

# Count By Fractions, Describing Patterns.

## Table of Contents

Teaching Plan Overview and Summary.....	<a href="#">page 2</a>
Count By Fractions, Describing Patterns .....	<a href="#">page 3</a>

### Differentiate and Assess

Not every student will be ready to investigate this concept at this Level and so we will need to differentiate to ensure every student is learning at their leading edge. Select the Differentiate button on this screen.

### Integrate

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding. Select the Integrate button on this screen.

### Intervene

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention. Select the Intervention button on this screen.

# COUNT BY FRACTIONS, DESCRIBING PATTERNS.

## EXPLICIT TEACHING PLAN OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

RESOURCES: PLAYING CARDS,PENCIL, PAPER

### WHAT COULD WE DO?

Children:

- record a number pattern by repeatedly adding a fraction, for example,  $\frac{1}{2}, \frac{2}{2}, \frac{3}{2}, \frac{4}{2}, \frac{5}{2}, \frac{6}{2}, \frac{7}{2}, \frac{8}{2}, \frac{9}{2}, \dots$   
and  $1\frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}, 3, 3\frac{1}{2}, 4, 4\frac{1}{2}, \dots$  identifying the terms are multiples of  $\frac{1}{2}$
- identify a rule for finding terms, for example, multiples of  $\frac{1}{2}$   
 $1 \times \frac{1}{2} = \frac{1}{2}$ , Term 1:  $\frac{1}{2}$ ,  
 $2 \times \frac{1}{2} = \frac{2}{2}$  or 1, Term 2:  $\frac{2}{2}$  or 1 ...
- use the rule to find further terms, for example,  
 $10 \times \frac{2}{2} = \frac{10}{2}$  or 5 Term 10:  $\frac{10}{2}$  or 50
- record a number pattern by repeatedly subtracting a fraction, for example, 5,  $4\frac{1}{2}, 4, 3\frac{1}{2}, 3, 2\frac{1}{2}, 2, 1\frac{1}{2}, 1, \dots$
- identify a rule for finding terms, for example, multiples of  $\frac{1}{2}$  backwards from 5  
 $1 \times \frac{1}{2}$  subtracted from  $5\frac{1}{2} = 5$ , Term 1: 5,  
 $2 \times \frac{1}{2}$  subtracted from  $5\frac{1}{2} = 4\frac{1}{2}$ , Term 2:  $4\frac{1}{2}$  ...
- use the rule to find further terms, for example,  
 $10 \times \frac{1}{2}$  subtracted from  $5\frac{1}{2} = \frac{1}{2}$  Term 10:  $\frac{1}{2}$

### WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

Children

- ask one another questions about number patterns involving fractions that increase through addition and decrease through subtraction, for example:
  - ▶ how is this number pattern repeating?
  - ▶ how could we record a rule to describe this number pattern?
  - ▶ how could we use the rule to continue the number pattern?

# COUNT BY FRACTIONS, DESCRIBING PATTERNS.

## EXPLICIT TEACHING PLAN

FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

### WHAT COULD WE DO?

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Record, for example,



Record, for example,



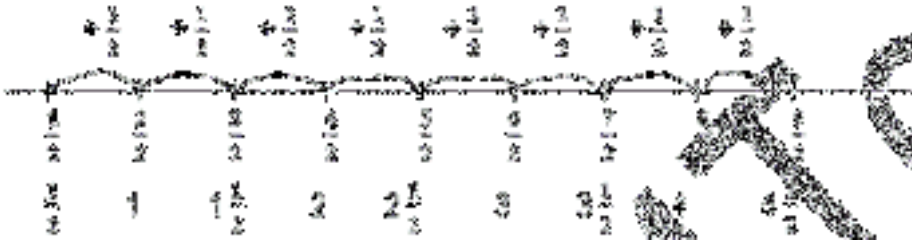
### WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

- ▶ Today brings an investigation about number patterns.
- ▶ What do you know about number patterns?
- ▶ Talk about number patterns with a friend.
- ▶ Is anyone ready to share what they are thinking about number patterns?
  
