# Maths Home Learning week 9: Division – Long Division.

Week Beginning: 8/6/2020

# Summer Term Week 9:
# L.O. Division – Long Division.

- Step 1: Revision of quotients and remainders when sharing
- Step 2: Introducing the long division method (sharing ones)
- Step 3: Long division of tens and ones with no regrouping
- Step 4: Long division of tens and ones with regrouping

# Step 1:
# Learning Objective: Revision of quotients and remainders when sharing

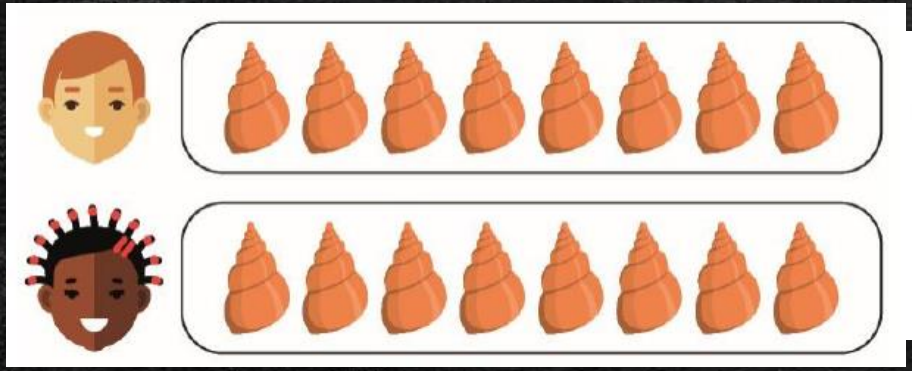
- Success Criteria:

- Share a total between a number of groups.
- Identify the amount that cannot be shared equally this is the remainder

- Key Vocabulary:
- Quotient: a result obtained by dividing one quantity by another. e.g In 10 ÷ 5 the quotient is 2 (10 ÷ 5 = 2)
- Remainder: what's left over in a division problem
- Base fact: Multiplication (or any other number) facts that help us to solve division problems

Step 1:
Learning Objective: Revision of quotients and remainders when sharing

- If there are 16 shells and 2 children. They can be shared equally.

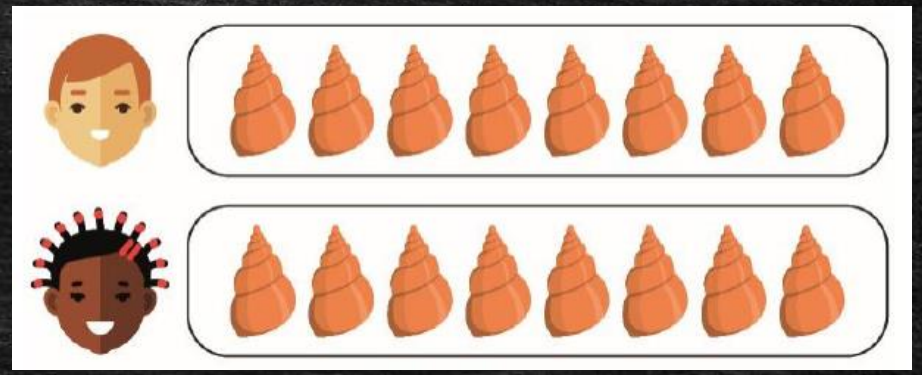


If we share the shells equally between the two friends, how many shells will each friend have?

We can see that each child has got 8 shells.

# Step 1:
# Learning Objective: Revision of quotients and remainders when sharing

- We can show this as 16 ÷ 2 = 8
- This shows us that the **quotient is 8** and there is **no remainder** because all parts have been shared equally.



8 is the quotient because there are 8 in each group. There are 0 shells remaining after sharing 16 shells equally between 2 children.

What was a useful base fact to know?

