

Lesson 5 – Fractions - Mixed Numbers to Improper Fractions

NC Objective:

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 $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$]

Resources needed:

Differentiated Sheets
Teaching Slides

Vocabulary:

Improper fractions, mixed numbers, convert, represent, quarter, halves, eighths, fifths, whole, numerator, denominator, multiply, add

Children now convert from mixed numbers to improper fractions using concrete and pictorial methods to understand the abstract method. Ensure children always write their working alongside the concrete and pictorial representations so they can see the clear links to the abstract.

Key Questions:

- How many quarters/halves/eighths/fifths are there in a whole?
- How does multiplication support us in converting from mixed numbers to improper fractions?
- Can you explain the steps in converting an improper fraction to a mixed number?
- Use the vocabulary: numerator, denominator, multiply, add.
- How could we use the previous bar model to help?

★ Working Towards

★★ Working Within

★★★ Greater Depth

Children continue to convert from mixed numbers to improper fractions using concrete and pictorial methods to understand the abstract method.

They can show their full bars in their maths books so they can see the mixed number compared to the improper fraction.

Children continue to convert from mixed numbers to improper fractions using concrete and pictorial methods to understand the abstract method.

On this sheet, they draw both bar models to show a mixed number and improper fraction that represent the abstract fraction given to them.

On this sheet, children use their reasoning skills to find the missing parts to the bar models.

Reasoning & Problem Solving

Some digits have been covered in paint. How many different possibilities can you find for each equation?

Spot and explain the mistakes.

Compare the number of possibilities you found. What do you notice?

Can you find the correct answers? Prove your answers using cubes.

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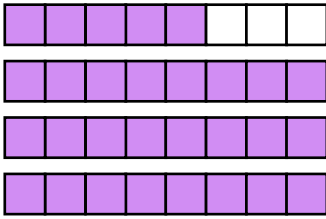
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Compare the number of possibilities you found. What do you notice?

Can you find the correct answers? Prove your answers using cubes.



Convert mixed numbers into improper fractions using bar models.

