Converting mixed numbers to improper fractions and vice versa

This is for a little background knowledge: https://www.bbc.co.uk/bitesize/topics/zhdwxnb/articles/zxcfjty

This is the video you looked at last time: https://www.youtube.com/watch?v=GpumUOiGS6Q

Tommy converts the improper fraction $\frac{27}{8}$ into a mixed number using bar models.
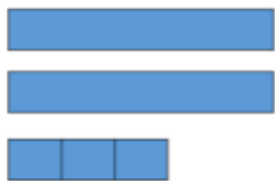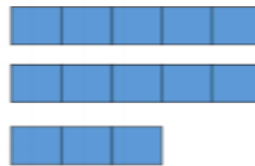

$3\frac{3}{8}$
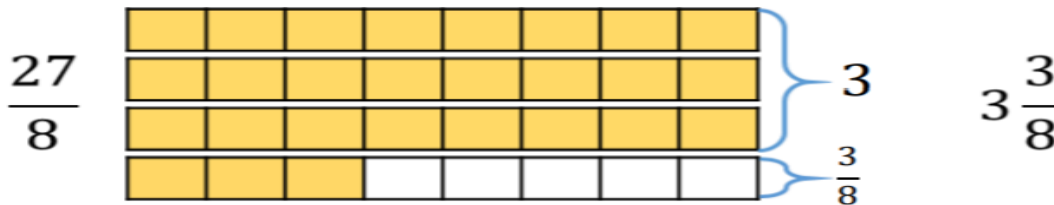
TASK 1 – Draw the bar model

Use Tommy's method to convert $\frac{25}{8}, \frac{27}{6}, \frac{18}{7}$ and $\frac{32}{4}$

Now we will look at the reverse

Jack uses bar models to convert a mixed number into an improper fraction.

$2\frac{3}{5} = \boxed{}$ wholes $+ \boxed{}$ fifths

2 wholes $= \boxed{}$ fifths

$\boxed{}$ fifths $+ \boxed{}$ fifths $= \boxed{}$ fifths

TASK 2 – Draw the bar models

Use Jack's method to convert $2\frac{1}{6}, 4\frac{1}{6}, 4\frac{1}{3}$ and $8\frac{2}{3}$

TASK 3

- $\frac{27}{5} = 5\frac{1}{5}$
- $\frac{27}{3} = 8$
- $\frac{27}{4} = 5\frac{7}{4}$
- $\frac{27}{10} = 20\frac{7}{10}$

Spot the errors

What mistakes have been made?

Can you find the correct answer?

Task 4

Three children have incorrectly converted $3\frac{2}{5}$ into an improper fraction.

Annie: $3\frac{2}{5} = \frac{6}{15}$

Mo: $3\frac{2}{5} = \frac{15}{5}$

Dexter: $3\frac{2}{5} = \frac{32}{5}$

What mistake has each child made?

Task 5

Fill in the missing numbers.

How many different possibilities can you find for each equation?

$$2\frac{\boxed{}}{8} = \frac{\boxed{}}{8}$$

$$2\frac{\boxed{}}{5} = \frac{\boxed{}}{5}$$

Compare the number of possibilities you found.

ANSWERS

TASK 1

Use Tommy's method to convert $\frac{25}{8}, \frac{27}{6}, \frac{18}{7}$ and $\frac{32}{4}$

25/8 = 24/8 + 1/8 = 3 whole ones 1/8

27/6 = 24/6 + 3/6 = 4 whole ones 3/6 = 4 ½

18/7 = 14/7 + 4/7 = 2 whole ones and 4/7

32/4 = 8 whole ones

TASK 2

Use Jack's method to convert $2\frac{1}{6}, 4\frac{1}{6}, 4\frac{1}{3}$ and $8\frac{2}{3}$

2 1/6 = 2x6/6 + 1/6 = 12/6 + 1/6 = 13/6

4 1/6 = 4x6/6 +1/6 = 24/6 + 1/6 = 25/6

4 1/3 = 4x3/3 + 1/3 = 12/3 + 1/3 = 13/3

8 2/3 = 8x3/3 + 2/3 = 24/3 + 2/3 = 26/3

Task 3

Spot the mistake

- $\frac{27}{5} = 5\frac{1}{5}$

- $\frac{27}{3} = 8$

- $\frac{27}{4} = 5\frac{7}{4}$

- $\frac{27}{10} = 20\frac{7}{10}$

What mistakes have been made?

Can you find the correct answers?

Correct answers

- $5\frac{2}{5}$ (incorrect number of fifths)

- 9 (incorrect whole)

- $6\frac{3}{4}$ (still have an improper fraction)

- $2\frac{7}{10}$ (incorrect number of wholes)

Three children have incorrectly converted $3\frac{2}{5}$ into an improper fraction.

$$3\frac{2}{5} = \frac{6}{15}$$

Annie

$$3\frac{2}{5} = \frac{15}{5}$$

Mo

$$3\frac{2}{5} = \frac{32}{5}$$

Dexter

What mistake has each child made?

Annie has multiplied the numerator and denominator by 3

Mo has multiplied the correctly but then forgotten to add on the extra 2 parts.

Dexter has just placed 3 in front of the numerator.

Fill in the missing numbers.

How many different possibilities can you find for each equation?

$$2\frac{\square}{8} = \frac{\square}{8}$$

$$2\frac{\square}{5} = \frac{\square}{5}$$

Compare the number of possibilities you found.

$2\frac{1}{8} = \frac{17}{8}$ $2\frac{2}{8} = \frac{18}{8}$

$2\frac{3}{8} = \frac{19}{8}$ $2\frac{4}{8} = \frac{20}{8}$

$2\frac{5}{8} = \frac{21}{8}$ $2\frac{6}{8} = \frac{22}{8}$

$2\frac{7}{8} = \frac{23}{8}$

There will be 4 solutions for fifths.

Teacher notes: Encourage children to make generalisations that the number of solutions is one less than the denominator.