

Lesson 1 – Fractions - Equivalent Fractions

NC Objective:

Identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths

Resources needed:

Differentiated Sheets
Teaching Slides

Vocabulary:

Equivalent fractions, models, concrete representations, multiplication, division

Children explore equivalent fractions using models and concrete representations. They use models to make the link to multiplication and division. Children then apply the abstract method to find equivalent fractions. It is important children have the conceptual understanding before moving on to just using an abstract method.

Key Questions:

What equivalent fractions can we find by folding the paper?

How can we record these?

What is the same and what is different about the numerators and denominators in the equivalent fractions?

How does multiplication and division help us find equivalent fractions?

Where can we see this in our model?

★ Working Towards

★★ Working Within

★★★ Greater Depth

On this sheet, they will use pictorial images where they can visually see the representations to determine the equivalent fractions. They work with simple shapes

On this sheet, they will use pictorial images where they can colour in the images to then determine the equivalent fraction.

On this sheet, they will create concrete representations to determine equivalent fractions.

Reasoning & Problem Solving

Equivalent Fractions ★ Reasoning & Problem Solving 5

Tia, Zach and Esin have equivalent fractions.

Tia: $\frac{4}{A}$ Zach: $\frac{6}{15}$ Esin: $\frac{B}{90}$

Here is Malachi's method to find equivalent fractions.

Whatever you do to the numerator, you do to the denominator.

He found these:

$\frac{4}{6} = \frac{6}{9}$ $\frac{4}{6} = \frac{2}{3}$ $\frac{4}{6} = \frac{1}{3}$ $\frac{4}{6} = \frac{8}{12}$

Find the value of A and B. Explain your method. What do you notice about the denominators?

Are all Malachi's fractions equivalent? Does his method work? Explain your reasons.

Equivalent Fractions ★★ Reasoning & Problem Solving 5

Tia, Zach and Esin have equivalent fractions.

Tia: $\frac{6}{A}$ Zach: $\frac{B}{C}$ Esin: $\frac{30}{40}$

Here is Malachi's method to find equivalent fractions.

Whatever you do to the numerator, you do to the denominator.

He found these:

$\frac{8}{12} = \frac{12}{16}$ $\frac{8}{12} = \frac{2}{3}$ $\frac{8}{12} = \frac{40}{60}$ $\frac{8}{12} = \frac{4}{8}$

$A + B = 23$

Find the value of A, B and C. Explain your method. What do you notice about the denominators?

Are all Malachi's fractions equivalent? Does his method work? Explain your reasons.

Equivalent Fractions ★★★ Reasoning & Problem Solving 5

Tia, Zach and Esin have equivalent fractions.

Tia: $\frac{A}{12}$ Zach: $\frac{20}{B}$ Esin: $\frac{C}{96}$

Here is Malachi's method to find equivalent fractions.

Whatever you do to the numerator, you do to the denominator.

He found these:

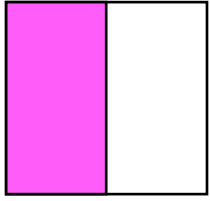
$\frac{6}{8} = \frac{72}{96}$ $\frac{6}{8} = \frac{15}{20}$ $\frac{6}{8} = \frac{4}{6}$ $\frac{6}{8} = \frac{10}{12}$

$A + C = 72$

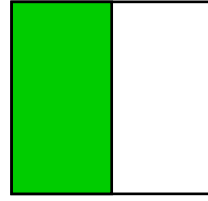
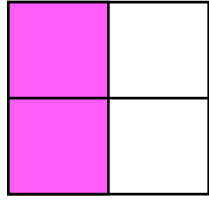
Find the value of A, B and C. Explain your method. What do you notice about the denominators?

Are all Malachi's fractions equivalent? Does his method work? Explain your reasons. Find three fractions equivalent to $\frac{9}{12}$.

