Lesson 1: Number Sequences

Introduction

Complete the equivalent fractions below.

$$\frac{1}{2} = \frac{\square}{4} = \frac{\square}{8} = \frac{\square}{16}$$

Remember- What we multiply or divide the denominator by we do the to numerator.

Introduction

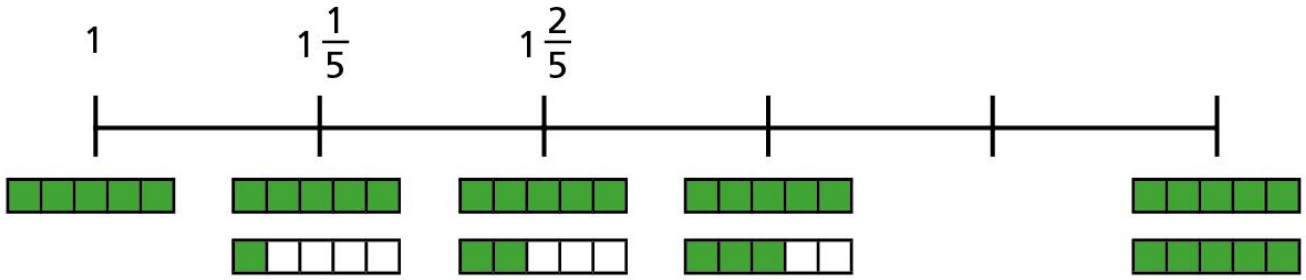
Complete the equivalent fractions below.

$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \frac{8}{16}$$

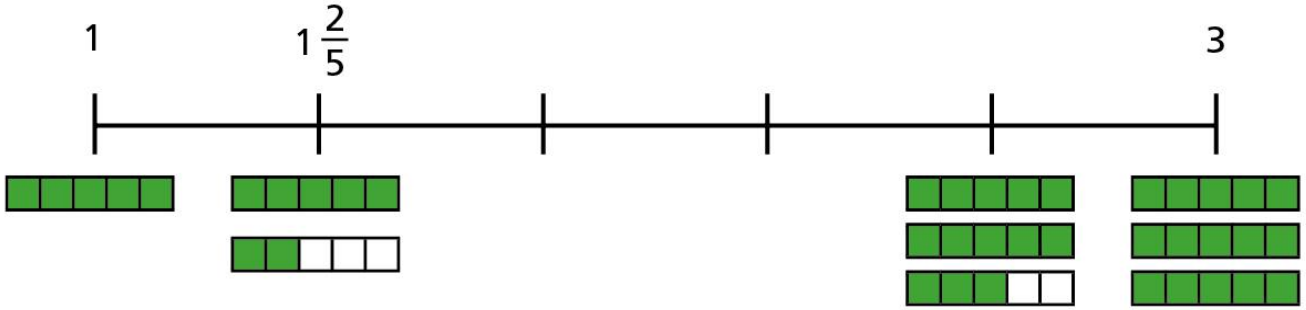
Look at the number line.
What is the value of each jump?
Can you use this information to fill in the blank spaces?

1 Complete the number lines.

a)



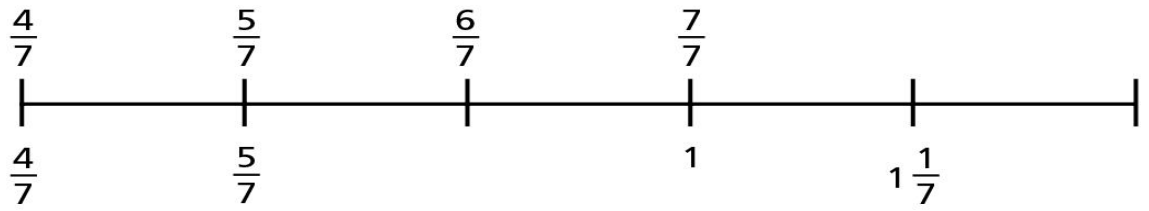
b)



