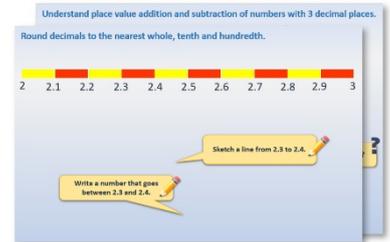


Week 12, Day 3

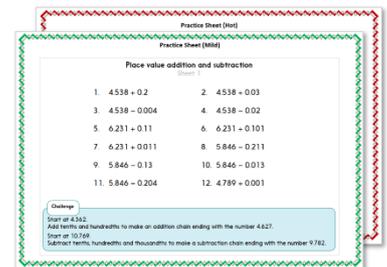
Multiply fractions

Each day covers one maths topic. It should take you about 1 hour or just a little more.

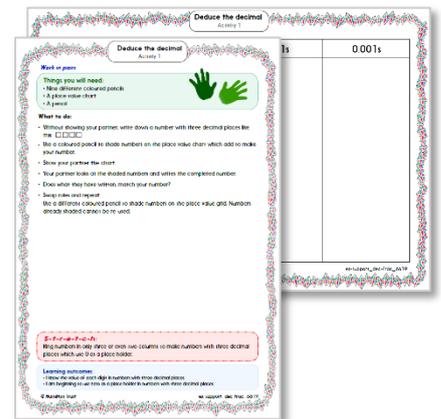
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



2. Tackle the questions on the **Practice Sheet**. There might be a choice of either **Mild** (easier) or **Hot** (harder)! Check the answers.



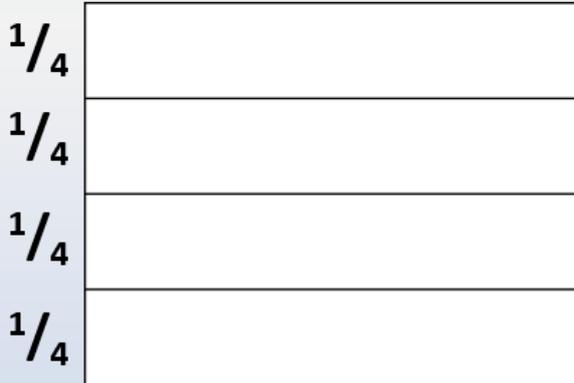
3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**



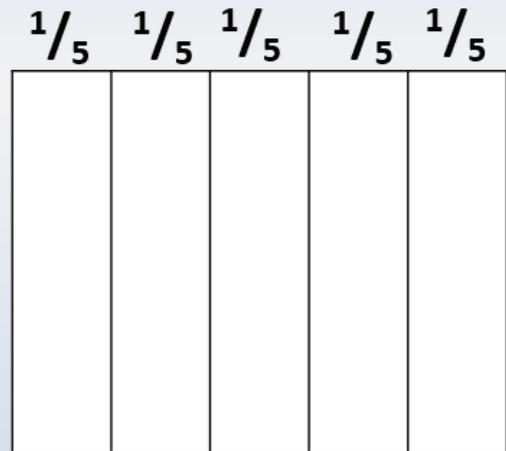
4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation...**

Learning Reminders

Multiply pairs of fractions.



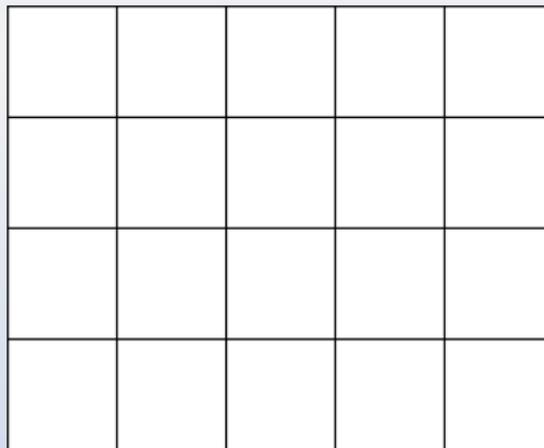
This rectangle has been split into **quarters**.



The *same* rectangle has been split into **fifths**.

Multiply pairs of fractions.

If we overlay the two rectangles, we can calculate/ count that there are **20 equally sized cells**:
twentieths.



We can use this grid to **multiply fractions**...
in this case, any number
of $\frac{1}{4}$ s and $\frac{1}{5}$ s.

Learning Reminders

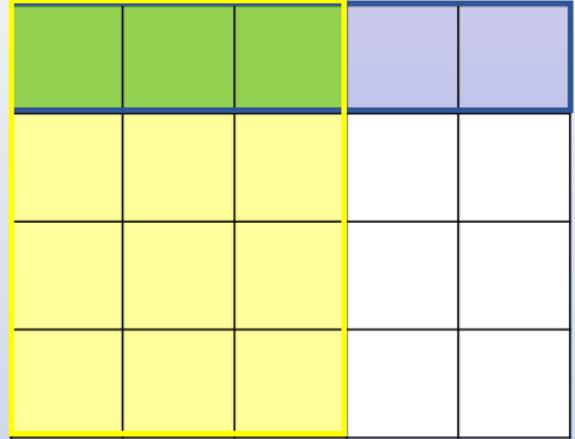
Multiply pairs of fractions.

