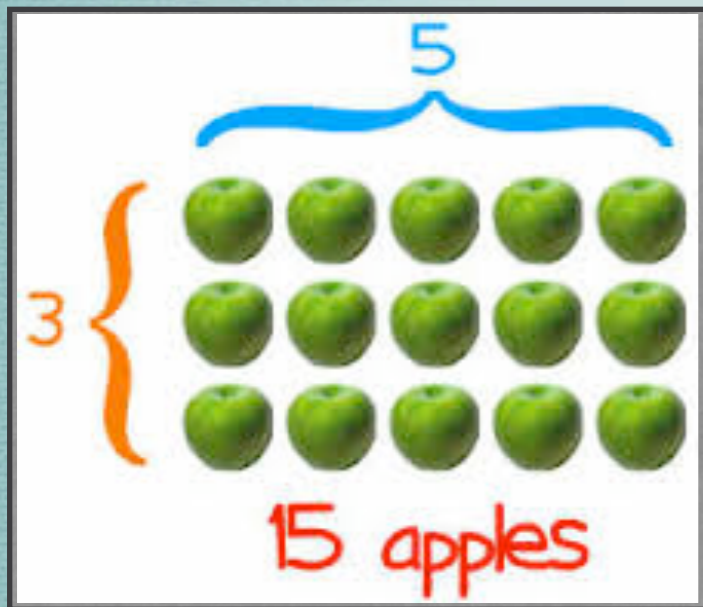


step 2 Keep dividing apples evenly



$$15 \div 3 = 5$$

There are 15  apples and 3  kids.  
Each kid wants the <sup>♦♦</sup>same <sup>#</sup> number of  apples.








