

Reasoning and Problem Solving

Step 4: Number Sequences

National Curriculum Objectives:

Mathematics Year 5: (5F2a) [Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements \$> 1\$ as a mixed number \[for example, \$2/5 + 4/5 = 6/5 = 1 \frac{1}{5}\$ \]](#)

Mathematics Year 5: (5F3) [Compare and order fractions whose denominators are all multiples of the same number](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Identify and explain the mistake in a sequence of mixed numbers and fractions with the same denominators.

Expected Identify and explain the mistake in a sequence of mixed numbers and fractions, using knowledge of equivalence.

Greater Depth Identify and explain the mistake in a sequence of mixed numbers and improper fractions, using knowledge of equivalence.

Questions 2, 5 and 8 (Reasoning)

Developing Explain whether the statement is correct or incorrect based on a given sequence of mixed numbers and fractions with the same denominators.

Expected Explain whether the statement is correct or incorrect based on a given sequence of mixed numbers and fractions, using knowledge of equivalence.

Greater Depth Explain whether the statement is correct or incorrect based on a given sequence of mixed numbers and improper fractions, using knowledge of equivalence.

Questions 3, 6 and 9 (Problem Solving)

Developing Sequence the fraction cards to determine the pattern and find the digit card that does not fit. Uses mixed numbers and fractions with the same denominators.

Expected Sequence the fraction cards to determine the pattern and find the digit card that does not fit. Uses mixed numbers and fractions, and knowledge of equivalence.

Greater Depth Sequence the fraction cards to determine the pattern and find the digit card that does not fit. Uses mixed numbers, improper fractions and knowledge of equivalence.

More [Year 5 Fractions](#) resources.

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Number Sequences

Number Sequences

1a. Look at the sequence below.

Circle the mistake.

$$2\frac{2}{5} \quad 2\frac{3}{5} \quad 2\frac{4}{5} \quad 2 \quad 3\frac{1}{5} \quad 3\frac{2}{5}$$

Explain your reasoning.



R

1b. Look at the sequence below.

Circle the mistake.

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

Explain your reasoning.



R

2a. Mr Smith shows Class 5 the sequence below.

$$1\frac{1}{3} \quad 1\frac{2}{3} \quad 2 \quad 2\frac{1}{3} \quad 2\frac{2}{3} \quad 3$$

Bella says,



The next number in the sequence is 4.

Is she correct? Convince me.



R

2b. Mrs Green shows Class 5 the sequence below.

$$3 \quad 3\frac{1}{6} \quad 3\frac{2}{6} \quad 3\frac{3}{6} \quad 3\frac{4}{6} \quad 3\frac{5}{6}$$

Jake says,



The next number in the sequence is 4.

Is he correct? Convince me.



R

3a. Sort the cards into an increasing sequence to find the card that doesn't fit.

$$5\frac{5}{6} \quad 6\frac{2}{6} \quad 5\frac{4}{6}$$

$$6\frac{1}{6} \quad 5 \quad 6$$

What is the sequence increasing by?
What is the fraction card that doesn't fit?



PS

3b. Sort the cards into an increasing sequence to find the card that doesn't fit.

$$3\frac{7}{8} \quad 4\frac{1}{8} \quad 3\frac{5}{8}$$

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

What is the sequence increasing by?
What is the fraction card that doesn't fit?



PS

Number Sequences

Number Sequences

4a. Look at the sequence below.

Circle the mistake.

7
 $6\frac{4}{6}$
 $6\frac{1}{3}$
6
 $5\frac{3}{6}$
 $5\frac{2}{6}$

Explain your reasoning.



R

4b. Look at the sequence below.

Circle the mistake.

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

Explain your reasoning.



R

5a. Mr Hall shows Class 5 the sequence below.

7
 $7\frac{2}{6}$
 $7\frac{2}{3}$
8
 $8\frac{1}{3}$
 $8\frac{2}{3}$

Lily says,



The next number in the sequence is 9.

Is she correct? Convince me.



R

5b. Mrs Shaw shows Class 5 the sequence below.

$5\frac{2}{5}$
5
 $4\frac{3}{5}$
 $4\frac{2}{10}$
 $3\frac{4}{5}$
 $3\frac{2}{5}$

Darren says,



The next number in the sequence is 2.

Is he correct? Convince me.



R

6a. Sort the cards into an increasing sequence to find the card that doesn't fit.

$2\frac{10}{14}$
 $4\frac{3}{14}$
 $3\frac{3}{7}$
 $1\frac{4}{14}$
 $\frac{4}{7}$
2

What is the sequence increasing by?
What is the fraction card that doesn't fit?