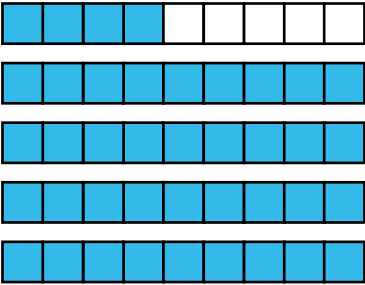


$$3\frac{5}{8} = 3 \text{ wholes} + 5 \text{ eighths.}$$

$$3 \text{ wholes} = 24 \text{ eighths.}$$

$$24 \text{ eighths} + 5 \text{ eighths} = 29 \text{ eighths.}$$

$$3\frac{5}{8} \text{ is the same as } \frac{\boxed{}}{\boxed{}}$$

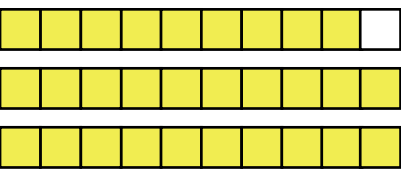


$$4\frac{4}{9} = 4 \text{ wholes} + 4 \text{ ninths.}$$

$$4 \text{ wholes} = \boxed{} \text{ ninths.}$$

$$36 \text{ ninths} + 4 \text{ ninths} = \boxed{} \text{ ninths.}$$

$$4\frac{4}{9} \text{ is the same as } \frac{\boxed{}}{\boxed{}}$$



$$2\frac{9}{10} = 2 \text{ wholes} + 9 \text{ tenths.}$$

$$2 \text{ wholes} = \boxed{} \text{ tenths.}$$

$$\boxed{} \text{ tenths} + \boxed{} \text{ tenths} = \boxed{} \text{ tenths.}$$

$$2\frac{9}{10} \text{ is the same as } \frac{\boxed{}}{\boxed{}}$$

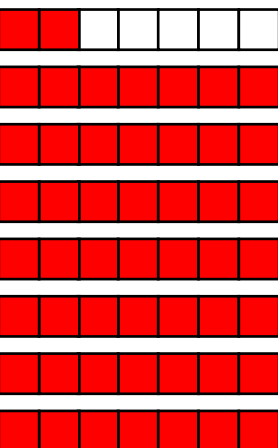


$$5\frac{3}{8} = \boxed{} \text{ wholes} + \boxed{} \text{ eighths.}$$

$$\boxed{} \text{ wholes} = \boxed{} \text{ eighths.}$$

$$\boxed{} \text{ eighths} + \boxed{} \text{ eighths} = \boxed{} \text{ eighths.}$$

$$5\frac{3}{8} \text{ is the same as } \frac{\boxed{}}{\boxed{}}$$



$$7\frac{2}{7} = \boxed{} \text{ wholes} + \boxed{} \text{ sevenths.}$$

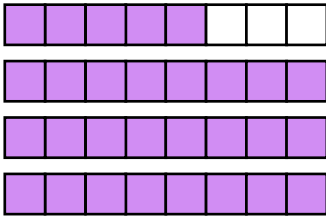
$$\boxed{} \text{ wholes} = \boxed{} \text{ sevenths.}$$

$$\boxed{} \text{ sevenths} + \boxed{} \text{ sevenths} = \boxed{} \text{ sevenths.}$$

$$7\frac{2}{7} \text{ is the same as } \frac{\boxed{}}{\boxed{}}$$



Convert mixed numbers into improper fractions using bar models.