- ▶ We've investigated number patterns with whole numbers, describing the way they repeat.
- ▶ Today we're going to investigate number patterns with fractions.
- ▶ Could we record a number pattern that increases by repeatedly adding a half?
- ▶ Let's record a number line.
- ▶ We call numbers in patterns, terms
- ▶ Let's make our first term a half.
  
- ▶ If we add a half, what number will we have?
- ▶ Could we record our second term as 2 halves?
- ▶ If we have 2 halves, do we have 1?
- ▶ Could we record our second term as 1?

Record, for example,



Record, for example,



Record the number pattern, for example,  $\frac{1}{2}, \frac{2}{2}, \frac{3}{2}, \frac{4}{2}, \frac{5}{2}, \frac{6}{2}, \frac{7}{2}, \frac{8}{2}, \frac{9}{2}$

Record the number pattern, for example,  $\frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}, 3, 3\frac{1}{2}, 4, 4\frac{1}{2}, \dots$

Record, for example, repeats by adding  $\frac{1}{2}$

- ▶ If we add another half, what number will we have?
- ▶ Could we record our second term as 3 halves?
- ▶ If we have 3 halves, do we have 1 and a half?
- ▶ Could we record our second term as 1 and a half?

▶ Let's continue repeatedly adding a half.

- ▶ How could we record our number pattern?
- ▶ How else could we record our number pattern?
- ▶ How does our pattern repeat?
- ▶ Does our pattern repeat by adding a half?

Record, for example, rule: start at  $\frac{1}{2}$  and repeatedly add  $\frac{1}{2}$

Record, for example, rule: multiples of  $\frac{1}{2}$

Record, for example,



Record, for example,

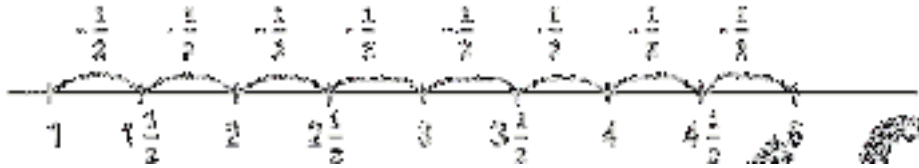


- ▶ Could we record a rule to describe the way that this pattern repeats?
- ▶ Could we record, start at 1 half and repeatedly add a half?
  
- ▶ If we are starting at a half, and repeatedly adding a half, are we recording the multiples of a half?
  
  
  
  
  
  
  
- ▶ Let's investigate number patterns that decrease by repeatedly subtracting a fraction.
  
- ▶ Could we record a number pattern that decreases by repeatedly subtracting a half?
- ▶ Let's record a number line.
- ▶ Let's make our first term 5.
  
  
  
  
  
  
  
- ▶ If we subtract a half, what number will we have?
- ▶ Will our second term be 4 and a half?

Record, for example,



Record, for example,



Record the number pattern, for example,  $5, 4\frac{1}{2}, 4, 3\frac{1}{2}, 3, 2\frac{1}{2}, 2, 1\frac{1}{2}, 1, \dots$

Record, for example, starts from 5 and repeats by subtracting  $\frac{1}{2}$

Record, for example, rule: start at 5 and repeatedly subtract  $\frac{1}{2}$

Record, for example, rule: multiples of  $\frac{1}{2}$  backwards from 5

- ▶ If we subtract another half, what number will we have?
- ▶ Will our third term be 4?

- ▶ Let's continue repeatedly subtracting a half.

- ▶ How could we record our number pattern?

- ▶ How does our pattern repeat?