$$15 \div 3 = 5$$

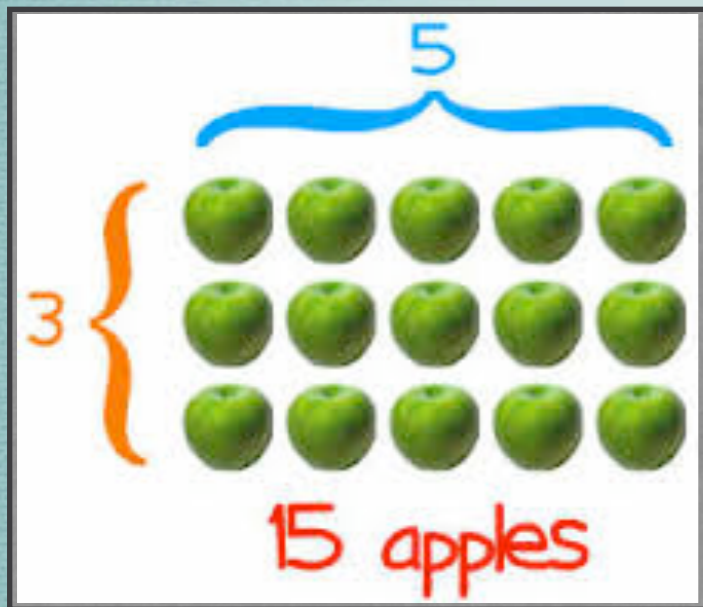
Last step

Divide up all apples evenly

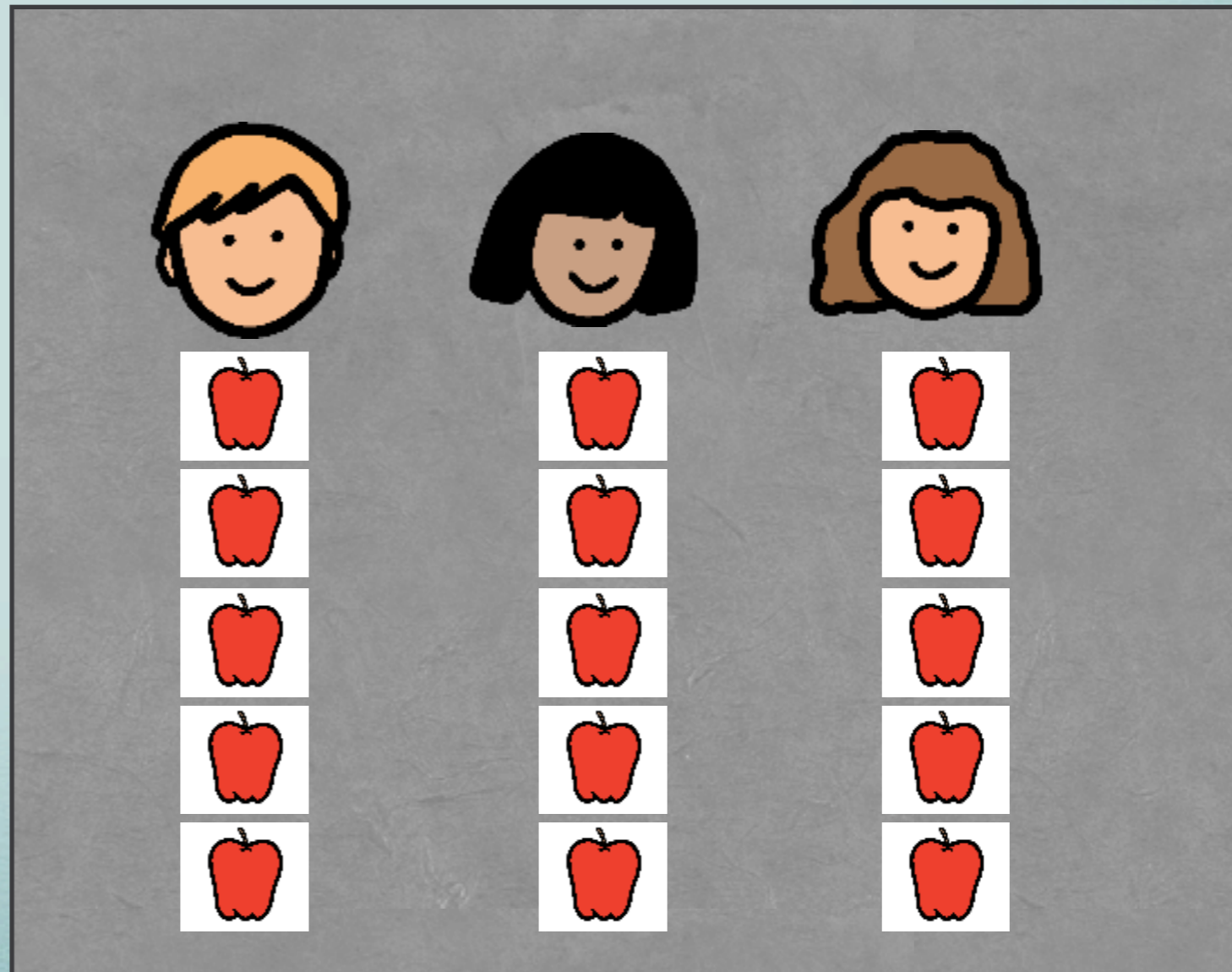


There are 15  apples and 3    kids.  
Each kid wants the same <sup>♦♦</sup> number <sup>#</sup> of  apples.

Each kid gets 5 apples. There were no apples left.