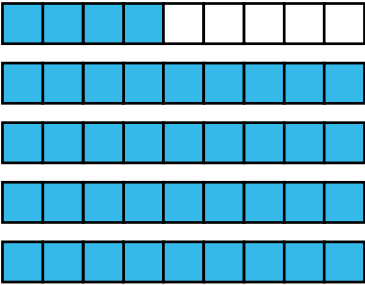


$$3\frac{5}{8} = 3 \text{ wholes} + 5 \text{ eighths.}$$

$$3 \text{ wholes} = 24 \text{ eighths.}$$

$$24 \text{ eighths} + 5 \text{ eighths} = 29 \text{ eighths.}$$

$$3\frac{5}{8} \text{ is the same as } \frac{29}{8}$$

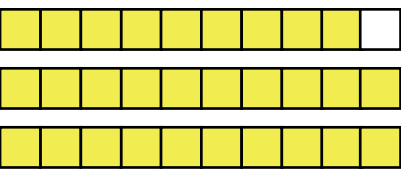


$$4\frac{4}{9} = 4 \text{ wholes} + 4 \text{ ninths.}$$

$$4 \text{ wholes} = 36 \text{ ninths.}$$

$$36 \text{ ninths} + 4 \text{ ninths} = 40 \text{ ninths.}$$

$$4\frac{4}{9} \text{ is the same as } \frac{40}{9}$$

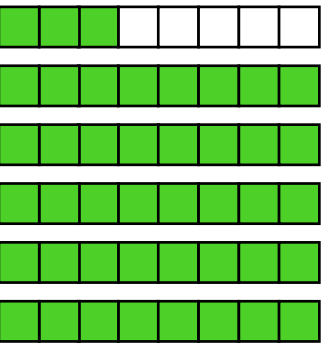


$$2\frac{9}{10} = 2 \text{ wholes} + 9 \text{ tenths.}$$

$$2 \text{ wholes} = 20 \text{ tenths.}$$

$$20 \text{ tenths} + 9 \text{ tenths} = 29 \text{ tenths.}$$

$$2\frac{9}{10} \text{ is the same as } \frac{29}{10}$$

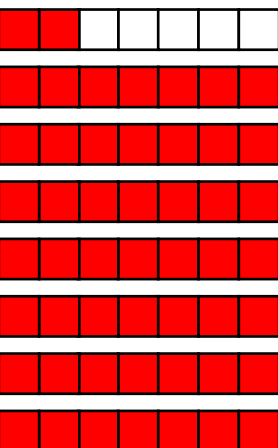


$$5\frac{3}{8} = 5 \text{ wholes} + 3 \text{ eighths.}$$

$$5 \text{ wholes} = 40 \text{ eighths.}$$

$$40 \text{ eighths} + 3 \text{ eighths} = 43 \text{ eighths.}$$

$$5\frac{3}{8} \text{ is the same as } \frac{43}{8}$$



$$7\frac{2}{7} = 7 \text{ wholes} + 2 \text{ sevenths.}$$

$$7 \text{ wholes} = 49 \text{ sevenths.}$$

$$49 \text{ sevenths} + 2 \text{ sevenths} = 51 \text{ sevenths.}$$

$$7\frac{2}{7} \text{ is the same as } \frac{51}{7}$$



Convert mixed numbers into improper fractions using bar models.

$1\frac{2}{5}$

is the same as

$3\frac{7}{8}$

is the same as

$8\frac{2}{4}$

is the same as

$6\frac{4}{9}$

is the same as

$5\frac{1}{7}$

is the same as

$4\frac{5}{6}$

is the same as

$2\frac{1}{2}$

is the same as

$7\frac{7}{9}$

is the same as

1 whole and five sixths is the same
as

3 wholes and one fourth is the same
as

4 wholes and three ninths is the
same as

5 wholes and two elevenths is the
same as

8 wholes and seven eighths is the
same as

6 wholes and one half is the same
as

2 wholes and four sevenths is the
same as

9 wholes and one eighth is the
same as



Convert mixed numbers into improper fractions using bar models.

$1\frac{2}{5}$ is the same as

$$\frac{7}{5}$$

$3\frac{7}{8}$ is the same as

$$\frac{31}{8}$$

$8\frac{2}{4}$ is the same as

$$\frac{34}{4}$$

$6\frac{4}{9}$ is the same as

$$\frac{58}{9}$$

$5\frac{1}{7}$ is the same as

$$\frac{36}{7}$$

$4\frac{5}{6}$ is the same as

$$\frac{29}{6}$$

$2\frac{1}{2}$ is the same as

$$\frac{5}{2}$$

$7\frac{7}{9}$ is the same as

$$\frac{70}{9}$$

1 whole and five sixths is the same as

$$\frac{11}{6}$$

3 wholes and one fourth is the same as

$$\frac{13}{4}$$

4 wholes and three ninths is the same as

$$\frac{39}{9}$$

5 wholes and two elevenths is the same as

$$\frac{57}{11}$$

8 wholes and seven eighths is the same as

$$\frac{71}{8}$$

6 wholes and one half is the same as

$$\frac{13}{2}$$

2 wholes and four sevenths is the same as

$$\frac{18}{7}$$

9 wholes and one eighth is the same as

$$\frac{73}{8}$$



Some bar models have been covered in paint.
Determine the correct bar model, mixed number and corresponding improper fraction.

Some **digits** have been covered in paint.
Determine the correct mixed number and corresponding improper fraction.



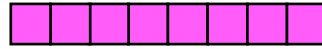
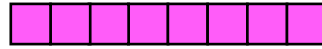
Some bar models have been covered in paint.

Determine the correct bar model, mixed number and corresponding improper fraction.



$$7\frac{5}{9}$$

$$\frac{68}{9}$$



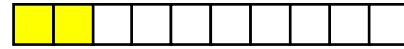
$$5\frac{4}{8}$$

$$\frac{44}{8}$$



$$9\frac{5}{11}$$

$$\frac{104}{11}$$



$$8\frac{2}{10}$$

$$\frac{82}{10}$$

Some **digits** have been covered in paint.

Determine the correct mixed number and corresponding improper fraction.

$$8\frac{9}{10} \text{ is the same as } \frac{89}{10}$$

$$4\frac{2}{7} \text{ is the same as } \frac{30}{7}$$



Two children have incorrectly converted $2\frac{4}{5}$ into an improper fraction.

