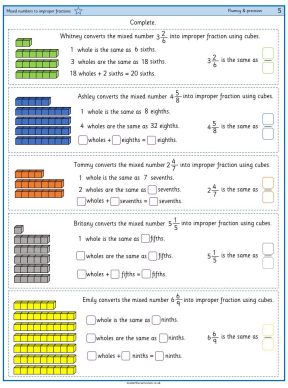
Lesson 4 – Fractions - Mixed Numbers to Improper Fractions

NC Objective:	Resources needed:	Vocabulary:
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 1/5]	Differentiated Sheets Teaching Slides	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

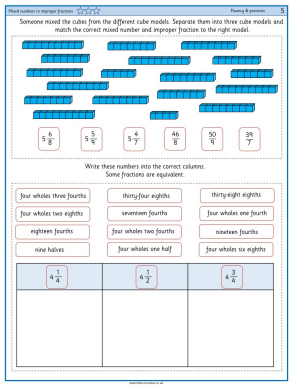


On this sheet, they will use the pictorial image and make the image using cubes.

★★ Working Within

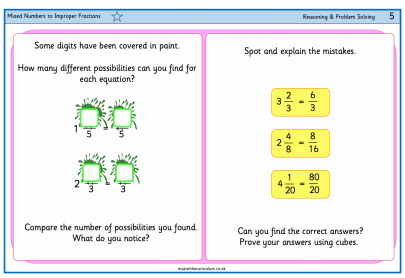
On this sheet, they will use cubes to represent the mixed number as an improper fraction. They are to write their solution alongside the concrete and pictorial representations so they can see the clear links to the abstract.

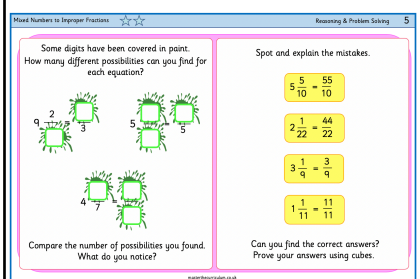
★★★ Greater Depth

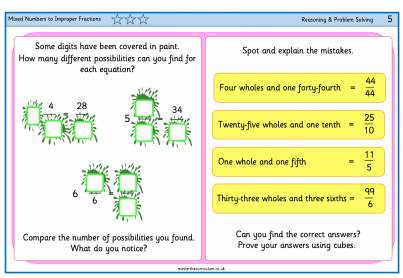


On this sheet, they use their problem solving and fluency skills to figure out what the pictorial representation should look like. They draw the correct answer in their books.

Reasoning & Problem Solving

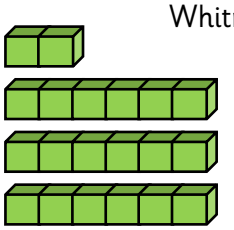






Complete the following.

Whitney converts the mixed number $3\frac{2}{6}$ into an improper fraction using cubes.



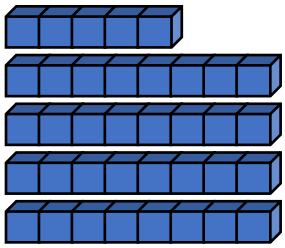
1 whole is the same as 6 sixths.

3 wholes are the same as 18 sixths.

18 sixths + 2 sixths = 20 sixths.

$3\frac{2}{6}$ is the same as $\frac{\square}{\square}$

Ashley converts the mixed number $4\frac{5}{8}$ into an improper fraction using cubes.



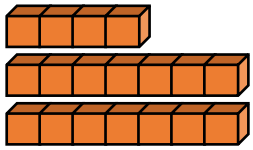
1 whole is the same as 8 eighths.

4 wholes are the same as 32 eighths.

$\square$ eighths + $\square$ eighths = $\square$ eighths.

$4\frac{5}{8}$ is the same as $\frac{\square}{\square}$

Tommy converts the mixed number $2\frac{4}{7}$ into an improper fraction using cubes.