$$15 \div 3 = 5$$



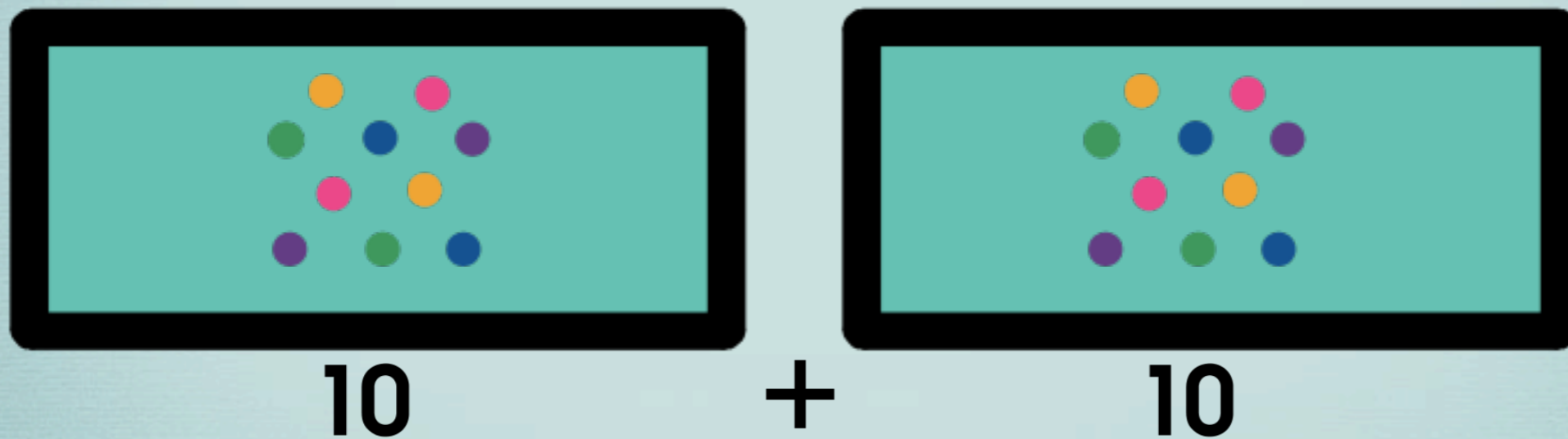


There are 23 marbles and 2 groups. Each group needs an equal number of marbles.



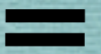
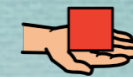
How many marbles are left?  
Use Fair Share strategy.

There are 23 marbles and 2 groups. Each group needs an equal number of marbles.