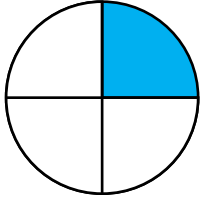
Write an equivalent fraction for each of these:



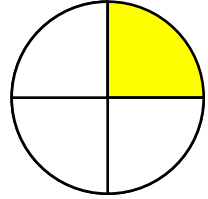
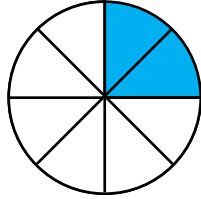
$$\frac{1}{2} = \frac{\square}{4}$$



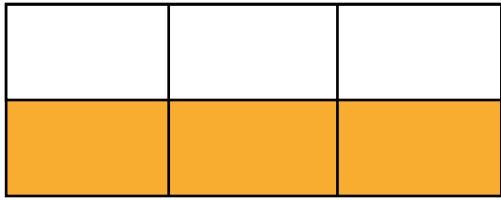
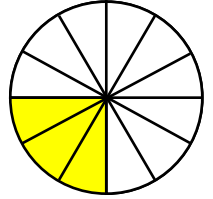
$$\frac{1}{2} = \frac{\square}{6}$$



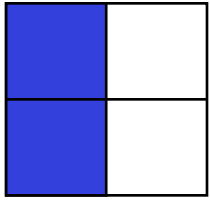
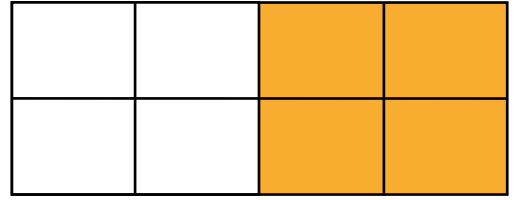
$$\frac{1}{4} = \frac{\square}{8}$$



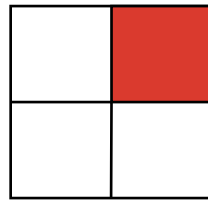
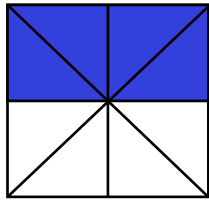
$$\frac{1}{4} = \frac{\square}{12}$$



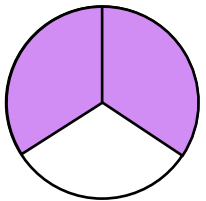
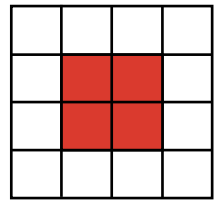
$$\frac{3}{6} = \frac{\square}{8}$$



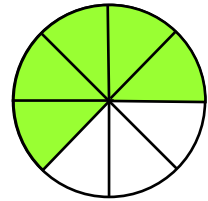
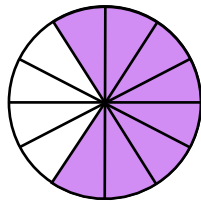
$$\frac{2}{4} = \frac{4}{\square}$$



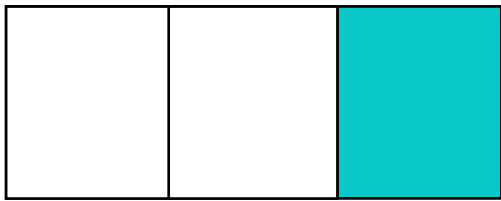
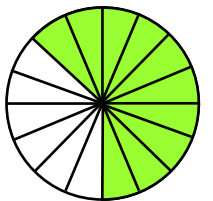
$$\frac{1}{4} = \frac{4}{\square}$$



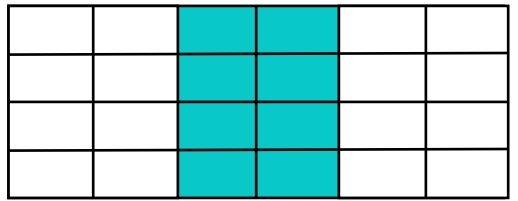
$$\frac{2}{3} = \frac{8}{\square}$$



$$\frac{5}{8} = \frac{10}{\square}$$

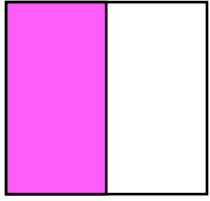


$$\frac{1}{3} = \frac{8}{\square}$$

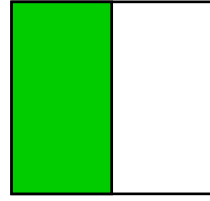
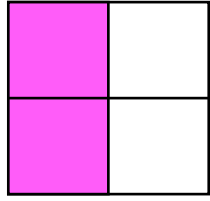




