

Number and Algebra: Fractions and Decimals: Adding Fraction Multiples

Australian Curriculum

This lesson plan could be used to support the teaching and learning of the following Content Descriptions from the Australian Curriculum.














Y6 – Number and Algebra, Fractions and Decimals

Solve problems involving addition and subtraction of fractions with the same or related denominators (ACMNA 126)

| | | |
|---|--|--|
| <p>Child-Friendly Aim: I can subtract fractions with denominators that are multiples of the same number.</p> | <p>Success Criteria: I can subtract fractions with the same denominator. I can convert between improper and mixed number fractions. I can use multiplication to change a fraction into an equivalent.</p> | <p>Resources: Lesson Pack Whiteboards and markers – class set</p> |
| <p>Key/New Words: Fraction, denominator, numerator, improper, mixed number, equivalent.</p> | <p>I can subtract fractions with denominators that are multiples of the same number.</p> | <p>Preparation: Subtracting Fractions Stained Glass Designs Activity Sheets – one per child</p> |

Prior Learning: It will be helpful if children have previous experience of subtracting fractions with the same denominator and recognising improper fractions and converting them to mixed numbers.

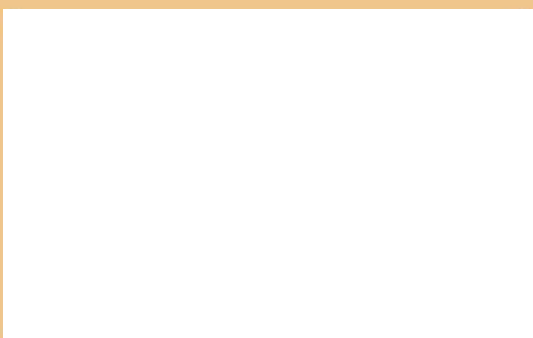
Learning Sequence

| | | |
|--|--|---|
|  | <p>Kangaroo Fractions: Children identify the fraction Kylie Kangaroo has jumped to along the number line shown on the Lesson Presentation. Encourage children to make links to equivalent fractions and to convert mixed numbers to improper fractions.</p> |  |
|  | <p>Same Denominators: Use the animated text and images on the Lesson Presentation to revise how to subtract fractions with the same denominator, discussing what happens to the numerators and denominators. Emphasise that mixed numbers should be converted to the equivalent improper fractions to make the calculation easier.</p> |  |
|  | <p>Denominator Multiples: Use the animated text and images on the Lesson Presentation to introduce how to subtract fractions which have denominators that are multiples of the same number, discussing how multiplication is used to change one of the fractions into an equivalent with the same denominator, emphasising that the same calculation is performed on both the numerator and denominator.</p> |  |
|  | <p>Colour by Fraction: Give each child the blank stained-glass design from the Subtracting Fractions Stained Glass Designs Activity Sheets. The children solve the differentiated question sheets to find out the colour of each stained-glass section. The answers to the stained-glass design are split over all three sheets, so the children will need to share answers to complete the whole design.</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div>  <p>Show they can subtract fractions with denominators that are multiples of the same number.</p> </div> <div>  <p>Show they can subtract fractions with denominators that are multiples of the same number including converting mixed numbers and improper fractions.</p> </div> <div>  <p>Children show they can subtract fractions with denominators that are multiples of the same number including converting mixed numbers and improper fractions and trickier multiplication facts.</p> </div> </div> |  |
|  | <p>Prove It: Children discuss the calculations shown on the Lesson Presentation, deciding if the answer is correct or incorrect. Encourage the children to prove how they know the calculation is correct or incorrect.</p> |  |

Masterit

Subtractit: Roll a dice to generate a denominator for two fractions. Roll the dice again to generate different numerators to create a subtraction calculating putting the larger number first. This can be extended to subtracting three or more fractions.

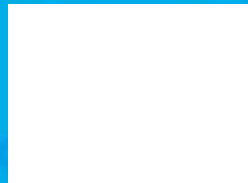
Matchit: Use these _____ to revise subtracting fractions.