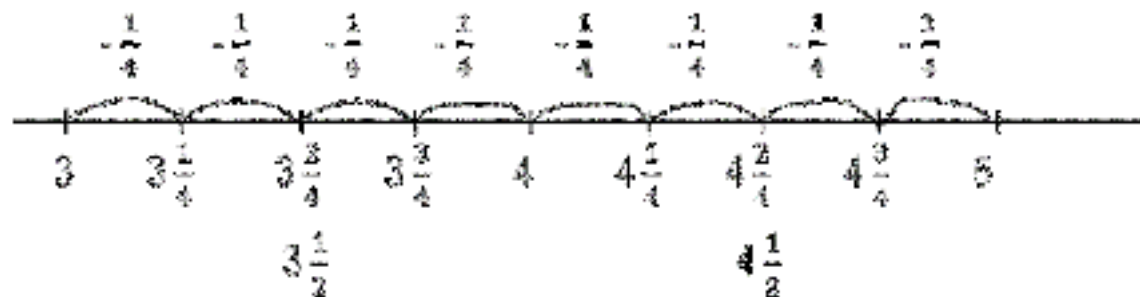
- ▶ Does our pattern repeat by subtracting a half?

- ▶ Could we record a rule to describe the way that this pattern repeats?

- ▶ Could we record, start at 5 and repeatedly subtract a half?

- ▶ If we are starting at a 5, and repeatedly subtracting a half, are we recording the multiples of a half backwards from 5?

Record, for example,



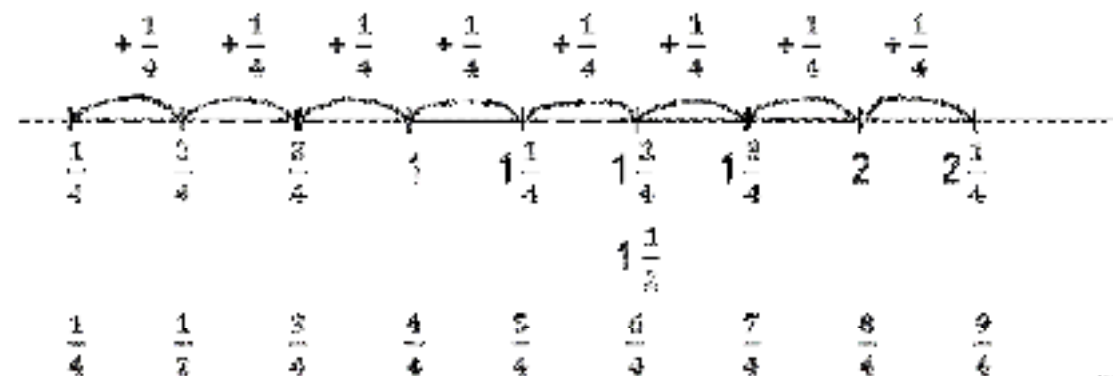
Record the number pattern, for example, 5,  $4\frac{3}{4}$ ,  $4\frac{2}{4}$ ,  $4\frac{1}{4}$ , 4,  $3\frac{3}{4}$ ,  $3\frac{2}{4}$ ,  $3\frac{1}{4}$ , 3, ...

Record, for example, starts from 5 and repeats by subtracting  $\frac{1}{4}$

Record, for example, rule: start at 5 and repeatedly subtract  $\frac{1}{4}$

Record, for example, rule: multiples of  $\frac{1}{4}$  backwards from 5

Record, for example,



Record the number pattern, for example,  $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, 1, 1 \frac{1}{4}, 1 \frac{2}{4}, 1 \frac{3}{4}, 2, 2 \frac{1}{4}, \dots$

Record the number pattern, for example,  $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, 1, 1 \frac{1}{2}, 1 \frac{3}{4}, 2 \frac{1}{4}, \dots$

Record the number pattern, for example,  $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, \frac{5}{4}, \frac{3}{2}, \frac{7}{4}, \frac{2}{1}, \frac{9}{4}, \dots$

Record, for example, repeats by adding  $\frac{3}{4}$

Record, for example, rule: start at  $\frac{1}{4}$  and repeatedly add  $\frac{1}{4}$

Record, for example, rule: multiples of  $\frac{1}{4}$