$10 + 10 = 20$  with 3 marbles left

$$23 \div 2 = 10 \text{ R } 3$$

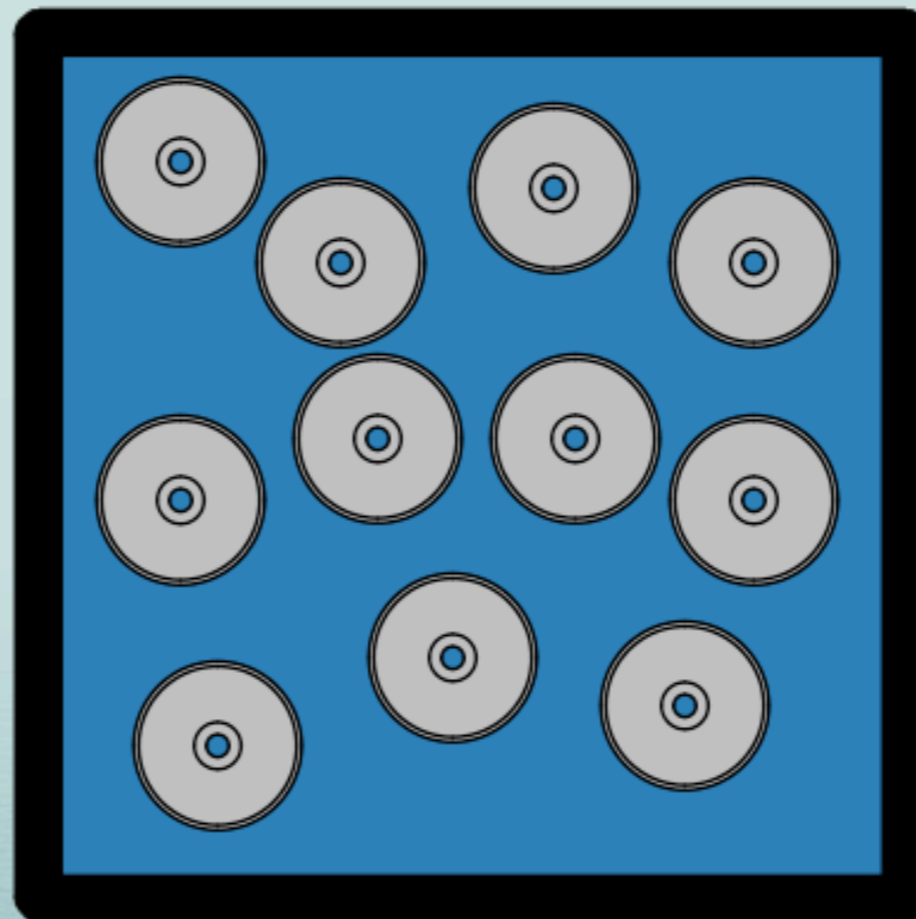