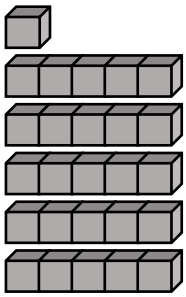
1 whole is the same as 7 sevenths.

2 wholes are the same as $\square$ sevenths.

$\square$ sevenths + $\square$ sevenths = $\square$ sevenths.

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

Britany converts the mixed number $5\frac{1}{5}$ into an improper fraction using cubes.



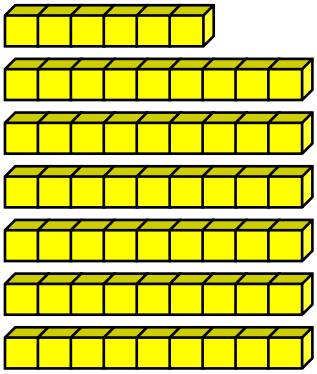
1 whole is the same as $\square$ fifths.

$\square$ wholes are the same as $\square$ fifths.

$\square$ fifths + $\square$ fifths = $\square$ fifths.

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

Emily converts the mixed number $6\frac{6}{9}$ into an improper fraction using cubes.



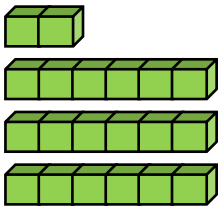
$\square$ whole is the same as $\square$ ninths.

$\square$ wholes are the same as $\square$ ninths.

$\square$ ninths + $\square$ ninths = $\square$ ninths.

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

Complete the following.



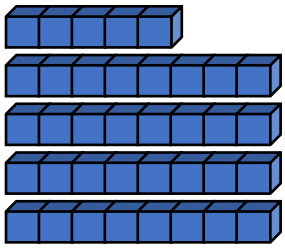
Whitney converts the mixed number $3\frac{2}{6}$ into an improper fraction using cubes.

1 whole is the same as 6 sixths.

3 wholes are the same as 18 sixths.

18 sixths + 2 sixths = 20 sixths.

$3\frac{2}{6}$ is the same as $\frac{20}{6}$



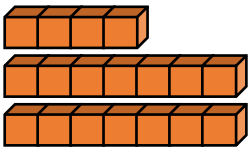
Ashley converts the mixed number $4\frac{5}{8}$ into an improper fraction using cubes.

1 whole is the same as 8 eighths.

4 wholes are the same as 32 eighths.

32 eighths + 5 eighths = 37 eighths.

$4\frac{5}{8}$ is the same as $\frac{37}{8}$



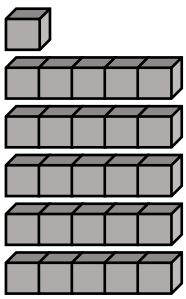
Tommy converts the mixed number $2\frac{4}{7}$ into an improper fraction using cubes.

1 whole is the same as 7 sevenths.

2 wholes are the same as 14 sevenths.

14 sevenths + 4 sevenths = 18 sevenths.

$2\frac{4}{7}$ is the same as $\frac{18}{7}$



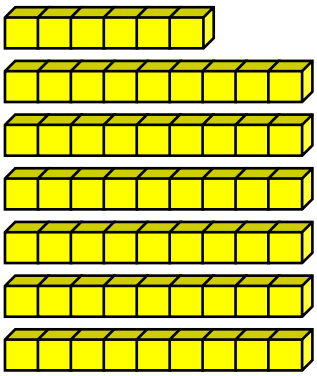
Britany converts the mixed number $5\frac{1}{5}$ into an improper fraction using cubes.

1 whole is the same as 5 fifths.

5 wholes are the same as 25 fifths.

25 fifths + 1 fifths = 26 fifths.

$5\frac{1}{5}$ is the same as $\frac{26}{5}$



Emily converts the mixed number $6\frac{6}{9}$ into an improper fraction using cubes.