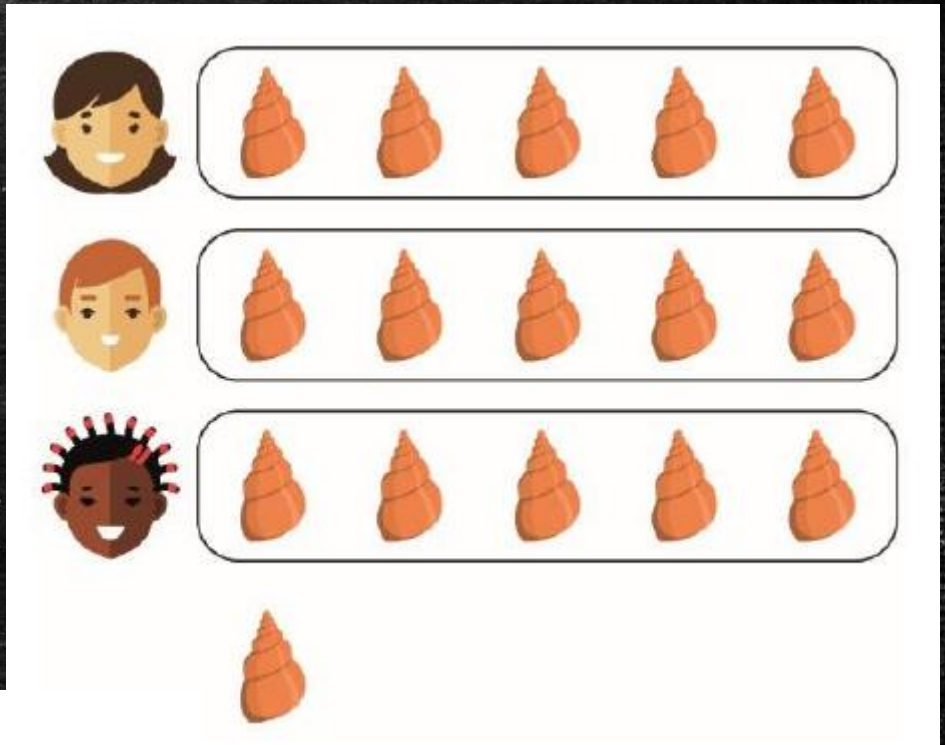
2 x 8 = 16

# Step 1:
# Learning Objective: Revision of quotients and remainders when sharing

- Another friend comes to join them and they share the 16 shells equally between the friends

- We can see that not all of the shells have been shared.

- 16 ÷ 3 = 5 remainder 1
- *Quotient 5*
- *Remainder 1*

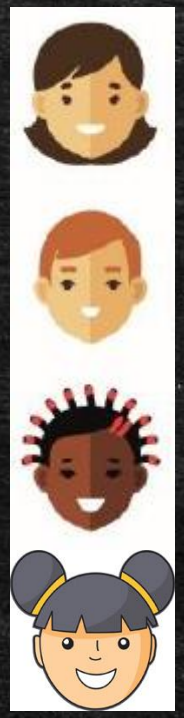


What base fact can you see?

3 x 5 = 15.
16 is one more than 15.

# Step 1:
# Learning Objective: Revision of quotients and remainders when sharing

- We have looked at using base facts to help us divide 16 by 2 or 3.
- If we were to share out the 16 shells between 4 friends sharing one at a time takes a long time. Could we share more than one into a group at a time?
- What base facts could we use to solve 16 ÷ 4?



We can use the base fact of 4 x 4 = 16
If you are unsure start by estimating. Think could I share 3 shells at a time?

# Step 1:
# Learning Objective: Revision of quotients and remainders when sharing

- What will the quotient and remainder will be for five and six friends sharing the 16 shells?
- Draw out sharing the 16 shells between 5 and then 6 friends. (it may be a good idea to try this using blocks or anything else you have at home!)