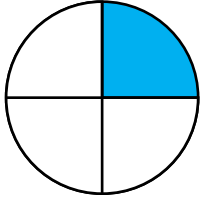
Write an equivalent fraction for each of these:



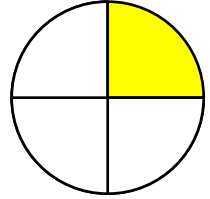
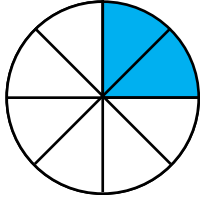
$$\frac{1}{2} = \frac{2}{4}$$



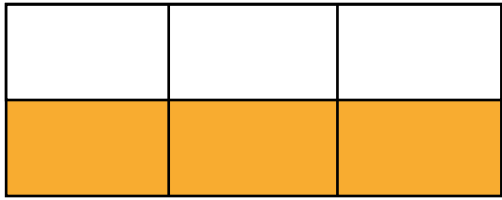
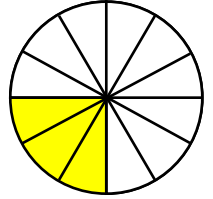
$$\frac{1}{2} = \frac{3}{6}$$



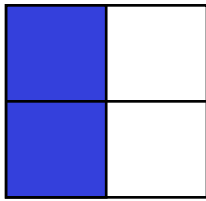
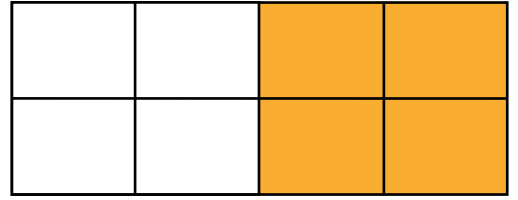
$$\frac{1}{4} = \frac{2}{8}$$



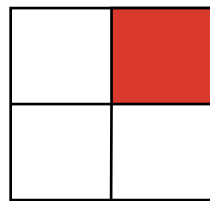
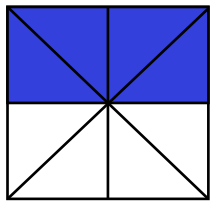
$$\frac{1}{4} = \frac{3}{12}$$



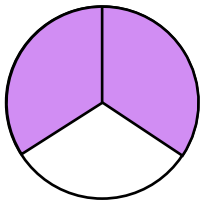
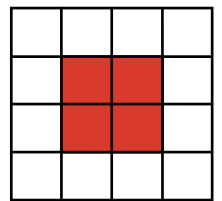
$$\frac{3}{6} = \frac{4}{8}$$



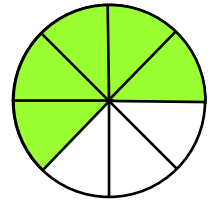
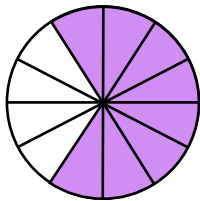
$$\frac{2}{4} = \frac{4}{8}$$



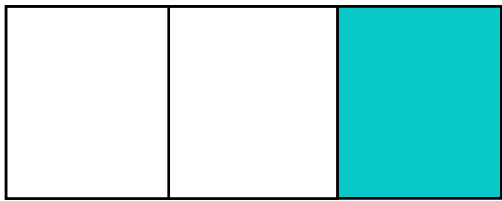
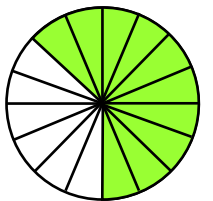
$$\frac{1}{4} = \frac{4}{16}$$



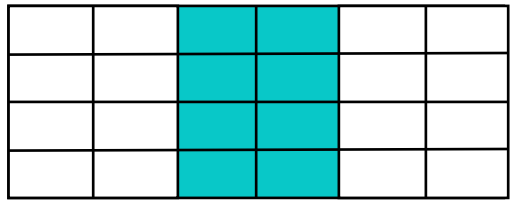
$$\frac{2}{3} = \frac{8}{12}$$



$$\frac{5}{8} = \frac{10}{16}$$



$$\frac{1}{3} = \frac{8}{24}$$





Colour one half of each shape.