Mathematics

Number and Algebra

Subtracting Fraction Multiples



Aim

- I can subtract fractions with denominators that are multiples of the same number.

Success Criteria

- I can subtract fractions with the same denominator.
- I can convert between improper and mixed number fractions.
- I can use multiplication to change a fraction into an equivalent.
- I can subtract fractions with denominators that are multiples of the same number.

Kangaroo Fractions



Click on Kylie Kangaroo and write the fraction she jumps to as an improper fraction and a mixed number.

0

1

$1\frac{2}{5}$

2



$\frac{7}{5}$

Kangaroo Fractions



Click on Kylie Kangaroo and write the fraction she jumps to as an improper fraction and a mixed number.

2

$2\frac{3}{4}$

3

4



$1\frac{1}{4}$

Kangaroo Fractions



Click on Kylie Kangaroo and write the fraction she jumps to as an improper fraction and a mixed number.

4

5

$5\frac{2}{3}$

6

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

$17\frac{1}{3}$

Same Denominators



In this fraction subtraction, both the fractions have the **same denominator**.

$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

To solve the calculation, the **denominator stays the same**, and the **numerators are subtracted**.

Same Denominators



In this fraction subtraction, both the fractions have the **same denominator**.

$$\frac{10}{3} - \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$$

| | | |
|---|---|---|
| 1 | 4 | 7 |
| 2 | 5 | 8 |
| 3 | 6 | |

This answer is an improper fraction. Every whole is made of three parts.

This is the same answer written as a mixed number.

Same Denominators



In this fraction subtraction, both the fractions have the **same denominator**.

$$2\frac{3}{4} - \frac{5}{4} = \frac{6}{4} = 1\frac{1}{2}$$

This is a mixed number. Change it to an improper fraction before calculating.

| | | |
|---|---|----|
| 1 | 5 | 9 |
| 2 | 6 | 10 |
| 3 | 7 | 11 |
| 4 | 8 | |

The answer is an improper fraction. Change it to a mixed number.

| | |
|---|---|
| 1 | 5 |
| 2 | |
| 3 | |
| 4 | |

This answer can be simplified.

Denominator Multiples



In this fraction subtraction, both the fractions have **different denominators** which are multiples of the same number.

$$\times 2 = 10$$

$$\frac{5}{3}$$

-

$$\frac{7}{6}$$

$$\times 2 = 6$$

To solve the calculation, we use **multiplication** to change the fraction with the lowest denominator into an **equivalent fraction** with the same denominator as the other fraction.

Remember to do the same multiplication to the numerator.

Denominator Multiples



Now we have a calculation where both the denominators are the same number.

$$\times 2 = 10$$

$$\frac{5}{3} - \frac{7}{6} = \frac{10}{6} - \frac{7}{6} = \frac{3}{6} = \frac{1}{2}$$

$$\times 2 = 6$$

To solve the calculation, the **denominator stays the same**, and the **numerators are subtracted**.