1 whole is the same as 9 ninths.

6 wholes are the same as 54 ninths.

54 ninths + 6 ninths = 60 ninths.

$6\frac{6}{9}$ is the same as $\frac{60}{9}$

Convert the mixed numbers into improper fractions using cubes.

$2\frac{3}{8}$ is the same as 

$4\frac{8}{9}$ is the same as 

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

$7\frac{3}{4}$ is the same as 

$9\frac{2}{3}$ is the same as 

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

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

$3\frac{5}{6}$ is the same as 

3 wholes six ninths is the same as 

4 wholes five sevenths is the same as 

8 wholes four sixths is the same as 

5 wholes three fourths is the same as 

6 wholes eight ninths is the same as 

1 wholes two fifths is the same as 

2 wholes one sixths is the same as 

7 wholes seven eighths is the same as 

Convert the mixed numbers into improper fractions using cubes.

$2\frac{3}{8}$ is the same as $\frac{19}{8}$

$4\frac{8}{9}$ is the same as $\frac{44}{9}$

$6\frac{4}{5}$ is the same as $\frac{34}{5}$

$7\frac{3}{4}$ is the same as $\frac{31}{4}$

$9\frac{2}{3}$ is the same as $\frac{29}{3}$

$8\frac{3}{7}$ is the same as $\frac{59}{7}$

$5\frac{1}{2}$ is the same as $\frac{11}{2}$

$3\frac{5}{6}$ is the same as $\frac{23}{6}$

3 wholes and six ninths is the same as $\frac{33}{9}$

4 wholes and five sevenths is the same as $\frac{33}{7}$

8 wholes and four sixths is the same as $\frac{52}{6}$

5 wholes and three fourths is the same as $\frac{23}{4}$

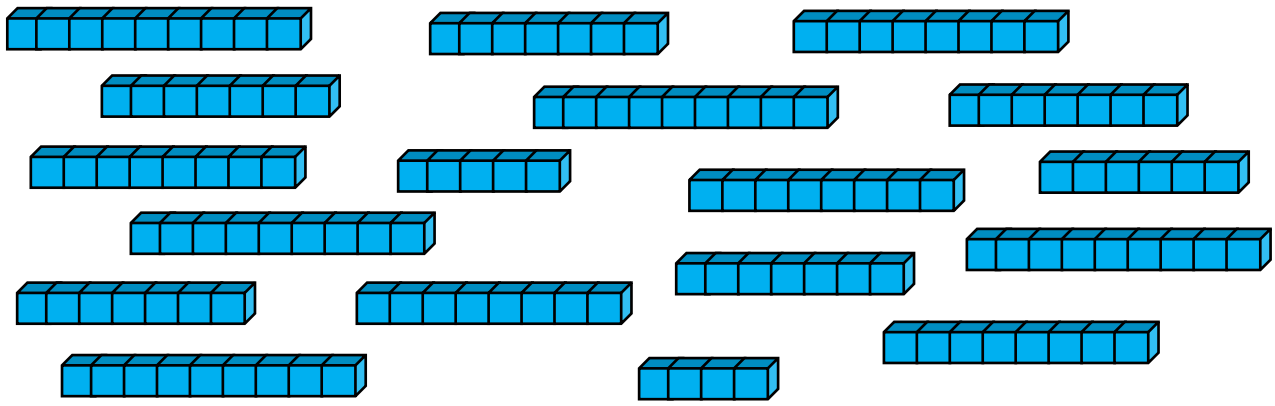
6 wholes and eight ninths is the same as $\frac{62}{9}$

1 whole and two fifths is the same as $\frac{7}{5}$

2 wholes and one sixth is the same as $\frac{13}{6}$

7 wholes and seven eighths is the same as $\frac{63}{8}$

Someone mixed the cubes from different cube models. Separate them into three cube models and match the correct mixed number and improper fraction to the right model.