Colour one third of each shape.

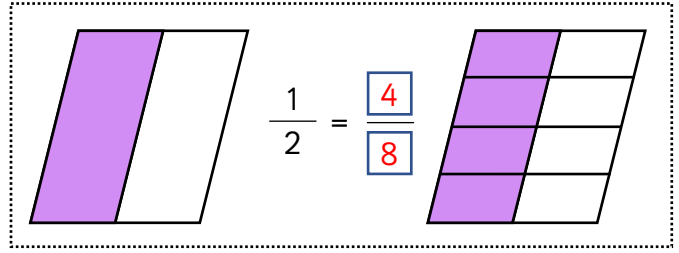
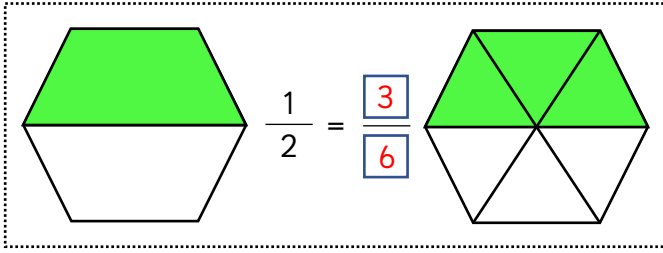
Colour one quarter of each shape.

Colour the second shape to match the first one. Complete equivalent fractions.

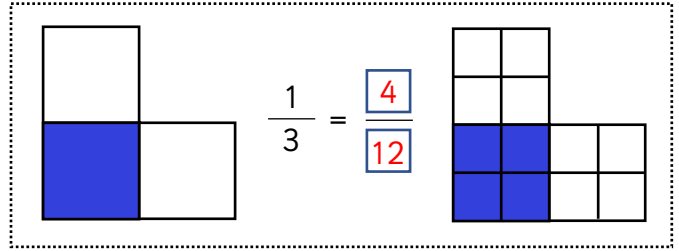
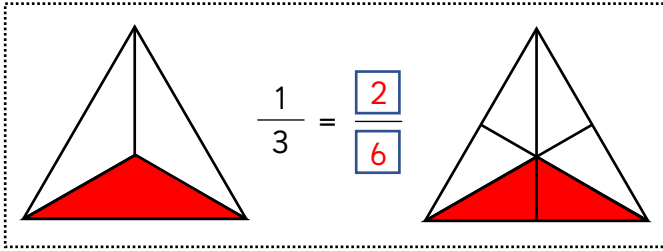
Divide and colour the first shape to match the second one. Complete equivalent fractions.



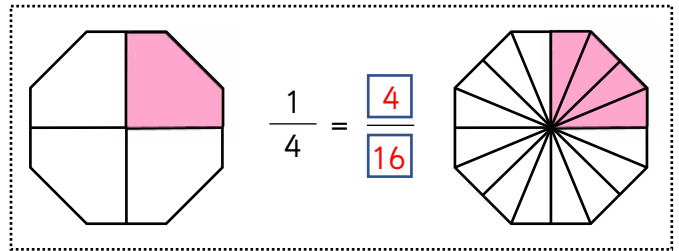
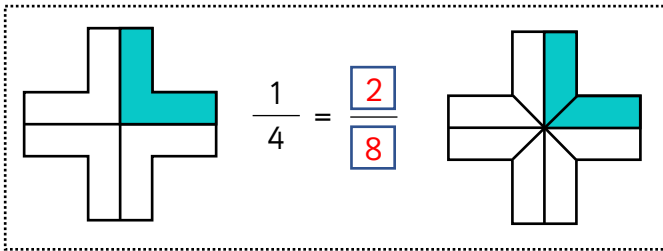
Colour one half of each shape.