Denominator Multiples

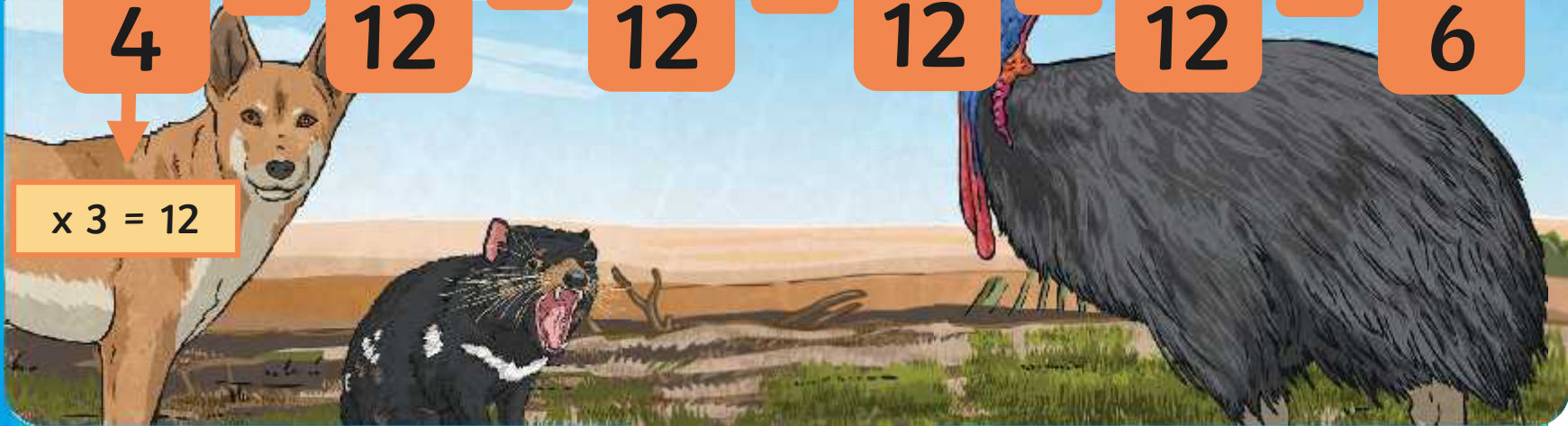


Let's try this with another calculation where the fractions have **different denominators** which are multiples of the same number.

$$\times 3 = 9$$

$$\frac{3}{4} - \frac{7}{12} = \frac{9}{12} - \frac{7}{12} = \frac{2}{12} = \frac{1}{6}$$

$$\times 3 = 12$$



Denominator Multiples

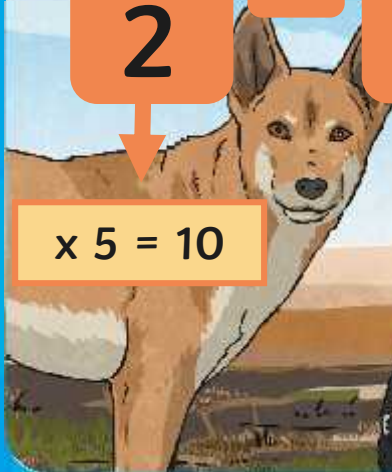


Let's try this with another calculation where the fractions have **different denominators** which are multiples of the same number.

$$\times 5 = 25$$

$$\frac{5}{2} - \frac{3}{10} = \frac{25}{10} - \frac{3}{10} = \frac{22}{10} = 2\frac{1}{5}$$

$$\times 5 = 10$$

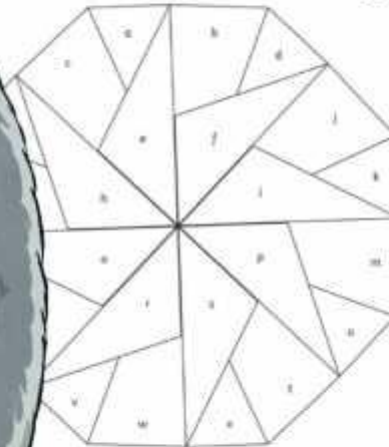


Colour by Fraction



Subtracting Fractions Stained Glass Designs

I can subtract fractions with denominators that are multiples of the same number.



Colour in your stained-glass design:

- Less than $\frac{1}{2}$ Between $\frac{1}{2}$ and 1
 Between 1 and $1\frac{1}{2}$ Greater than $1\frac{1}{2}$

Subtracting Fractions Stained Glass Designs

I can subtract fractions with denominators that are multiples of the same number.