$5\frac{6}{8}$ $5\frac{5}{9}$ $5\frac{4}{7}$ $\frac{46}{8}$ $\frac{50}{9}$ $\frac{39}{7}$

Write these numbers into the correct columns.
Some fractions are equivalent.

four wholes three fourths	thirty-four eighths	thirty-eight eighths
four wholes two eighths	seventeen fourths	four wholes one fourth
eighteen fourths	four wholes two fourths	nineteen fourths
nine halves	four wholes one half	four wholes six eighths

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

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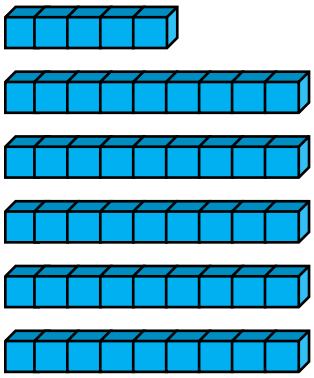
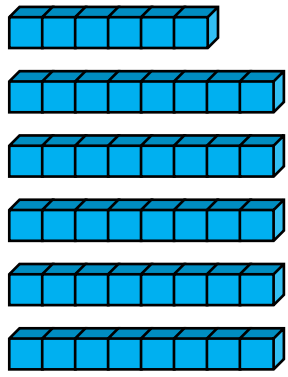
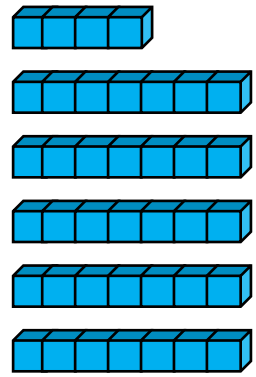






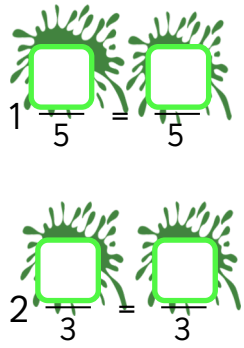
$5\frac{5}{9}$ $\frac{50}{9}$ $5\frac{6}{8}$ $\frac{46}{8}$ $5\frac{4}{7}$ $\frac{39}{7}$

Write these numbers into the correct columns.
Some fractions are equivalent.

$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$
four wholes and one fourth	four wholes and one half	four wholes and three fourths
seventeen fourths	nine halves	nineteen fourths
four wholes and two eighths	four wholes and two fourths	four wholes and six eighths
thirty-four eighths	eighteen fourths	thirty-eight eighths

Some digits have been covered in paint.

How many different possibilities can you find for each equation?



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

Spot and explain the mistakes.

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

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

$4\frac{1}{20} = \frac{80}{20}$

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

Mixed Numbers to Improper Fractions ☆ Reasoning & Problem Solving 5

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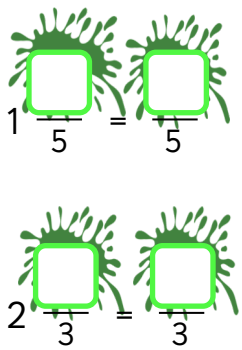

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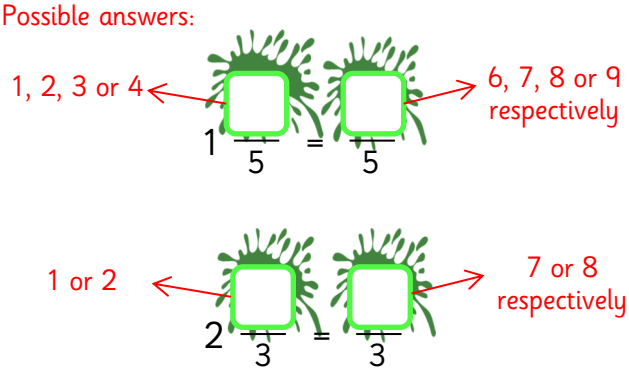
Possible answers:



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

The number of solutions is one less than the denominator.