There are 11 CD's and 4 students. Each student gets an equal

#

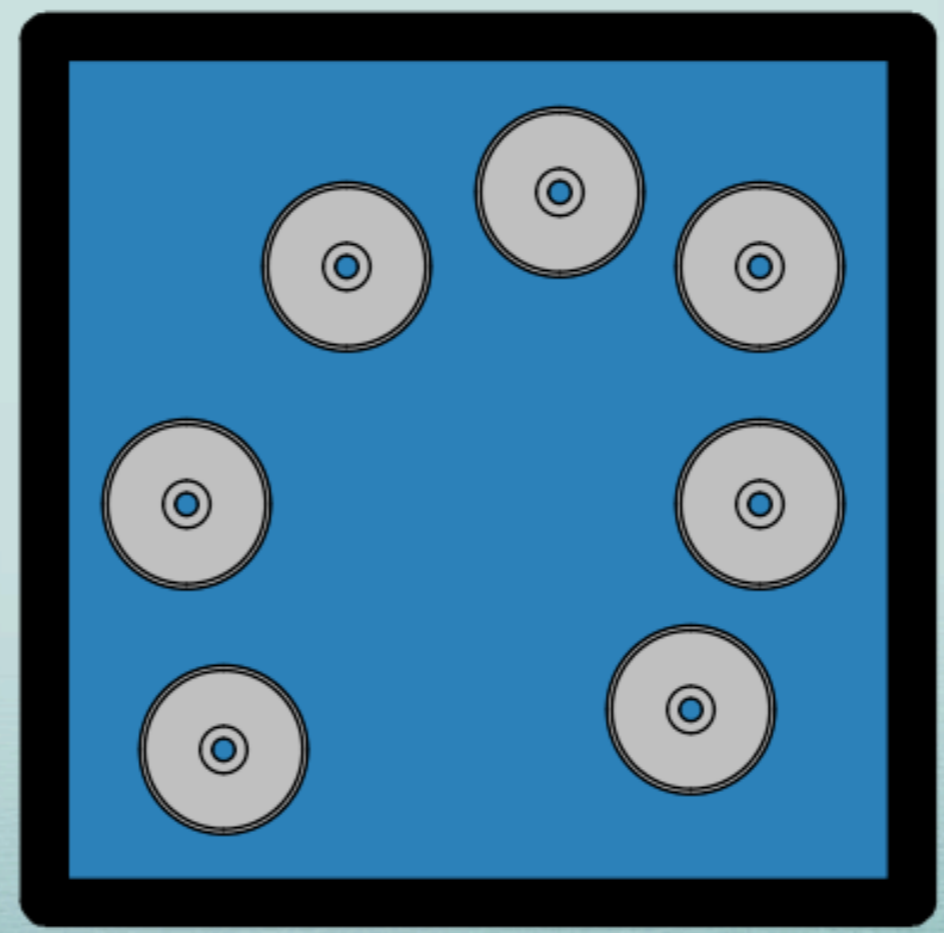
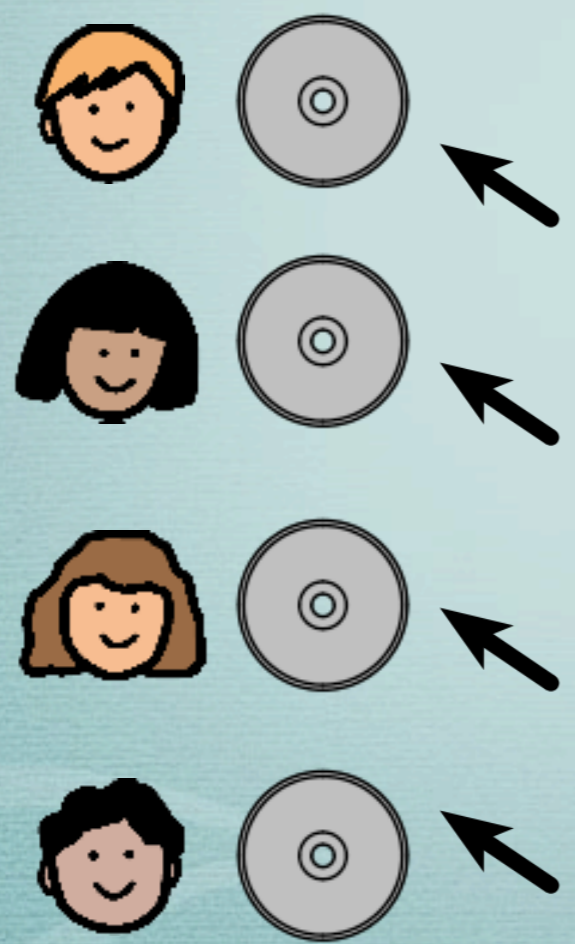