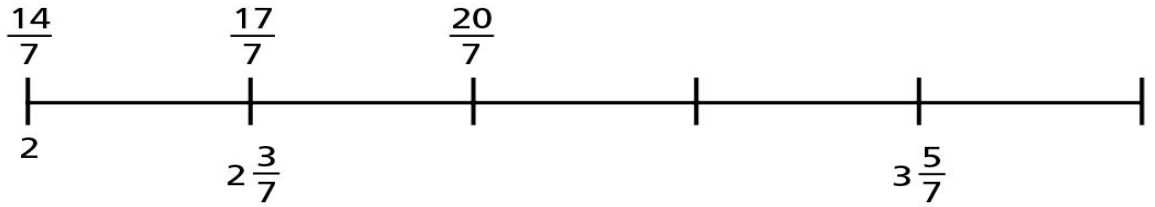
Look at the number line.
This time you have the mixed numbers and improper fractions on the line to help.
What is the value of each jump?
Can you use this information to fill in the blank spaces?

2 Complete the number lines.

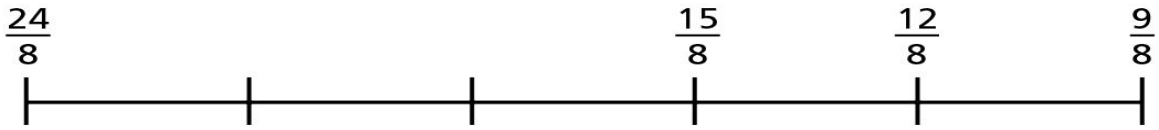
a)



b)



c)



Lets try taking the number line away.

$2\frac{1}{8}$, $2\frac{7}{8}$, $3\frac{5}{8}$, _____, _____,_____

, , ,

Step 1: What is the difference between the first 2 fractions?

Lets try taking the number line away.

$2\frac{1}{8}$, $2\frac{7}{8}$, $3\frac{5}{8}$, _____, _____, _____

Step 1: What is the difference between the first 2 fractions? $\frac{6}{8}$

Now how do we find the rest of the sequence?

Lets try taking the number line away.

$2\frac{1}{8}$, $2\frac{7}{8}$, $3\frac{5}{8}$, _____, _____, _____

Step 1: What is the difference between the first 2 fractions? $\frac{6}{8}$

Now how do we find the rest of the sequence? Add on the $\frac{6}{8}$ to the mixed number or convert to and improper fraction. Whichever you find easier.

Lets try taking the number line away.

$2\frac{1}{8}$, $2\frac{7}{8}$, $3\frac{5}{8}$, _____, _____, _____

$\frac{17}{8}$, $\frac{23}{8}$, $\frac{29}{8}$, _____, _____, _____

Step 1: What is the difference between the first 2 fractions? $\frac{6}{8}$

Now how do we find the rest of the sequence? Add on the $\frac{6}{8}$ to the mixed number or convert to and improper fraction. Whichever you find easier.

Were you correct.

$2\frac{1}{8}$, $2\frac{7}{8}$, $3\frac{5}{8}$, $4\frac{3}{8}$, $5\frac{1}{8}$, $5\frac{7}{8}$

$\frac{17}{8}$, $\frac{23}{8}$, $\frac{29}{8}$, $\frac{35}{8}$, $\frac{41}{8}$, $\frac{47}{8}$

Step 1: What is the difference between the first 2 fractions? $\frac{6}{8}$

Now how do we find the rest of the sequence? Add on the $\frac{6}{8}$ to the mixed number or convert to and improper fraction. Whichever you find easier.

Can you apply these skills to sequence the numbers below from smallest to largest.

$2\frac{6}{8}$ $3\frac{6}{8}$ $4\frac{3}{4}$

$4\frac{2}{8}$ $2\frac{1}{4}$ $3\frac{1}{4}$

Can you apply these skills to sequence the numbers below from smallest to largest.