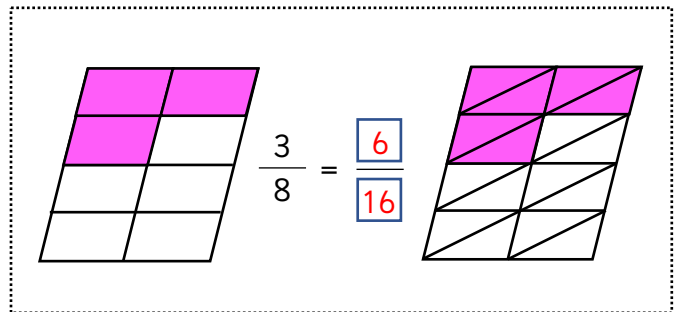
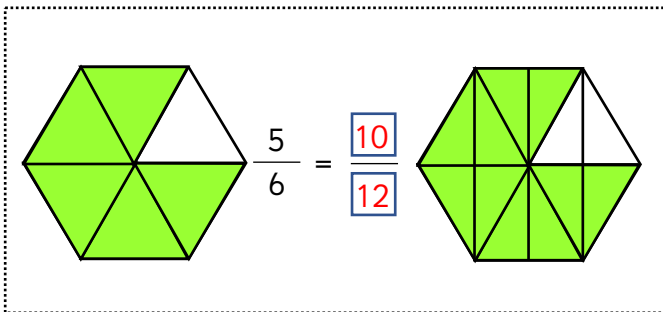
Colour one third of each shape.



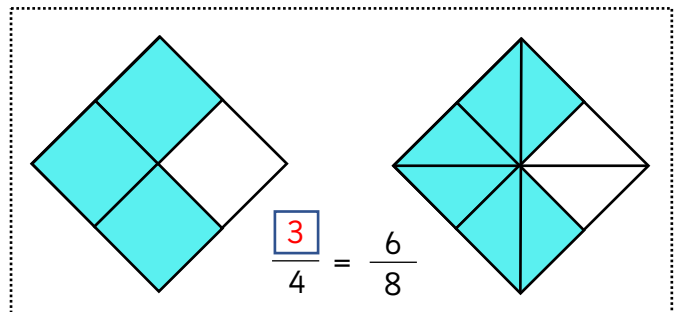
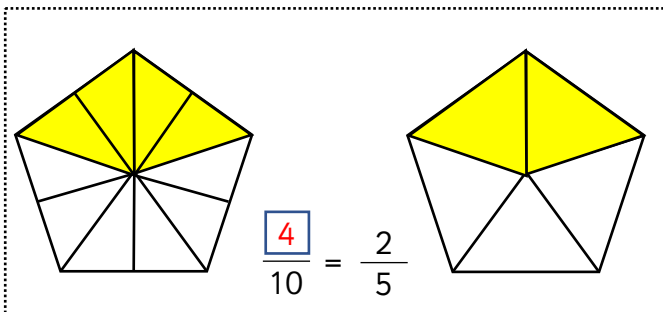
Colour one quarter of each shape.



Colour the second shape to match the first one. Complete equivalent fractions.



Divide and colour the first shape to match the second one. Complete equivalent fractions.





Divide and colour the shapes to show the following equivalent fractions.

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

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

$\frac{2}{6} = \frac{1}{3}$

$\frac{3}{4} = \frac{9}{12}$

$\frac{4}{6} = \frac{10}{15}$

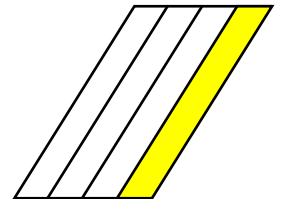
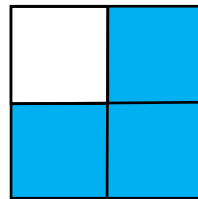
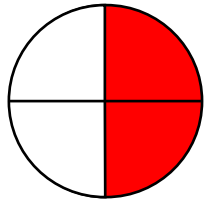
How much, as a fraction, has been circled?

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

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

Sort the fractions into the right column.