number of CD's. How many CD's does each student get?



There are 11 CD's and 4 students. Each student gets an equal  
# number of CD's. How many CD's does each student get?

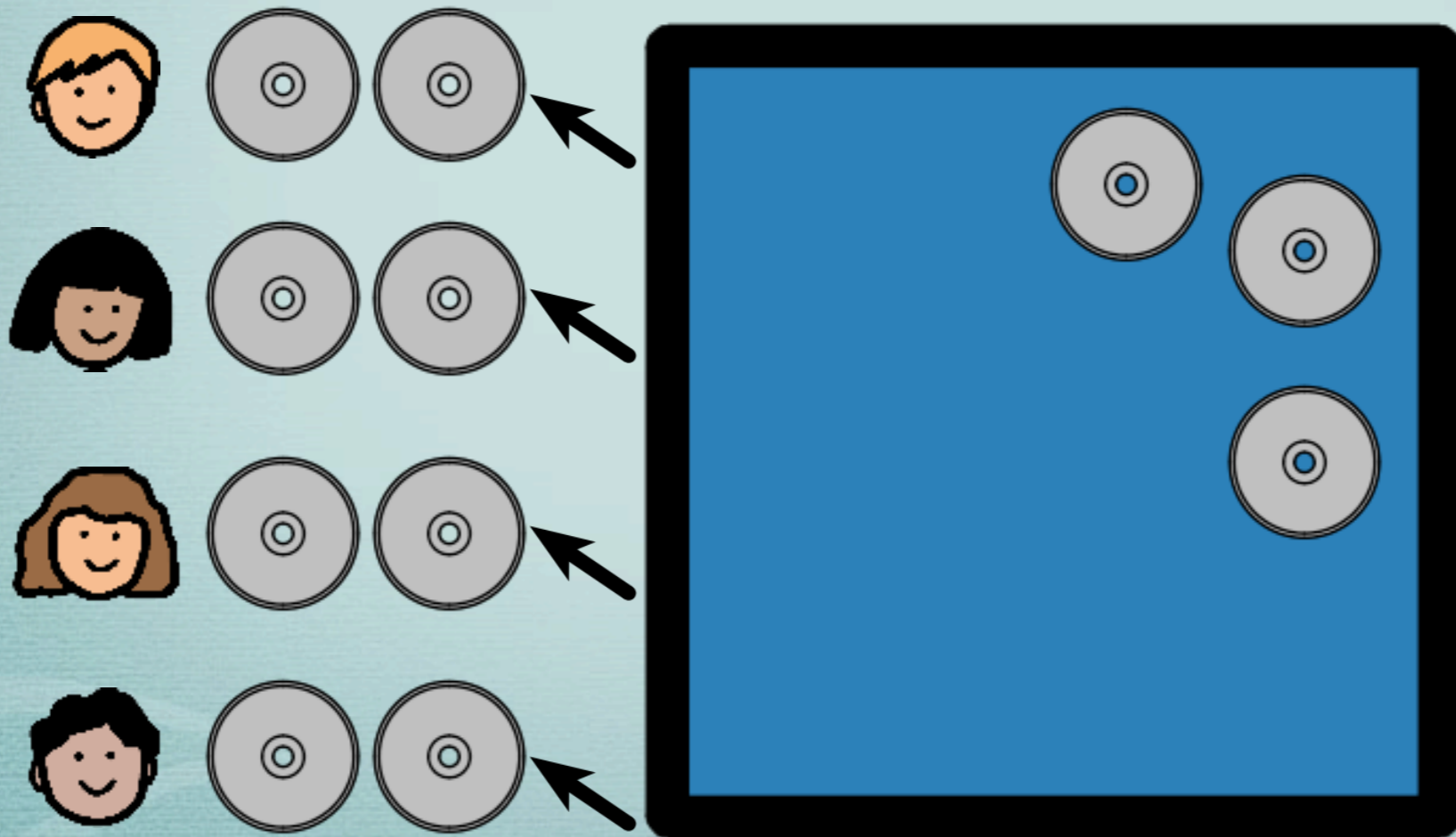
step 1



There are 11 CD's and 4 students. Each student gets an equal  
 # number of CD's. How many CD's does each student get?