Spot and explain the mistakes.

$3\frac{2}{3} = \frac{6}{3}$ $\frac{11}{3}$ (the numerator has been multiplied by 3)

$2\frac{4}{8} = \frac{8}{16}$ $\frac{20}{8}$ (the numerator and denominator have been multiplied by 2)

$4\frac{1}{20} = \frac{80}{20}$ $\frac{81}{20}$ (there should be a 1 part added to the numerator)

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

Mixed Numbers to Improper Fractions ☆ Answers Reasoning & Problem Solving 5

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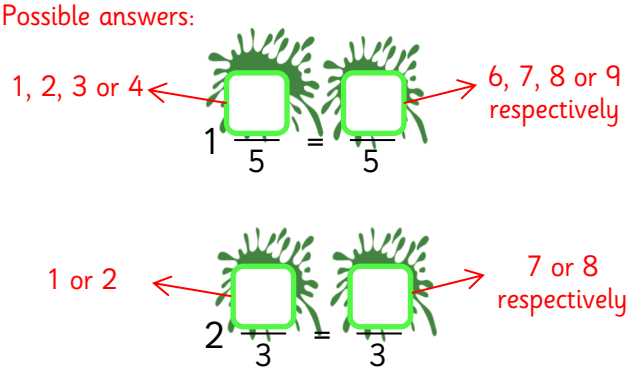
How many different possibilities can you find for each equation?

Possible answers:



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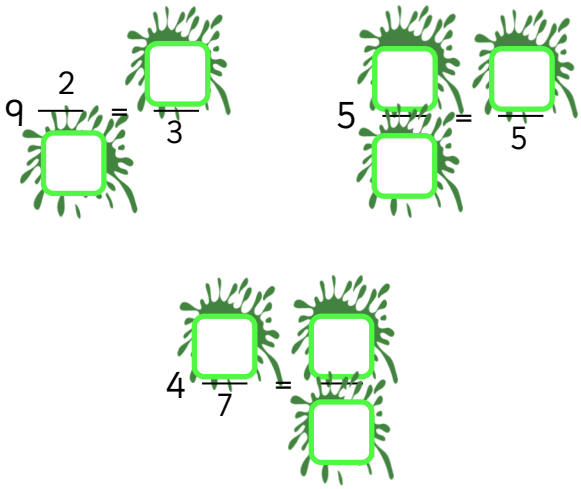

Compare the number of possibilities you found.
What do you notice?

Spot and explain the mistakes.

$5\frac{5}{10} = \frac{55}{10}$

$2\frac{1}{22} = \frac{44}{22}$

$3\frac{1}{9} = \frac{3}{9}$

$1\frac{1}{11} = \frac{11}{11}$

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

Mixed Numbers to Improper Fractions ☆☆ Reasoning & Problem Solving 5

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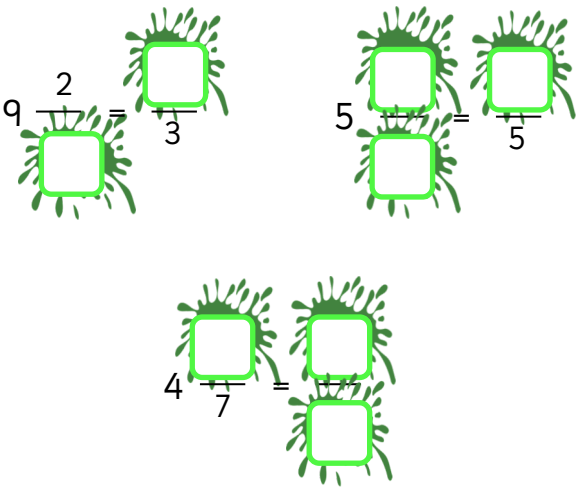
How many different possibilities can you find for each equation?