# Tasks

- Play 'The Remainder Game'
- Write down the number being divided, the number of groups, quotient (number in each group) and remainder each time.
- If you don't have a 0-9 dice you can either make 0-9 number cards and turn them over or roll a 6 sided die twice and add the totals up to a maximum of 9.
- **<u>The recording frame does not have to be printed you can easily draw it out yourself.</u>**
- **<u>The recording frame is on the next page of this PowerPoint.</u>**

## The Remainder Game

**This is a game for two players.**
**Players will need:**

- 31 counters
- 0-9 dice
- The recording frame

**Rules**

1. Player one rolls the dice. The number rolled becomes the number of groups.
2. If a player rolls a 0 then they roll again and if a player rolls a 1 they miss a go.
3. If a player rolls a number that the counters cannot be shared equally into, they miss a go.
4. If numbers 2-9 are rolled, the player shares all of the counters into the correct number of equal groups.
5. Any counters that cannot be shared into equal groups are remainders.
6. The player records the total number of counters shared equally, the number of equal groups, the number in each group (as the quotient) and the remainder.
7. The player keeps all of the counters that cannot be shared equally into groups (the remainder) from that go.
8. The next player has their turn with the counters that are left.
9. The game ends when there are fewer than 2 counters left.

**Winning**

The player with the most counters at the end wins the game.

| | | |
|---|---|---|
| **1.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder | **2.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder | **3.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder |
| **4.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder | **5.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder | **6.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder |
| **7.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder | **8.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder | **9.** Total counters being shared<br>Number of groups<br>Quotient<br>Remainder |

# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

- Success Criteria:

- Share a total between a number of groups Use the correct layout for long division.
- Use base multiplication facts
- Don’t be scared of long division! It is subtracting as well as your x tables knowledge.

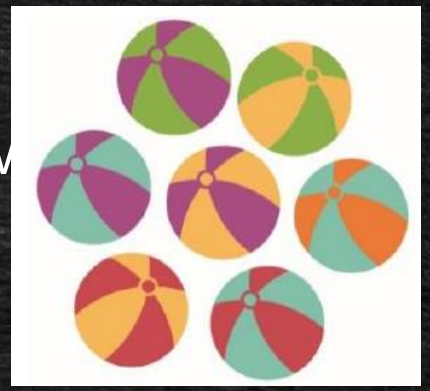
- Key Vocabulary:
- Quotient: a result obtained by dividing one quantity by another. e.g In 10 ÷ 5 the quotient is 2 (10 ÷ 5 = 2)
- Remainder: what's left over in a division problem
- Base fact: Multiplication (or any other number) facts that help us to solve division problems

# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

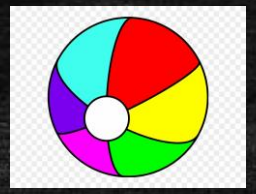
- Watch this video from 3:02 to 4:34
- Intro to Long Division with Remainders
- https://www.khanacademy.org/math/arithmetic-home/multiply-divide/mult-digit-div-2/v/division-2

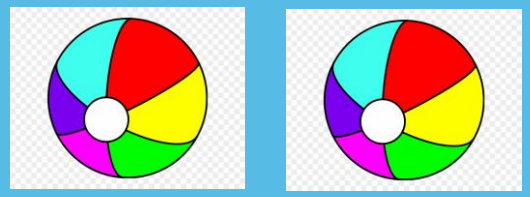
# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

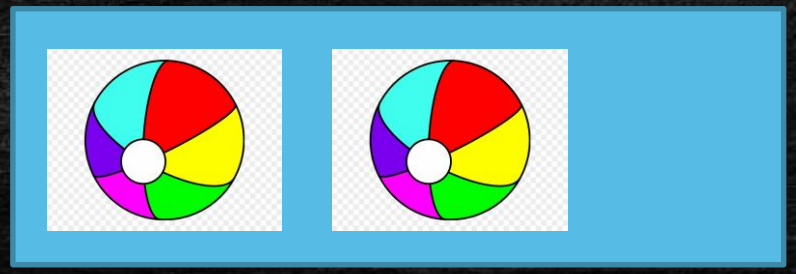
- 7 balls need to be shared between 3 party bags. (7 ÷ 3)