The answers to these calculations are:

- than $\frac{1}{2}$ • between 1 and $1\frac{1}{2}$
 less than $\frac{1}{2}$ and 1 • greater than $1\frac{1}{2}$


Colour in sections of the stained-glass design based on your answers.

| Class | Question | Answer | Score |
|-------|---------------------------------|--------|-------|
| | $\frac{7}{8} - \frac{1}{2} =$ | | |
| | $\frac{13}{8} - \frac{3}{4} =$ | | |
| | $\frac{10}{6} - \frac{1}{2} =$ | | |
| | $\frac{13}{4} - \frac{3}{2} =$ | | |
| | $\frac{7}{10} - \frac{5}{20} =$ | | |
| | $\frac{4}{3} - \frac{7}{15} =$ | | |
| | $\frac{31}{20} - \frac{2}{5} =$ | | |
| | $\frac{19}{9} - \frac{1}{3} =$ | | |

Prove It



Is this calculation correct? Prove it!

$$2\frac{6}{10} - \frac{4}{5} = 1\frac{4}{5}$$


$$\frac{26}{10} - \frac{8}{10} = \frac{18}{10} = 1\frac{8}{10} = 1\frac{4}{5}$$

Prove It



Is this calculation correct? Prove it!

$$2\frac{5}{6} - \frac{2}{3} = 1\frac{4}{6} \quad \times$$

$$\frac{17}{6} - \frac{4}{6} = \frac{13}{6} = 2\frac{1}{6}$$

Prove It



Is this calculation correct? Prove it!


$$2\frac{5}{9} - \frac{2}{3} = 1\frac{5}{9} \quad \times$$

$$\frac{23}{9} - \frac{6}{9} = \frac{17}{9} = 1\frac{8}{9}$$

Prove It



Is this calculation correct? Prove it!

$$3\frac{2}{8} - \frac{3}{4} = 2\frac{1}{2}$$


$$\frac{26}{8} - \frac{6}{8} = \frac{20}{8} = 2\frac{4}{8} = 2\frac{1}{2}$$

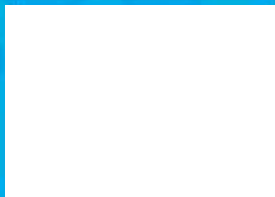
Aim



- I can subtract fractions with denominators that are multiples of the same number.

Success Criteria

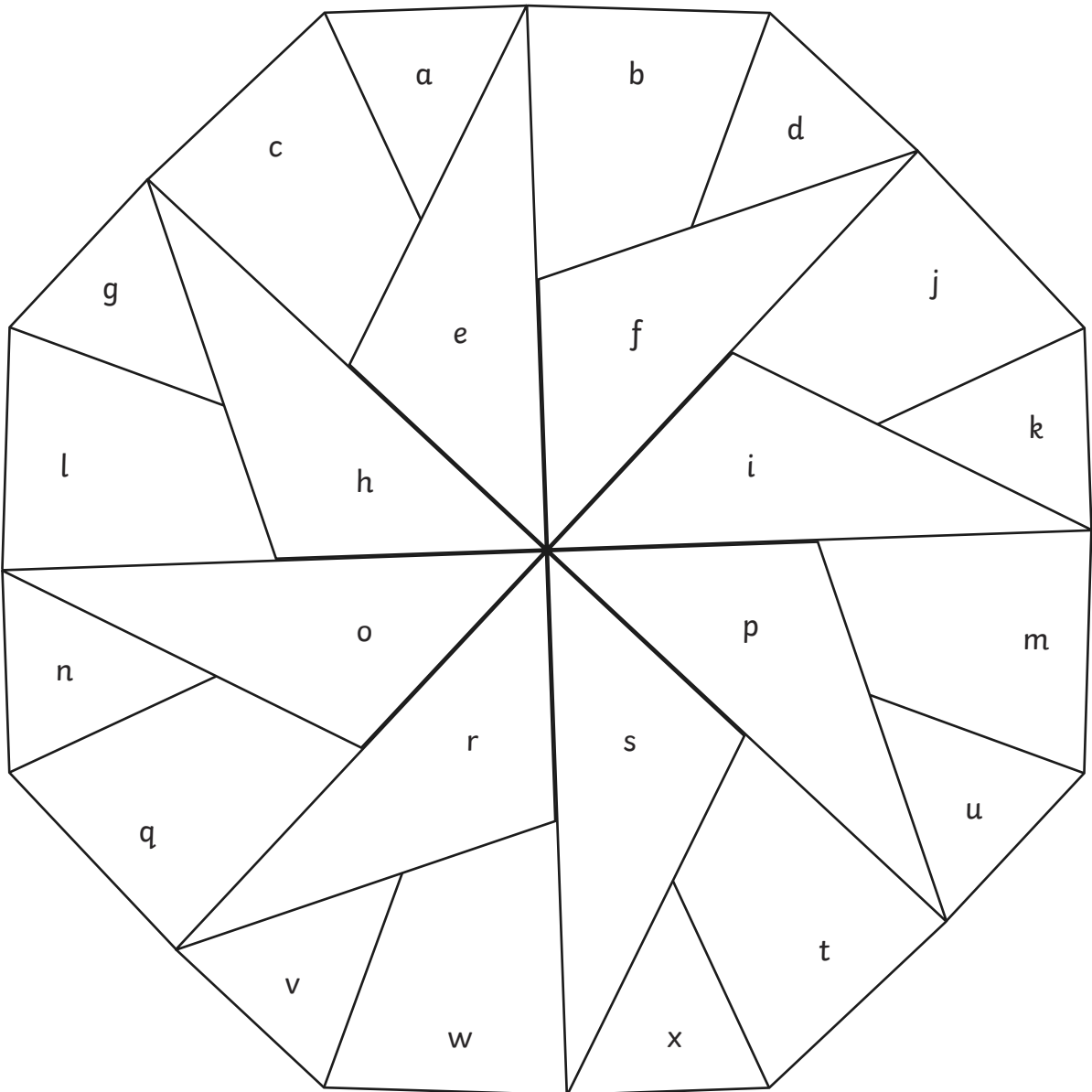
- I can subtract fractions with the same denominator.
- I can convert between improper and mixed number fractions.
- I can use multiplication to change a fraction into an equivalent.
- I can subtract fractions with denominators that are multiples of the same number.