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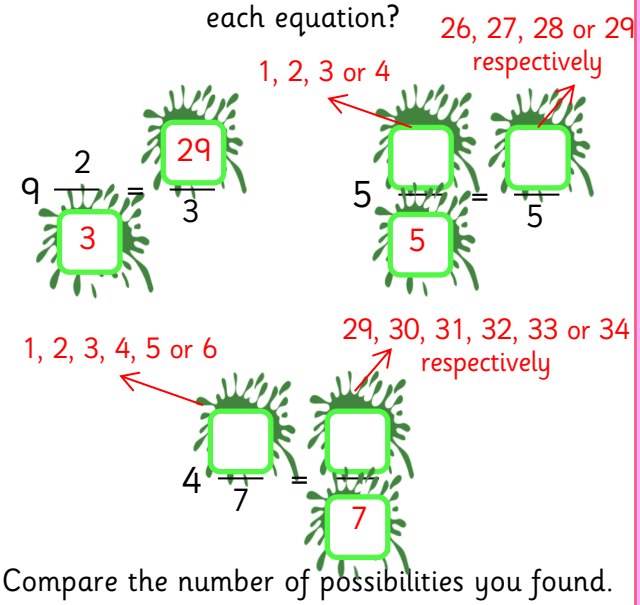

Compare the number of possibilities you found.
What do you notice?

The number of solutions is one less than the denominator except in the first example.

Spot and explain the mistakes.

$5\frac{5}{10} = \frac{55}{10}$ There is no mistake

$2\frac{1}{22} = \frac{44}{22}$ $\frac{20}{22}$ (there should be a 1 part added to the numerator)

$3\frac{1}{9} = \frac{3}{9}$ $\frac{28}{9}$ (the number of wholes was written at the place of the numerator)

$1\frac{1}{11} = \frac{11}{11}$ $\frac{12}{11}$ (there should be a 1 part added to the numerator)

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

Mixed Numbers to Improper Fractions ☆☆ Answers Reasoning & Problem Solving 5

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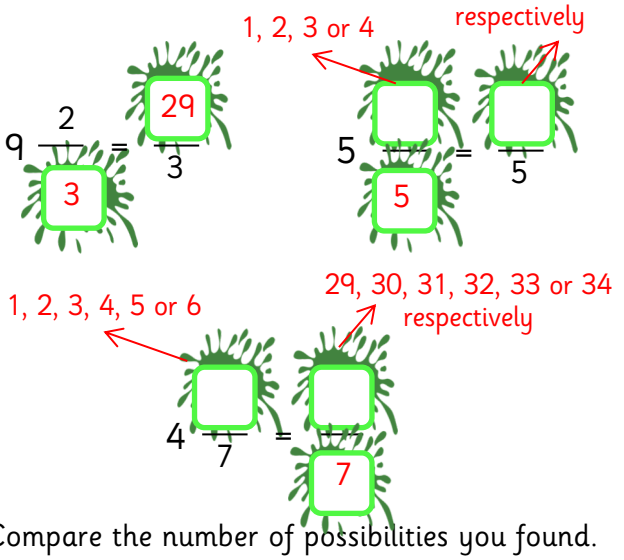
How many different possibilities can you find for each equation?



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The number of solutions is one less than the denominator except in the first example.

Spot and explain the mistakes.

$5\frac{5}{10} = \frac{55}{10}$ There is no mistake

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$1\frac{1}{11} = \frac{11}{11}$ $\frac{12}{11}$ (there should be a 1 part added to the numerator)

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

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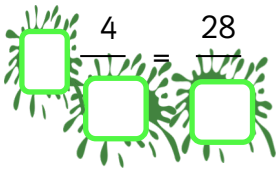
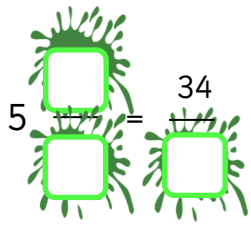
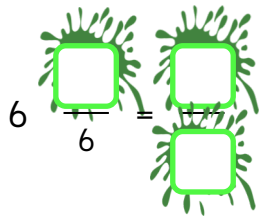
How many different possibilities can you find for each equation?