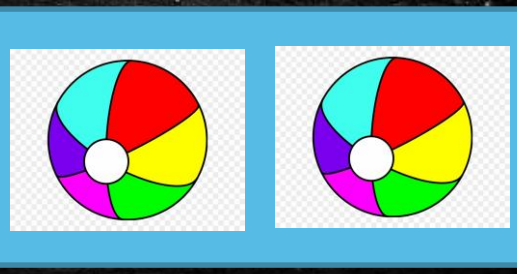


  - We already know 7 ÷ 3 will give us a remainder because we know that 7 cannot be divided by 3 without a remainder.
  - *Below we can see that the 7 balls have been put into 3 bags and one ball remains. This means we have a Quotient of 2 and a Remainder of 1*
  - We would write this as 7 ÷ 3 = 2 r 1



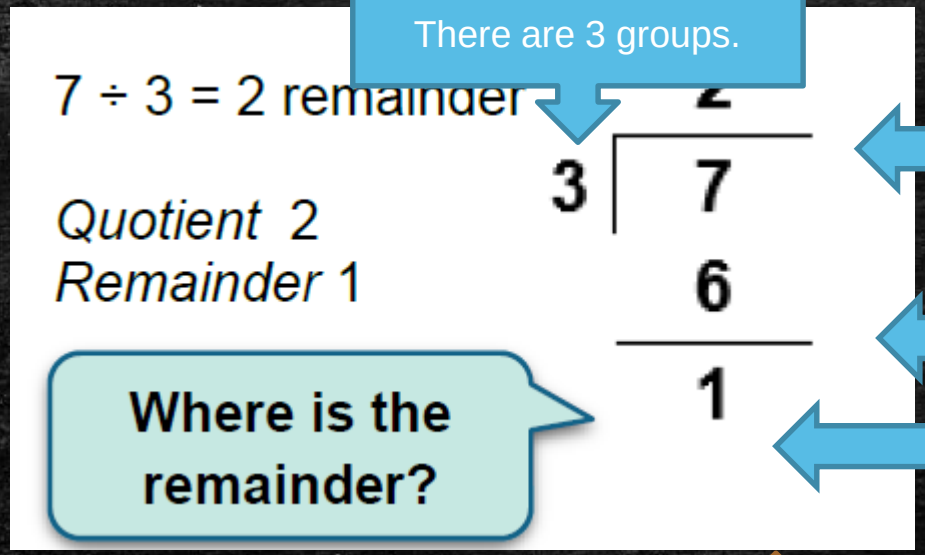






# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

- 7 ÷ 3 = 2 r 1 can also be shown and calculated like this:
- This is a long division sequence.




There are 3 groups.

7 is the number we are dividing

6 is the quotient.

1 is the remainder.

We got our remainder by taking 6 away from 7. (7-6 =1)

# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

- 7 ÷ 3 = 2 r 1 can also be shown and calculated like this:
- This is a long division sequence.

7 ÷ 3 = 2 remainder

*Quotient* 2
*Remainder* 1

```
      2
3 | 7
    6
    1
```

7 is the number we are dividing

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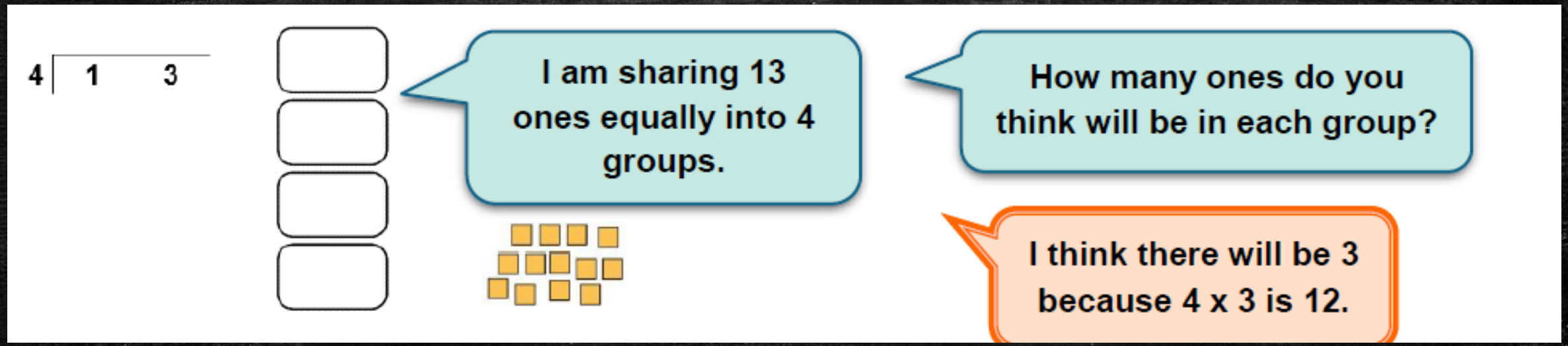
# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

- In this example I will solve 13 ÷ 4.