Zach

$$2\frac{4}{5} = \frac{8}{5}$$



Leanna

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

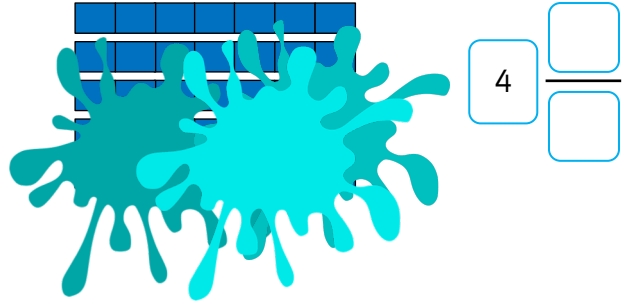


What mistake has each child made?
Explain.

Tia spilt paint on her homework.
She is trying to remember what could be below.



There could be $\frac{20}{7}$.



Do you agree with her?
Explain your reasons.



Two children have incorrectly converted $2\frac{4}{5}$ into an improper fraction.

Zach

$$2\frac{4}{5} = \frac{8}{5}$$



Leanna

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

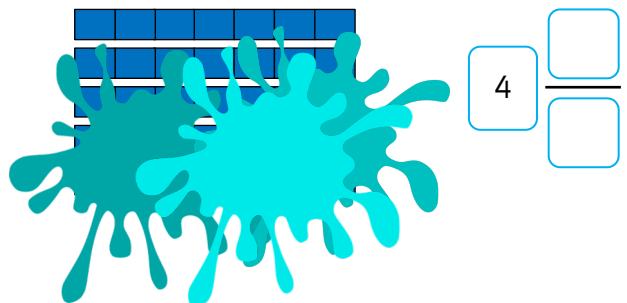


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Two children have incorrectly converted $2\frac{4}{5}$ into an improper fraction.

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$$2\frac{4}{5} = \frac{8}{5}$$



Leanna

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



What mistake has each child made?
Explain.

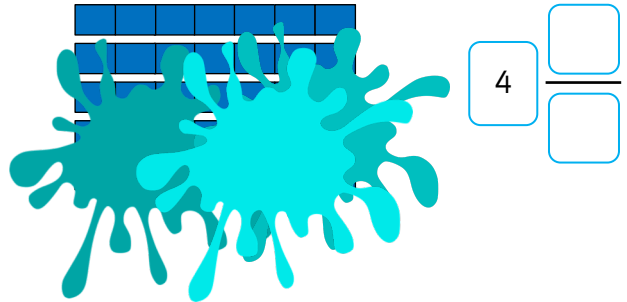
Zach has multiplied the numerator by 2.
Leanna has multiplied the denominator by 2.

$$2\frac{4}{5} = \frac{14}{5}$$

Tia spilt paint on her homework.
She is trying to remember what could be below.



There could be $\frac{20}{7}$.



Do you agree with her?
Explain your reasons.

I disagree with Tia.
There are 7 parts so the numerator must be greater than $28 = 4 \times 7$.



Two children have incorrectly converted $2\frac{4}{5}$ into an improper fraction.

Zach

$$2\frac{4}{5} = \frac{8}{5}$$



Leanna

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



What mistake has each child made?
Explain.

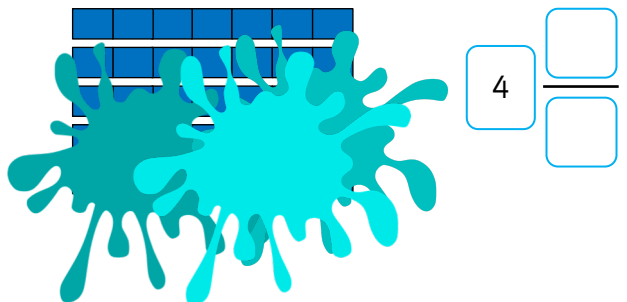
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Leanna has multiplied the denominator by 2.

$$2\frac{4}{5} = \frac{14}{5}$$

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There could be $\frac{20}{7}$.



