

Challenge questions

Monday 1 Feb

1) Ryan has these numbers:



a) He wants to use two cards to make an improper fraction that is as close to $4\frac{1}{3}$ as possible. What fraction should he make?

b) Ryan now wants to use two cards to make an improper fraction that is as close to 4 as possible. What should his fraction be?



2) B is double the value of A. What could the values of A, B and C be? Find all possibilities.

$$A\frac{B}{8} = \frac{C}{8}$$

a) What could the values of A, B and C be? Find all the possibilities.

b) Explain how you know that you have found all the possible solutions?

Tues 2 Feb

- 1) Ryan has created a sequence. Within the sequence, there are mixed numbers containing $\frac{1}{2}$ and $\frac{1}{4}$. However, the sequence is not increasing or decreasing in steps of $\frac{1}{4}$. What could the sequence look like? Give 3 examples.



- 2) Here are the first and last numbers in a sequence.



What could the counting step be and what could the sequence look like? Give 3 possible sequences.



1) Fill in the missing numbers.

a) $\frac{\square}{12} < \frac{7}{6}$ (Your fraction should be greater than 1.)

b) $\frac{\square}{4} < \frac{16}{8}$

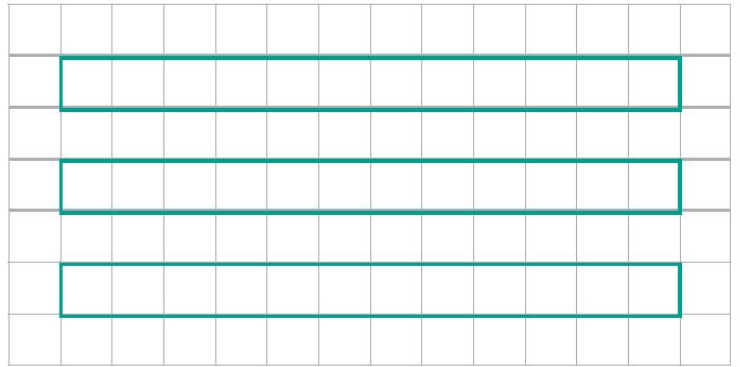
c) $\frac{26}{16} = 1 \frac{5}{\square}$

Your fraction should be

I cut each of my cakes into 4 equal pieces. I have eaten 11 pieces of cake overall.



Will



2) Will



Lucy

I cut each of my cakes into 6 equal pieces. I have eaten 15 pieces of cake overall.

Answers

Mon 1 Feb

1) a) $4\frac{1}{3} = \frac{13}{3}$
Therefore, $\frac{15}{3}$ is the closest improper fraction to $4\frac{1}{3}$.

b) $4 = \frac{16}{4}$
Therefore, $\frac{15}{4}$ is the closest improper fraction to 4.

2) $A = 1$ $A = 2$ $A = 3$
 $B = 2$ $B = 4$ $B = 6$
 $C = 10$ $C = 20$ $C = 30$
 $1\frac{2}{8} = \frac{10}{8}$ $2\frac{4}{8} = \frac{20}{8}$ $3\frac{6}{8} = \frac{30}{8}$

All the possible solutions have been found because if A were 4, B would be 8 and $\frac{8}{8}$ has a value of one whole.

Tues

1) There are many different possibilities. Three possible sequences are shown below:

$3\frac{1}{2}, 4\frac{1}{4}, 5, 5\frac{6}{8}, 6\frac{1}{2}$ (This sequence is increasing by $\frac{6}{8}$.)

$5\frac{3}{8}, 5\frac{6}{8}, 6\frac{1}{2}, 6\frac{1}{2}, 6\frac{7}{8}, 7\frac{1}{4}$ (This sequence is increasing by $\frac{3}{8}$.)

$9\frac{10}{12}, 9\frac{1}{4}, 8\frac{8}{12}, 8\frac{1}{2}, 7\frac{1}{2}$ (This sequence is decreasing by $\frac{7}{12}$.)

2) There are a number of different possibilities. Three possible sequences are shown below:

$4\frac{3}{4}, 5\frac{3}{8}, 6, 6\frac{5}{8}, 7\frac{1}{4}$ (This sequence is increasing by $\frac{5}{8}$.)

$4\frac{3}{4}, 5\frac{1}{4}, 5\frac{3}{4}, 6\frac{1}{4}, 6\frac{3}{4}, 7\frac{1}{4}$ (This sequence is increasing by $\frac{1}{2}$.)

$4\frac{3}{4}, 5\frac{7}{12}, 6\frac{5}{12}, 7\frac{1}{4}$ (This sequence is increasing by $\frac{10}{12}$.)

Wed/Thurs

1) $\frac{3}{5} > \frac{1}{6}$ $\frac{3}{5} > \frac{2}{6}$ $\frac{3}{5} > \frac{3}{6}$



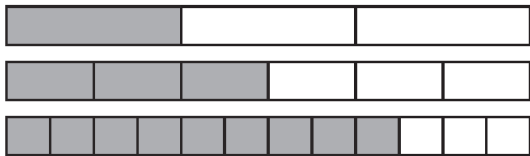
Children should have either drawn bar models to prove their answers are correct or used equivalent fractions with a common numerator or denominator.

2) The missing fraction could be $\frac{3}{10}$ or $\frac{4}{10}$ (or the equivalent fraction $\frac{2}{5}$).

It could also be any other fraction that is larger than $\frac{1}{5}$ but smaller than $\frac{1}{2}$.

3) a) Harriet's fraction could be $\frac{5}{12}, \frac{6}{12}, \frac{7}{12}$ or $\frac{8}{12}$ or any equivalent fractions whose denominator is a multiple of 3.

Children's bar models should show the fraction they have chosen compared to the two fractions given. Here is an example showing $\frac{3}{6}$.



b) Leo is wrong. Children may draw bar models to show that $\frac{5}{6}$ is larger than $\frac{9}{12}$. They may also use their knowledge of equivalent fractions to prove that $\frac{5}{6} = \frac{10}{12}$, which is larger than $\frac{9}{12}$.

Fri

1) a) $\frac{13}{12} < \frac{7}{6}$ b) $1\frac{3}{4} < \frac{16}{8}$ c) $\frac{26}{16} = 1\frac{5}{8}$ (

2) Will

Lucy

Will ate the most cake overall.

3) Accept any problems that compare fractions greater than 1.