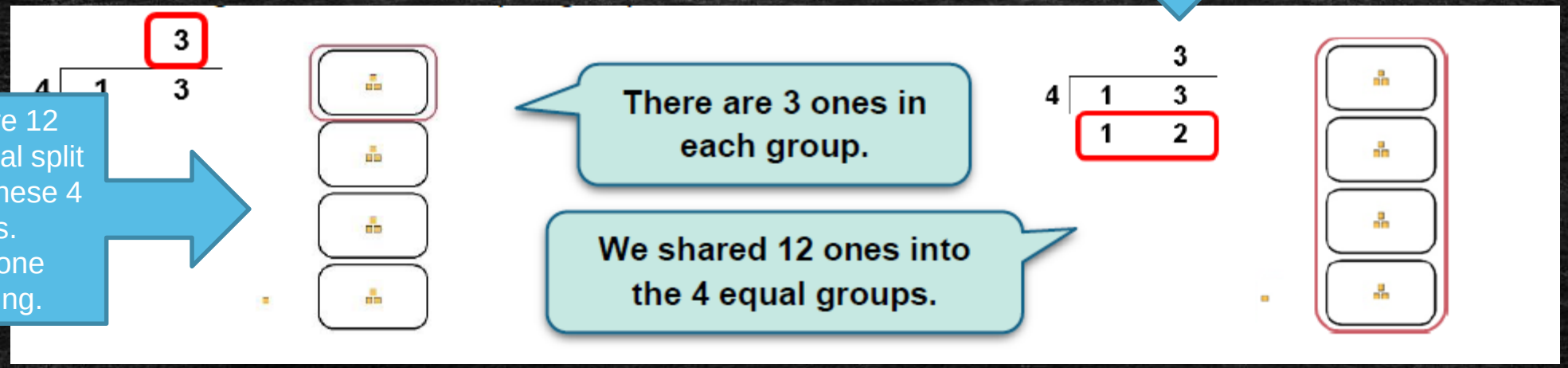


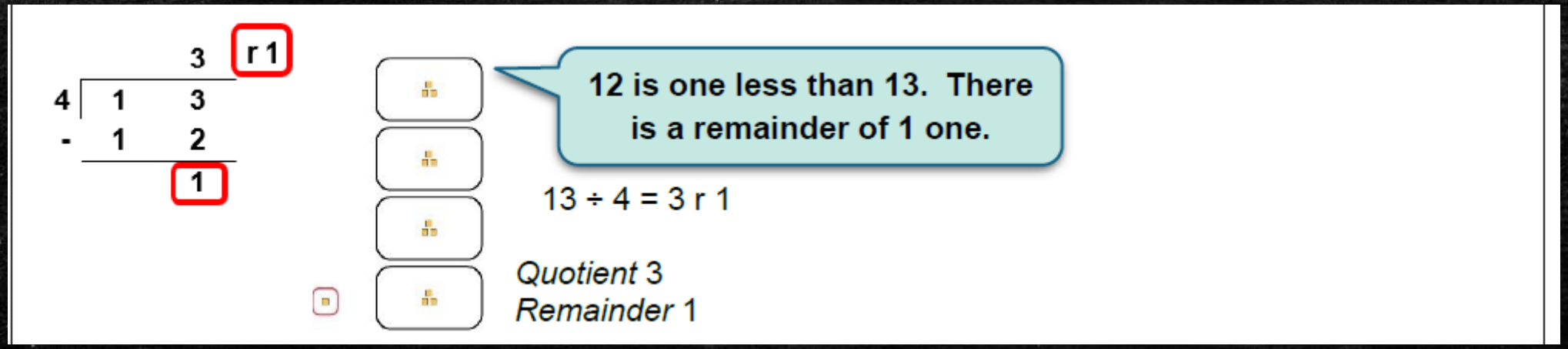
# Step 2:
# Learning Objective: Introducing the long division method (sharing ones)

- 13 ÷ 4. (Continued)

Next you will take 12 away from 13
(13-12)

There are 12 ones in total split between these 4 boxes.
With 1 one remaining.