Do you agree with her?
Explain your reasons.

I disagree with Tia.
There are 7 parts so the numerator must be greater than $28 = 4 \times 7$.



Three children have incorrectly converted $3\frac{4}{5}$ into an improper fraction.

Zach

$$3\frac{4}{5} = \frac{15}{5}$$

Leanna

$$3\frac{4}{5} = \frac{12}{15}$$

Esin

$$3\frac{4}{5} = \frac{34}{5}$$

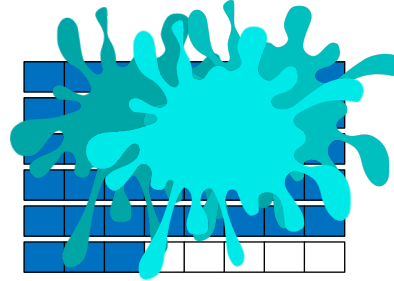


What mistake has each child made?
Explain.

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She is trying to remember what could be below.



There could be $\frac{15}{8}$.



Do you agree with her?
Explain your reasons.



Three children have incorrectly converted $3\frac{4}{5}$ into an improper fraction.

Zach

$$3\frac{4}{5} = \frac{15}{5}$$

Leanna

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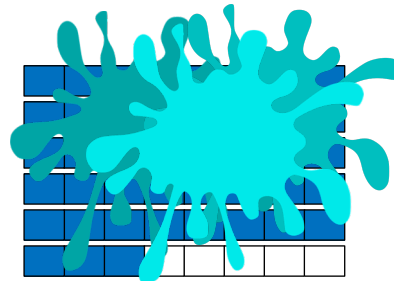


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There could be $\frac{15}{8}$.



Do you agree with her?
Explain your reasons.



Three children have incorrectly converted $3\frac{4}{5}$ into an improper fraction.

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$$3\frac{4}{5} = \frac{15}{5}$$

Leanna

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Esin

$$3\frac{4}{5} = \frac{34}{5}$$



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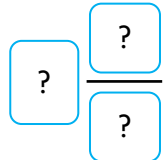
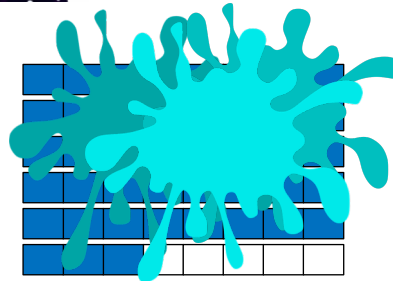
Zach has multiplied correctly but then forgotten to add on the extra 4 parts.

Leanna has multiplied the numerator and denominator by 3.
Esin has just placed 3 in front of the numerator.

Tia spilt paint on her homework.
She is trying to remember what could be below.



There could be $\frac{15}{8}$.



Do you agree with her?
Explain your reasons.

I disagree with Tia.
The fraction represented is $5\frac{3}{8} = \frac{43}{8}$



Three children have incorrectly converted $3\frac{4}{5}$ into an improper fraction.

Zach

$$3\frac{4}{5} = \frac{15}{5}$$

Leanna

$$3\frac{4}{5} = \frac{12}{15}$$



Esin

$$3\frac{4}{5} = \frac{34}{5}$$



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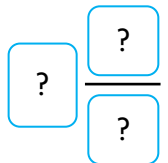
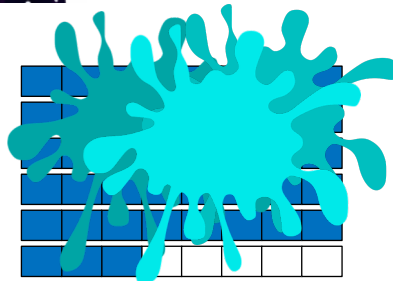
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There could be $\frac{15}{8}$.



Do you agree with her?
Explain your reasons.