Smallest

$2\frac{1}{4}$ $2\frac{6}{8}$ $3\frac{1}{4}$ $3\frac{6}{8}$ $4\frac{2}{8}$ $4\frac{3}{4}$

Largest

Now try writing this number sequence.

My sequence starts with the mixed number $8\frac{2}{10}$

It is decreasing by $\frac{1}{10}$.

Write the next 5 numbers in the sequence.

Were you correct?

My sequence starts with the mixed number $8\frac{2}{10}$.

It is decreasing by $\frac{1}{10}$.

Write the next 5 numbers in the sequence.

$8\frac{1}{10}$, 8, $7\frac{9}{10}$, $7\frac{8}{10}$, $7\frac{7}{10}$

Now your turn.
Don't forget you can convert them to an improper fraction, if you find that easier.

3 Continue the sequences.

a) $2\frac{7}{8}$, $3\frac{1}{8}$, $3\frac{3}{8}$, ☐, ☐, ☐

b) $5\frac{6}{7}$, $5\frac{3}{7}$, 5, ☐, ☐, ☐

c) $5\frac{6}{11}$, $5\frac{3}{11}$, 5, ☐, ☐, ☐

What is the same and what is different about the sequences in parts b) and c)?

Talk about it with a partner.

Now instead of finishing the sequence we have to spot the sequence. Look at each carefully and then match it to its rule.

4 Match each sequence to its rule.

$2\frac{2}{3}, \ 3\frac{1}{3}, \ 4, \ 4\frac{2}{3}$	add three quarters
$2\frac{1}{2}, \ 3\frac{1}{4}, \ 4, \ 4\frac{3}{4}$	subtract two thirds
$4\frac{1}{3}, \ 3\frac{2}{3}, \ 3, \ 2\frac{1}{3}$	add two thirds
$4\frac{1}{4}, \ 3\frac{3}{4}, \ 3\frac{1}{4}, \ 2\frac{3}{4}$	subtract one half

5 Teddy and Rosie are finding the missing numbers in the sequence.

3, ☐, ☐, ☐, ☐, ☐, ☐, ☐, 4

a)

I think the missing fractions are sevenths because there are seven blank number cards.

Do you agree with Teddy? _____

Explain your answer.

_____

How do start a question like this?
Work it out ourselves.

5 Teddy and Rosie are finding the missing numbers in the sequence.

3, ☐, ☐, ☐, ☐, ☐, ☐, ☐, 4

a)

I think the missing fractions are sevenths because there are seven blank number cards.

Do you agree with Teddy? _____

Explain your answer.

_____

Step 1: Count how many missing numbers there are, this will help us work out the rule.

There are 8 jumps to get to 4.

This tells us the denominator because the whole is divided into 8.

5 Teddy and Rosie are finding the missing numbers in the sequence.

3, ☐, ☐, ☐, ☐, ☐, ☐, ☐, 4

a)

I think the missing fractions are sevenths because there are seven blank number cards.

Do you agree with Teddy? _____

Explain your answer.

_____

So if the sequence is

$$3, 3\frac{1}{8}, 3\frac{2}{8}, 3\frac{3}{8}, 3\frac{4}{8}, 3\frac{5}{8}, 3\frac{7}{8}, 4$$

Do you agree or disagree with Teddy. Can you explain why?

Now use this new skill to answer this question.
Mr Jones shows Class 5 the sequence below.

$6\frac{1}{2}$	$6\frac{6}{8}$	7	$7\frac{2}{8}$	$7\frac{1}{2}$	$7\frac{6}{8}$

Benji says,

The next number in the sequence is 8.

Top tip:
Don't forget about your equivalent fractions

Is he correct? Convince me.
Convince me by showing me

Reasoning 2

Mr Jones shows Class 5 the sequence below.

$6\frac{1}{2}$	$6\frac{6}{8}$	7	$7\frac{2}{8}$	$7\frac{1}{2}$	$7\frac{6}{8}$

Benji says,

> The next number in the sequence is 8.

Is he correct? Convince me.

Benji is correct because the sequence is increasing by $\frac{2}{8}$.