step 2

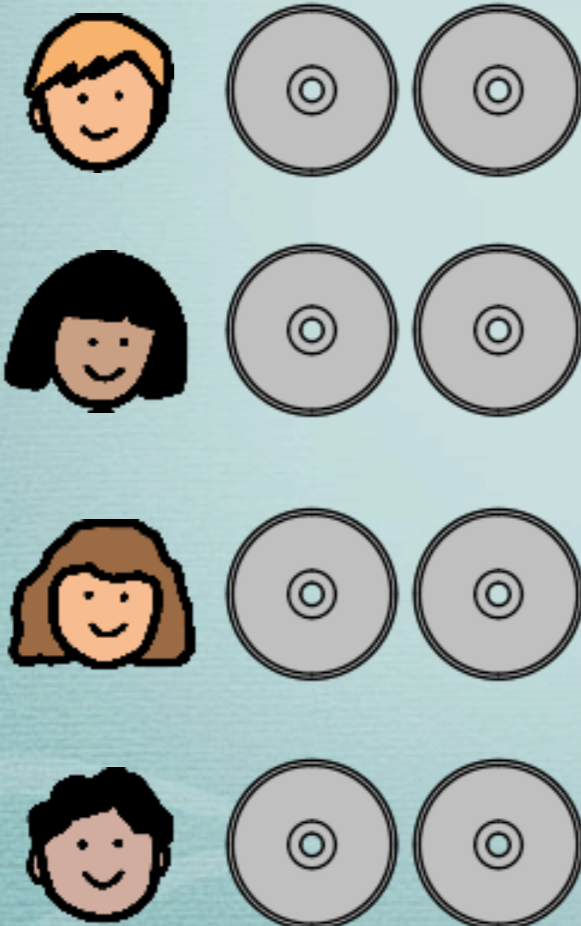
3 CD's Left



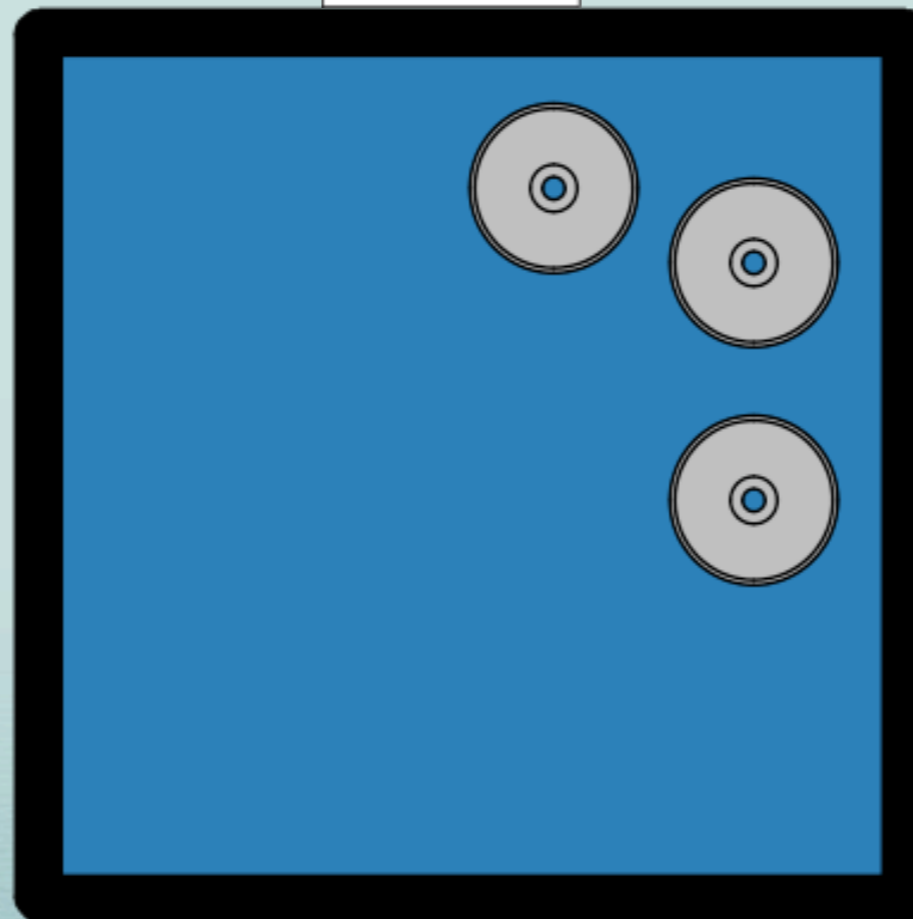


Each student can have 2 CD's. There are 3 CD's left.

$$11 \div 4 = 2 R 3$$



Remainder



# Review

What is the Divisor?

$$12 \div 3 = 4$$

What is the Dividend?

$$12 \div 3 = 4$$

What is the Quotient?

$$12 \div 3 = 4$$

What is the Remainder?

$$16 \div 3 = 5R1$$

# Review

Division is splitting into equal groups.

Division is “fair sharing”.



Divide



Equal



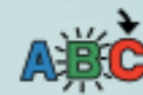
groups



# Review

What is the Remainder?

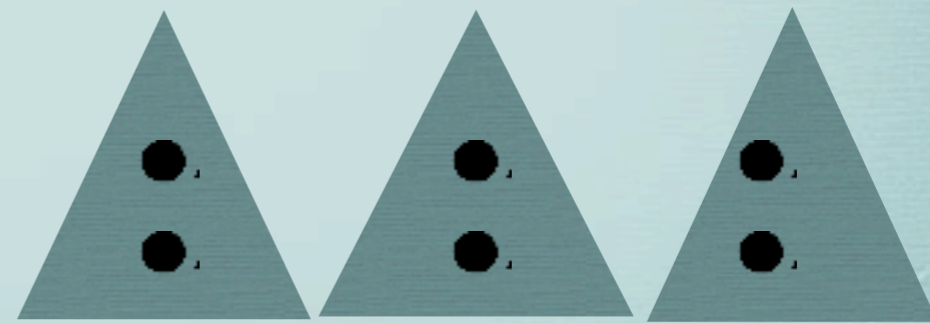
#



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It is the Number you have left over after dividing.

$$\begin{array}{r} 2 \\ 3 \overline{) 7} \\ \underline{6} \\ 1 \end{array} \leftarrow \text{Remainder}$$



● ← Remainder