I disagree with Tia.
The fraction represented is $5\frac{3}{8} = \frac{43}{8}$



Three children have incorrectly converted four and two ninths into an improper fraction.

$$\frac{8}{9}$$

Zach



$$\frac{8}{36}$$

Leanna



$$\frac{42}{9}$$

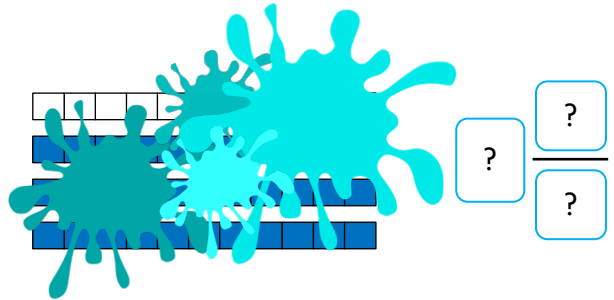
Esin

What mistake has each child made?
Explain.

Tia spilt paint on her homework.
She is trying to remember what could be below.



There could be forty elevenths.



Do you agree with her?
Explain your reasons.



Three children have incorrectly converted four and two ninths into an improper fraction.

$$\frac{8}{9}$$

Zach



$$\frac{8}{36}$$

Leanna



$$\frac{42}{9}$$

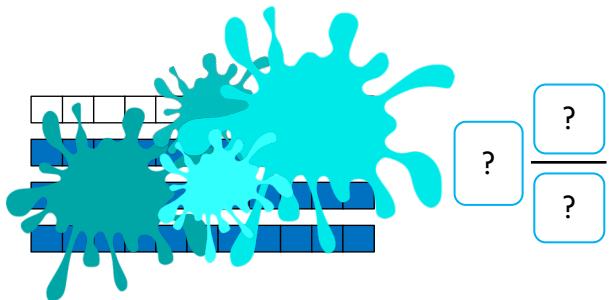
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She is trying to remember what could be below.



There could be forty elevenths.



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Explain your reasons.



Three children have incorrectly converted four and two ninths into an improper fraction.

$$\frac{8}{9}$$

Zach



$$\frac{8}{36}$$

Leanna



Esin

$$4\frac{2}{9}$$

What mistake has each child made?
Explain.

They have converted the fraction $4\frac{2}{9}$

Zach has multiplied the numerator by 4.

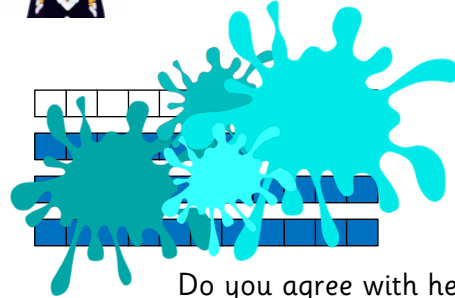
Leanna has multiplied the numerator and denominator by 4.

Esin has just placed 4 in front of the numerator.

Tia spilt paint on her homework.
She is trying to remember what could be below.



There could be forty elevenths.



$$\frac{?}{?}$$

Do you agree with her?
Explain your reasons.

I disagree with Tia. She thinks that represented fraction is:

$$3\frac{7}{11}$$

She has written the numerator (7) incorrectly. We can see that 5 parts of 11 in the first whole are not coloured. It means that numerator could be 1, 2, 3, 4, 5 or 6 (not 7, 8, 9, 10 or 11).



Three children have incorrectly converted four and two ninths into an improper fraction.

$$\frac{8}{9}$$

Zach



$$\frac{8}{36}$$

Leanna



Esin

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What mistake has each child made?
Explain.

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Zach has multiplied the numerator by 4.

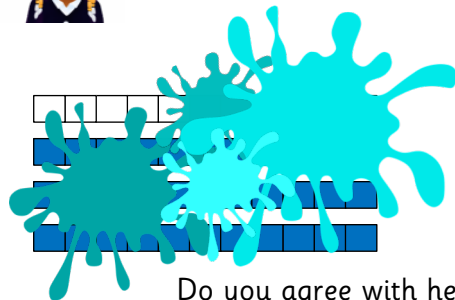
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