Subtracting Fractions

Stained Glass Designs

I can subtract fractions with denominators that are multiples of the same number.



Choose the four colours for your stained-glass design:

Less than $\frac{1}{2}$

Between $\frac{1}{2}$ and 1

Between 1 and $1\frac{1}{2}$

Greater than $1\frac{1}{2}$



Subtracting Fractions

Stained Glass Designs

I can subtract fractions with denominators that are multiples of the same number.



Identify if the answers to these calculations are:

- less than $\frac{1}{2}$
- between $\frac{1}{2}$ and 1
- between 1 and $1\frac{1}{2}$
- greater than $1\frac{1}{2}$

Colour each section of the stained-glass design based on your answers.

| Stained Glass Section | Question | Answer | Size |
|-----------------------|---------------------------------|--------|------|
| e = | $\frac{7}{8} - \frac{1}{2} =$ | | |
| f = | $\frac{13}{8} - \frac{3}{4} =$ | | |
| b = | $\frac{10}{6} - \frac{1}{2} =$ | | |
| a = | $\frac{13}{4} - \frac{3}{2} =$ | | |
| s = | $\frac{7}{10} - \frac{5}{20} =$ | | |
| p = | $\frac{4}{3} - \frac{7}{15} =$ | | |
| m = | $\frac{31}{20} - \frac{2}{5} =$ | | |
| k = | $\frac{19}{9} - \frac{1}{3} =$ | | |



Subtracting Fractions

Stained Glass Designs **Answers**

I can subtract fractions with denominators that are multiples of the same number.