- $\frac{8}{16}$
- $\frac{7}{14}$
- $\frac{21}{28}$
- $\frac{12}{16}$
- $\frac{1}{2}$
- $\frac{6}{12}$
- $\frac{3}{4}$
- $\frac{2}{8}$
- $\frac{5}{20}$
- $\frac{18}{24}$
- $\frac{5}{10}$
- $\frac{1}{4}$
- $\frac{9}{12}$





Divide and colour the shapes to show the following equivalent fractions.

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

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

$\frac{2}{6} = \frac{1}{3}$

$\frac{3}{4} = \frac{9}{12}$

$\frac{4}{6} = \frac{10}{15}$

How much, as a fraction, has been circled?

$\frac{4}{12} = \frac{2}{6} = \frac{1}{3}$

$\frac{3}{15} = \frac{1}{5}$

Sort the fractions into the right column.

$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$
$\frac{6}{12}$	$\frac{12}{16}$	$\frac{2}{8}$
$\frac{8}{16}$	$\frac{18}{24}$	$\frac{5}{20}$
$\frac{5}{10}$	$\frac{9}{12}$	
$\frac{7}{14}$	$\frac{21}{28}$	



Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{4}{A}$$

Zach



$$\frac{6}{15}$$

Esin



$$\frac{B}{90}$$

Find the value of A and B.

Explain your method.

What do you notice about the denominators?

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{4}{6} = \frac{6}{8}$$

$$\frac{4}{6} = \frac{2}{3}$$

$$\frac{4}{6} = \frac{1}{3}$$

$$\frac{4}{6} = \frac{8}{12}$$

Are all Malachi's fractions equivalent?

Does his method work?

Explain your reasons.



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Does his method work?

Explain your reasons.



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$$\frac{4}{A}$$

Zach



$$\frac{6}{15}$$

Esin



$$\frac{B}{90}$$

Find the value of A and B.
Explain your method.

What do you notice about the denominators?

A = 10, B = 36
Denominator 90 is a multiple of 10 and 15.

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{4}{6} = \frac{6}{8}$$

$$\frac{4}{6} = \frac{2}{3}$$

$$\frac{4}{6} = \frac{1}{3}$$

$$\frac{4}{6} = \frac{8}{12}$$

Are all Malachi's fractions equivalent?
Does his method work?
Explain your reasons.

The first and the third fractions are incorrect.
Malachi's method doesn't always work. It works when multiplying or dividing both the numerator or denominator but not when adding or subtracting the same thing to both.



Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{4}{A}$$

Zach



$$\frac{6}{15}$$

Esin



$$\frac{B}{90}$$

Find the value of A and B.
Explain your method.

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A = 10, B = 36
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Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{6}{A}$$

Zach



$$\frac{B}{C}$$

Esin



$$\frac{30}{40}$$

$$A + B = 23$$

Find the value of A, B and C.
Explain your method.

What do you notice about the denominators?

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{8}{12} = \frac{12}{16}$$

$$\frac{8}{12} = \frac{2}{3}$$

$$\frac{8}{12} = \frac{40}{60}$$

$$\frac{8}{12} = \frac{4}{8}$$

Are all Malachi's fractions equivalent?
Does his method work?
Explain your reasons.



Tia, Zach and Esin have equivalent fractions.

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$$\frac{6}{A}$$

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Explain your method.

What do you notice about the denominators?

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Does his method work?
Explain your reasons.



Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{6}{A}$$

Zach



$$\frac{B}{C}$$

Esin



$$\frac{30}{40}$$

$$A + B = 23$$

Find the value of A, B and C.

Explain your method.

What do you notice about the denominators?

$$A = 8, B = 15, C = 20$$

$6 \times 5 = 30$ so $A \times 5$ must be 40. That means $A = 8$.

Then B must be $23 - 8 = 15$.

Denominator 40 is a multiple of 8 and 20.

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{8}{12} = \frac{12}{16}$$

$$\frac{8}{12} = \frac{2}{3}$$

$$\frac{8}{12} = \frac{40}{60}$$

$$\frac{8}{12} = \frac{4}{8}$$

Are all Malachi's fractions equivalent?