# Task

- Complete Mild, Medium or Spicy questions.

# Step 3:
# Learning Objective: Long division of tens and ones with no regrouping

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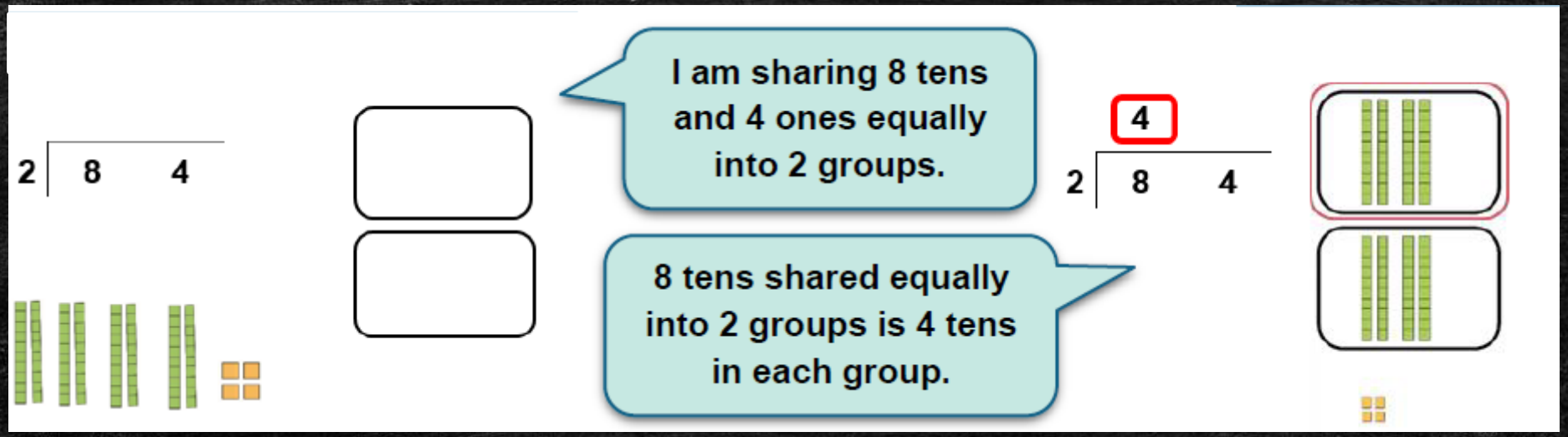
# Step 3:
# Learning Objective: Long division of tens and ones with no regrouping

When solving 84 ÷ 2 the strategy to use is sharing 8 tens and 4 ones into 2 equal groups.