Identify if the answers to these calculations are:

- less than $\frac{1}{2}$
- between $\frac{1}{2}$ and 1
- between 1 and $1\frac{1}{2}$
- greater than $1\frac{1}{2}$

Colour each section of the stained-glass design based on your answers.

| Stained Glass Section | Question | Answer | Size |
|-----------------------|---------------------------------|---------------------------------|------------------------------|
| e = | $\frac{7}{8} - \frac{1}{2} =$ | $\frac{3}{8}$ | Less than $\frac{1}{2}$ |
| f = | $\frac{13}{8} - \frac{3}{4} =$ | $\frac{7}{8}$ | Between $\frac{1}{2}$ and 1 |
| b = | $\frac{10}{6} - \frac{1}{2} =$ | $\frac{7}{6} = 1\frac{1}{6}$ | Between 1 and $1\frac{1}{2}$ |
| a = | $\frac{13}{4} - \frac{3}{2} =$ | $\frac{7}{4} = 1\frac{3}{4}$ | Greater than $1\frac{1}{2}$ |
| s = | $\frac{7}{10} - \frac{5}{20} =$ | $\frac{9}{20}$ | Less than $\frac{1}{2}$ |
| p = | $\frac{4}{3} - \frac{7}{15} =$ | $\frac{13}{15}$ | Between $\frac{1}{2}$ and 1 |
| m = | $\frac{31}{20} - \frac{2}{5} =$ | $\frac{23}{20} = 1\frac{3}{20}$ | Between 1 and $1\frac{1}{2}$ |
| k = | $\frac{19}{9} - \frac{1}{3} =$ | $\frac{16}{9} = 1\frac{7}{9}$ | Greater than $1\frac{1}{2}$ |



Subtracting Fractions

Stained Glass Designs

I can subtract fractions with denominators that are multiples of the same number.



Identify if the answers to these calculations are:

- less than $\frac{1}{2}$
- between $\frac{1}{2}$ and 1
- between 1 and $1\frac{1}{2}$
- greater than $1\frac{1}{2}$

Colour each section of the stained-glass design based on your answers.

| Stained Glass Section | Question | Answer | Size |
|-----------------------|---------------------------------|--------|------|
| c = | $1\frac{8}{10} - \frac{1}{2} =$ | | |
| i = | $\frac{9}{10} - \frac{3}{5} =$ | | |
| r = | $1\frac{1}{4} - \frac{8}{20} =$ | | |
| n = | $2\frac{7}{25} - \frac{2}{5} =$ | | |
| d = | $2\frac{1}{18} - \frac{1}{3} =$ | | |
| j = | $1\frac{9}{12} - \frac{2}{4} =$ | | |
| v = | $1\frac{5}{7} - \frac{5}{35} =$ | | |
| t = | $1\frac{3}{6} - \frac{6}{30} =$ | | |



Subtracting Fractions Stained Glass Designs **Answers**

I can subtract fractions with denominators that are multiples of the same number.



Identify if the answers to these calculations are:

- less than $\frac{1}{2}$
- between 1 and $1\frac{1}{2}$
- between $\frac{1}{2}$ and 1
- greater than $1\frac{1}{2}$

Colour each section of the stained-glass design based on your answers.

| Stained Glass Section | Question | Answer | Size |
|-----------------------|---------------------------------|---|------------------------------|
| c = | $1\frac{8}{10} - \frac{1}{2} =$ | $\frac{13}{10} = 1\frac{3}{10}$ | Between 1 and $1\frac{1}{2}$ |
| i = | $\frac{9}{10} - \frac{3}{5} =$ | $\frac{3}{10}$ | Less than $\frac{1}{2}$ |
| r = | $1\frac{1}{4} - \frac{8}{20} =$ | $\frac{17}{20}$ | Between $\frac{1}{2}$ and 1 |
| n = | $2\frac{7}{25} - \frac{2}{5} =$ | $\frac{47}{25} = 1\frac{22}{25}$ | Greater than $1\frac{1}{2}$ |
| d = | $2\frac{1}{18} - \frac{1}{3} =$ | $\frac{31}{18} = 1\frac{13}{18}$ | Greater than $1\frac{1}{2}$ |
| j = | $1\frac{9}{12} - \frac{2}{4} =$ | $\frac{15}{12} = 1\frac{3}{12} = 1\frac{1}{4}$ | Between 1 and $1\frac{1}{2}$ |
| v = | $1\frac{5}{7} - \frac{5}{35} =$ | $\frac{55}{35} = 1\frac{20}{35} = 1\frac{4}{7}$ | Greater than $1\frac{1}{2}$ |
| t = | $1\frac{3}{6} - \frac{6}{30} =$ | $\frac{39}{30} = 1\frac{9}{30} = 1\frac{3}{10}$ | Between 1 and $1\frac{1}{2}$ |



Subtracting Fractions

Stained Glass Designs

I can subtract fractions with denominators that are multiples of the same number.