Does his method work?

Explain your reasons.

The first and the fourth fractions are incorrect.

Malachi's method doesn't always work. It works when multiplying or dividing both the numerator or denominator but not when adding or subtracting the same thing to both.



Tia, Zach and Esin have equivalent fractions.

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$$A + B = 23$$

Find the value of A, B and C.

Explain your method.

What do you notice about the denominators?

$$A = 8, B = 15, C = 20$$

$6 \times 5 = 30$ so $A \times 5$ must be 40. That means $A = 8$.

Then B must be $23 - 8 = 15$.

Denominator 40 is a multiple of 8 and 20.

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{8}{12} = \frac{12}{16}$$

$$\frac{8}{12} = \frac{2}{3}$$

$$\frac{8}{12} = \frac{40}{60}$$

$$\frac{8}{12} = \frac{4}{8}$$

Are all Malachi's fractions equivalent?

Does his method work?

Explain your reasons.

The first and the fourth fractions are incorrect.

Malachi's method doesn't always work. It works when multiplying or dividing both the numerator or denominator but not when adding or subtracting the same thing to both.



Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{A}{12}$$

Zach



$$\frac{20}{B}$$

Esin



$$\frac{C}{96}$$

$$A + C = 72$$

Find the value of A, B and C.
Explain your method.

What do you notice about the denominators?

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{6}{8} = \frac{72}{96}$$

$$\frac{6}{8} = \frac{15}{20}$$

$$\frac{6}{8} = \frac{4}{6}$$

$$\frac{6}{8} = \frac{10}{12}$$

Are all Malachi's fractions equivalent?
Does his method work?
Explain your reasons.

Find three fractions equivalent to $\frac{9}{12}$.



Tia, Zach and Esin have equivalent fractions.

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$$\frac{A}{12}$$

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$$A + C = 72$$

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Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{A}{12}$$

Zach



$$\frac{20}{B}$$

Esin



$$\frac{C}{96}$$

$$A + C = 72$$

Find the value of A, B and C.
Explain your method.

What do you notice about the denominators?

$$A = 8, B = 30, C = 64$$

$$12 \times 8 = 96 \text{ so } A \times 8 \text{ must be } C.$$

The only option which satisfied $A + C = 72$ is

$$A = 8 \text{ and } C = 64.$$

Denominator 96 is a multiple of 8 and 12.

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{6}{8} = \frac{72}{96}$$

$$\frac{6}{8} = \frac{15}{20}$$

$$\frac{6}{8} = \frac{4}{6}$$

$$\frac{6}{8} = \frac{10}{12}$$

Are all Malachi's fractions equivalent?

Does his method work?

Explain your reasons.

The third and the fourth fractions are incorrect.

Malachi's method doesn't always work. It works when multiplying or dividing both the numerator or denominator but not when adding or subtracting the same thing to both.

Find three fractions equivalent to $\frac{9}{12}$. $\frac{3}{4}$ $\frac{18}{24}$ $\frac{54}{72}$



Tia, Zach and Esin have equivalent fractions.

Tia



$$\frac{A}{12}$$

Zach



$$\frac{20}{B}$$

Esin



$$\frac{C}{96}$$

$$A + C = 72$$

Find the value of A, B and C.
Explain your method.

What do you notice about the denominators?

$$A = 8, B = 30, C = 64$$

$$12 \times 8 = 96 \text{ so } A \times 8 \text{ must be } C.$$

The only option which satisfied $A + C = 72$ is

$$A = 8 \text{ and } C = 64.$$

Denominator 96 is a multiple of 8 and 12.

Here is Malachi's method to find equivalent fractions.



Whatever you do to the numerator, you do to the denominator.

He found these:

$$\frac{6}{8} = \frac{72}{96}$$

$$\frac{6}{8} = \frac{15}{20}$$

$$\frac{6}{8} = \frac{4}{6}$$

$$\frac{6}{8} = \frac{10}{12}$$

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Find three fractions equivalent to $\frac{9}{12}$. $\frac{3}{4}$ $\frac{18}{24}$ $\frac{54}{72}$