PS

6b. Sort the cards into a decreasing sequence to find the card that doesn't fit.

$9\frac{1}{2}$
 $9\frac{8}{12}$
 $9\frac{1}{8}$
 $9\frac{4}{12}$
 $9\frac{1}{6}$
 $9\frac{5}{6}$

What is the sequence decreasing by?
What is the fraction card that doesn't fit?



PS

Number Sequences

Number Sequences

7a. Look at the sequence below.

Circle the mistake.

$$5 \frac{5}{6} \quad \frac{73}{12} \quad 6 \frac{1}{3} \quad 6 \frac{7}{12} \quad \frac{82}{12} \quad 7 \frac{2}{12}$$

Explain your reasoning.



R

7b. Look at the sequence below.

Circle the mistake.

$$\frac{71}{8} \quad 8 \frac{1}{2} \quad 8 \frac{1}{8} \quad 7 \frac{3}{4} \quad \frac{65}{8} \quad 7$$

Explain your reasoning.



R

8a. Mr Gregory shows Class 5 the sequence below.

$$9 \frac{4}{10} \quad 9 \quad 8 \frac{6}{10} \quad 8 \frac{1}{5} \quad 7 \frac{4}{5} \quad \frac{74}{10}$$

Anya says,



The next number in the sequence is $6 \frac{8}{10}$.

Is she correct? Convince me.



R

8b. Mrs Williams shows Class 5 the sequence below.

$$4 \quad 4 \frac{1}{3} \quad 4 \frac{2}{3} \quad 5 \quad \frac{32}{6} \quad 5 \frac{2}{3}$$

Marco says,



The next number in the sequence is 6.

Is he correct? Convince me.



R

9a. Sort the cards into an increasing sequence to find the card that doesn't fit.

$$10 \frac{1}{2} \quad \frac{92}{8} \quad 10 \frac{14}{16}$$

$$11 \frac{1}{4} \quad \frac{78}{8} \quad \frac{81}{8}$$

What is the sequence increasing by?
What is the fraction card that doesn't fit?



PS

9b. Sort the cards into a decreasing sequence to find the card that doesn't fit.

$$\frac{60}{18} \quad 5 \frac{6}{18} \quad \frac{32}{9}$$

$$\frac{44}{9} \quad \frac{40}{9} \quad 4$$

What is the sequence decreasing by?
What is the fraction card that doesn't fit?



PS

Reasoning and Problem Solving Number Sequences

Developing

- 1a. 2 is the mistake because the sequence is increasing by $\frac{1}{5}$.
- 2a. Bella is incorrect because the sequence is increasing by $\frac{1}{3}$. The next number is $3\frac{1}{3}$.
- 3a. The sequence is increasing by $\frac{1}{6}$.
The odd card out is 5.

Expected

- 4a. $5\frac{3}{6}$ is the mistake because the other numbers are decreasing by $\frac{2}{6}$.
- 5a. Lily is correct because the sequence is increasing by $\frac{1}{3}$.
- 6a. The sequence is increasing by $\frac{5}{7}$.
The odd card out is $4\frac{3}{14}$.

Greater Depth

- 7a. $7\frac{2}{12}$ is the mistake because the sequence is increasing by $\frac{3}{12}$.
- 8a. Anya is incorrect because the sequence is decreasing by $\frac{4}{10}$. The next number is 7.
- 9a. The sequence is increasing by $\frac{3}{8}$.
The odd card out is $\frac{92}{8}$.

Reasoning and Problem Solving Number Sequences

Developing

- 1b. $3\frac{4}{4}$ is the mistake because it is the same as 4.
- 2b. Jake is correct because the sequence is increasing by $\frac{1}{6}$.
- 3b. The sequence is increasing by $\frac{1}{8}$.
The odd card out is $3\frac{8}{8}$.

Expected

- 4b. $3\frac{3}{8}$ is the mistake because the other numbers are increasing by $\frac{2}{8}$.
- 5b. Darren is incorrect because the sequence is decreasing by $\frac{2}{5}$. The next number is 3.
- 6b. The sequence is decreasing by $\frac{1}{6}$.
The odd card out is $9\frac{1}{8}$.

Greater Depth

- 7b. $\frac{65}{8}$ is the mistake because the sequence is decreasing by $\frac{3}{8}$.
- 8b. Marco is correct because the sequence is increasing by $\frac{2}{6}$.
- 9b. The sequence is decreasing by $\frac{4}{9}$.
The odd card out is $\frac{60}{18}$.