Identify if the answers to these calculations are:

- less than $\frac{1}{2}$
- between $\frac{1}{2}$ and 1
- between 1 and $1\frac{1}{2}$
- greater than $1\frac{1}{2}$

Colour each section of the stained-glass design based on your answers.

| Stained Glass Section | Question | Answer | Size |
|-----------------------|----------------------------------|--------|------|
| g = | $2\frac{1}{21} - \frac{1}{7} =$ | | |
| l = | $1\frac{10}{18} - \frac{1}{6} =$ | | |
| o = | $\frac{3}{5} - \frac{2}{15} =$ | | |
| w = | $\frac{11}{10} - \frac{3}{50} =$ | | |
| x = | $2\frac{1}{4} - \frac{7}{16} =$ | | |
| h = | $1\frac{7}{12} - \frac{2}{3} =$ | | |
| u = | $\frac{12}{6} - \frac{3}{12} =$ | | |
| q = | $1\frac{3}{6} - \frac{6}{24} =$ | | |



Subtracting Fractions Stained Glass Designs **Answers**

I can subtract fractions with denominators that are multiples of the same number.



Identify if the answers to these calculations are:

- less than $\frac{1}{2}$
- between 1 and $1\frac{1}{2}$
- between $\frac{1}{2}$ and 1
- greater than $1\frac{1}{2}$

Colour each section of the stained-glass design based on your answers.

| Stained Glass Section | Question | Answer | Size |
|-----------------------|----------------------------------|---|------------------------------|
| g = | $2\frac{1}{21} - \frac{1}{7} =$ | $\frac{40}{21} = 1\frac{19}{21}$ | Greater than $1\frac{1}{2}$ |
| l = | $1\frac{10}{18} - \frac{1}{6} =$ | $\frac{25}{18} = 1\frac{7}{18}$ | Between 1 and $1\frac{1}{2}$ |
| o = | $\frac{3}{5} - \frac{2}{15} =$ | $\frac{7}{15}$ | Less than $\frac{1}{2}$ |
| w = | $\frac{11}{10} - \frac{3}{50} =$ | $\frac{52}{50} = 1\frac{2}{50} = 1\frac{1}{25}$ | Between 1 and $1\frac{1}{2}$ |
| x = | $2\frac{1}{4} - \frac{7}{16} =$ | $\frac{29}{16} = 1\frac{13}{16}$ | Greater than $1\frac{1}{2}$ |
| h = | $1\frac{7}{12} - \frac{2}{3} =$ | $\frac{11}{12}$ | Between $\frac{1}{2}$ and 1 |
| u = | $\frac{12}{6} - \frac{3}{12} =$ | $\frac{21}{12} = 1\frac{9}{12} = 1\frac{3}{4}$ | Greater than $1\frac{1}{2}$ |
| q = | $1\frac{3}{6} - \frac{6}{24} =$ | $\frac{30}{24} = 1\frac{6}{24} = 1\frac{1}{4}$ | Between 1 and $1\frac{1}{2}$ |

Number and Algebra | Subtracting Fraction Multiples

| | | |
|---|--|--|
| I can subtract fractions with denominators that are multiples of the same number. | | |
| I can subtract fractions with the same denominator. | | |
| I can convert between improper and mixed number fractions. | | |
| I can use multiplication to change a fraction into an equivalent. | | |
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Number and Algebra | Subtracting Fraction Multiples

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Number and Algebra | Subtracting Fraction Multiples

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Number and Algebra | Subtracting Fraction Multiples

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