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

Spot and explain the mistakes.

Four wholes and one forty-fourth = $\frac{44}{44}$

Twenty-five wholes and one tenth = $\frac{25}{10}$

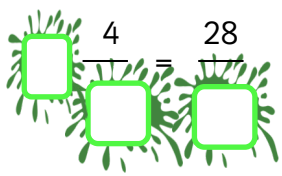
One whole and one fifth = $\frac{11}{5}$

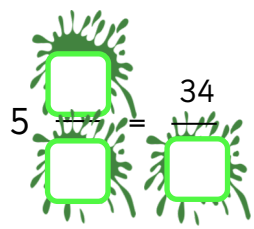
Thirty-three wholes and three sixths = $\frac{99}{6}$

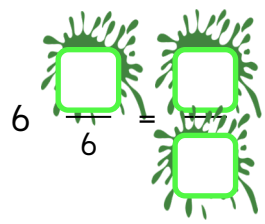
Can you find the correct answers?
Prove your answers using cubes.

Mixed Numbers to Improper Fractions ☆☆☆ Reasoning & Problem Solving 5

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







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

Spot and explain the mistakes.

Four wholes and one forty-fourth = $\frac{44}{44}$

Twenty-five wholes and one tenth = $\frac{25}{10}$

One whole and one fifth = $\frac{11}{5}$

Thirty-three wholes and three sixths = $\frac{99}{6}$

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

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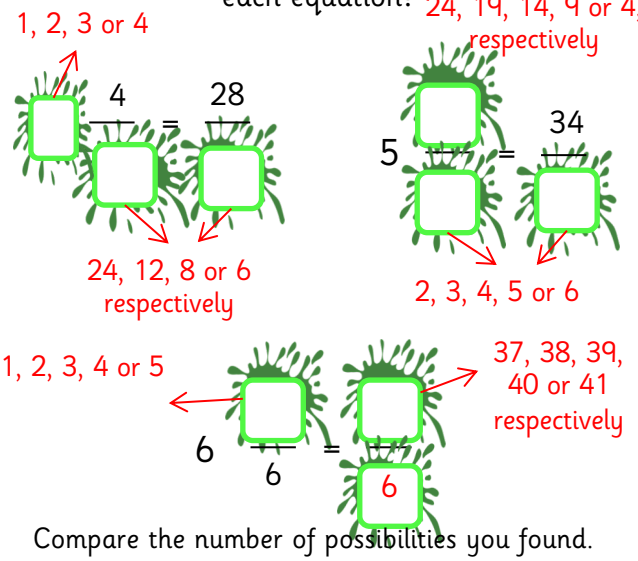
Some digits have been covered in paint.
How many different possibilities can you find for each equation?



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

In the 1st and the 2nd examples, the number of solutions depends on the numerators (28 and 34). In the 3rd example, the number of solutions is one less than the denominator.

Spot and explain the mistakes.

Four wholes and one forty-fourth	=	$\frac{44}{44}$	$\frac{177}{44}$
Twenty-five wholes and one tenth	=	$\frac{25}{10}$	$\frac{251}{10}$
One whole and one fifth	=	$\frac{11}{5}$	$\frac{6}{5}$
Thirty-three wholes and three sixths	=	$\frac{99}{6}$	$\frac{201}{6}$

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

Mixed Numbers to Improper Fractions ☆☆☆ Answers Reasoning & Problem Solving 5

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

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

In the 1st and the 2nd examples, the number of solutions depends on the numerators (28 and 34). In the 3rd example, the number of solutions is one less than the denominator.

Spot and explain the mistakes.

Four wholes and one forty-fourth = 44/44 177/44

Twenty-five wholes and one tenth = 25/10 251/10

One whole and one fifth = 11/5 6/5

Thirty-three wholes and three sixths = 99/6 201/6

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

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