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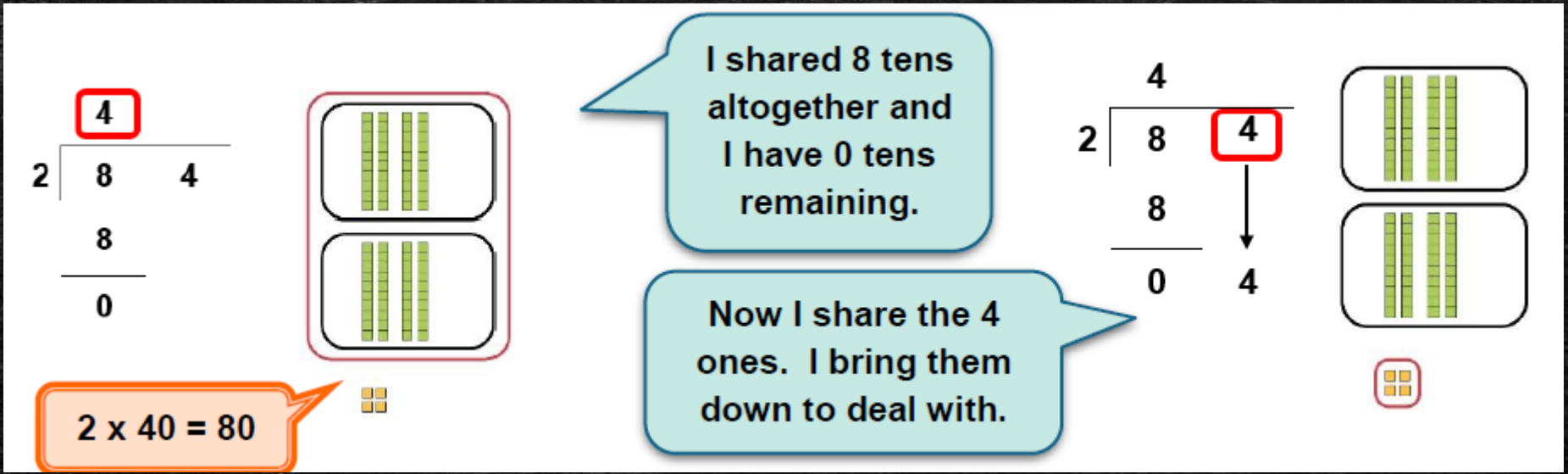
When solving 84 ÷ 2 the strategy to use is sharing 8 tens and 4 ones into 2 equal groups. (Continued)



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# Learning Objective: Long division of tens and ones with no regrouping

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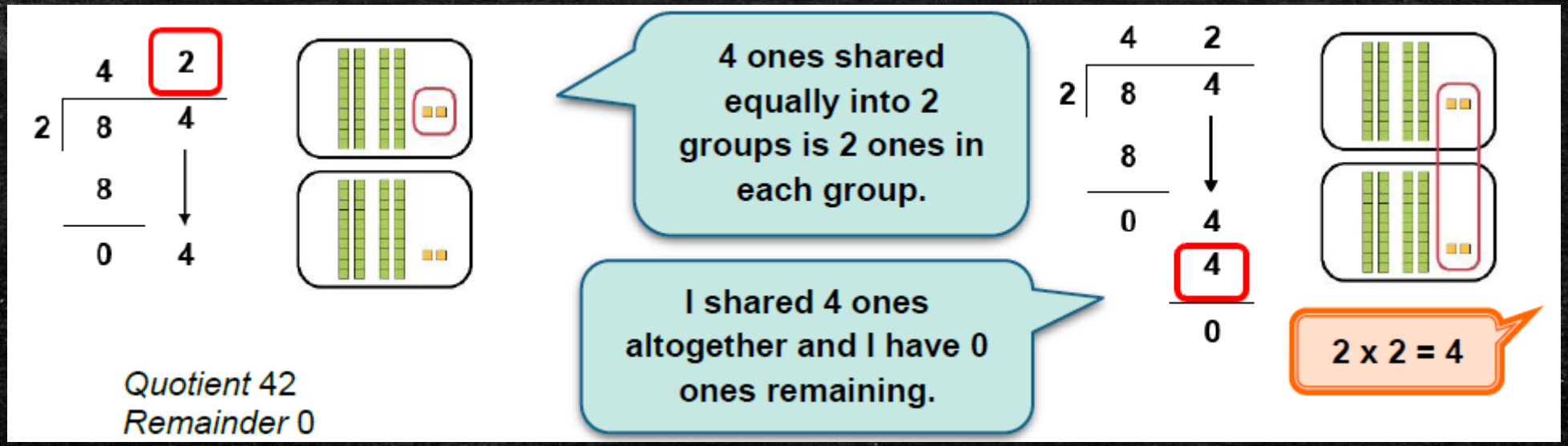

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# Step 4:
# Learning Objective: Long division of tens and ones with no regrouping

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# Step 4:
# Learning Objective: Long division of tens and ones with regrouping

- This is a handy video that gives a great example of using base-10 blocks to make long division more visual.