Find $\frac{1}{4} \times \frac{3}{5}$
(which we can read as $\frac{1}{4}$ of $\frac{3}{5}$)

A Shade $\frac{1}{4}$ of the grid (blue).

B Shade $\frac{3}{5}$ of the grid (yellow).

C The overlap (green) represents $\frac{1}{4}$ of $\frac{3}{5}$,
or $\frac{1}{4} \times \frac{3}{5}$.
The overlap is $\frac{3}{20}$



So, $\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$

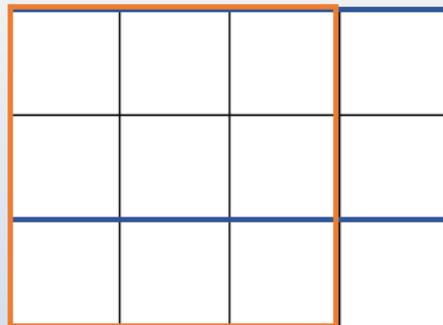
Multiply pairs of fractions.

Use this grid to find $\frac{2}{3} \times \frac{3}{4}$

A Shade $\frac{2}{3}$ of the grid.

B Shade $\frac{3}{4}$ of the grid.

C The overlap will represent $\frac{2}{3} \times \frac{3}{4}$



So, $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$
Answer

Learning Reminders

Multiply pairs of fractions.

Aha, I've just spotted something to help!

We saw already that $\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$

...and that $\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$

Look at the numerators in $\frac{1}{4} \times \frac{3}{5} \dots 1 \times 3 = 3$, the numerator of our answer $\frac{3}{20}$
Look at the denominators in $\frac{1}{4} \times \frac{3}{5} \dots 4 \times 5 = 20$, the denominator of our answer $\frac{3}{20}$

Does this work for our second calculation?

$\frac{2}{3} \times \frac{3}{4}$ **Multiply** across the numerators, then the denominators...

$2 \times 3 =$ numerator of 6, and $3 \times 4 =$ denominator of 12, giving $\frac{6}{12}$

YES! It works!

What a useful tool to help us check answers when multiplying pairs of fractions...

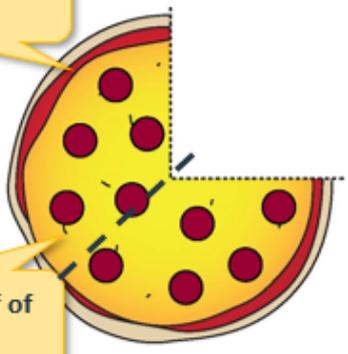
Multiply pairs of fractions.

Do you remember the 'trick' for multiplying fractions?

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

We multiply the numerators and then multiply the denominators – this is today's first tip.

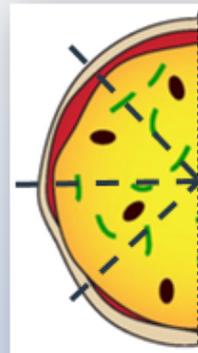
How much pizza is left?



How much is half of what is left?

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

How much pizza is left?



How much is $\frac{3}{4}$ of what is left?

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

We get the same answer just as when we multiply whole numbers in either order.

Practice Sheet Mild

Multiplying fractions

1. Find $\frac{1}{2}$ of these fractions. The first one is done for you.

$$\frac{1}{4}$$

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

$$\frac{1}{3}$$

$$\frac{2}{3}$$

$$\frac{3}{4}$$

$$\frac{3}{8}$$

$$\frac{1}{2}$$

2. Find $\frac{1}{4}$ of these fractions. The first one is done for you.

$$\frac{1}{3}$$

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

$$\frac{2}{3}$$

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

$$\frac{1}{2}$$

Practice Sheet Hot

Multiplying fractions

1. Find $\frac{1}{4}$ of these fractions. The first one is done for you.

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

$$\frac{2}{3}$$

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

$$\frac{1}{2}$$

2. $\frac{1}{2} \times \frac{1}{4}$

3. $\frac{1}{3} \times \frac{1}{2}$

4. $\frac{1}{2} \times \frac{1}{5}$

5. $\frac{1}{2} \times \frac{2}{3}$

6. $\frac{1}{3} \times \frac{3}{4}$

7. $\frac{2}{3} \times \frac{3}{4}$

8. $\frac{3}{5} \times \frac{1}{2}$

9. There is $\frac{2}{3}$ of a cheesecake left. Four people equally share what is left. What fraction of the whole cheesecake do they have each?

10. $\frac{3}{4}$ of a class of children like athletics. $\frac{1}{2}$ of these like running best. What fraction of the class prefer running?

Practice Sheets Answers

Multiplying fractions (mild)

1. $\frac{1}{8}$
 $\frac{1}{6}$
 $\frac{2}{6}$
 $\frac{3}{8}$
 $\frac{3}{16}$
 $\frac{1}{4}$

2. $\frac{1}{12}$
 $\frac{2}{12}$
 $\frac{3}{20}$
 $\frac{1}{8}$

Multiplying fractions (hot)

1. $\frac{1}{12}$
 $\frac{2}{12}$
 $\frac{3}{20}$
 $\frac{1}{8}$

8. $\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$

9. $\frac{2}{3} \times \frac{1}{4} = \frac{1}{6}$ cheesecake each

10. $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ prefer running

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

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

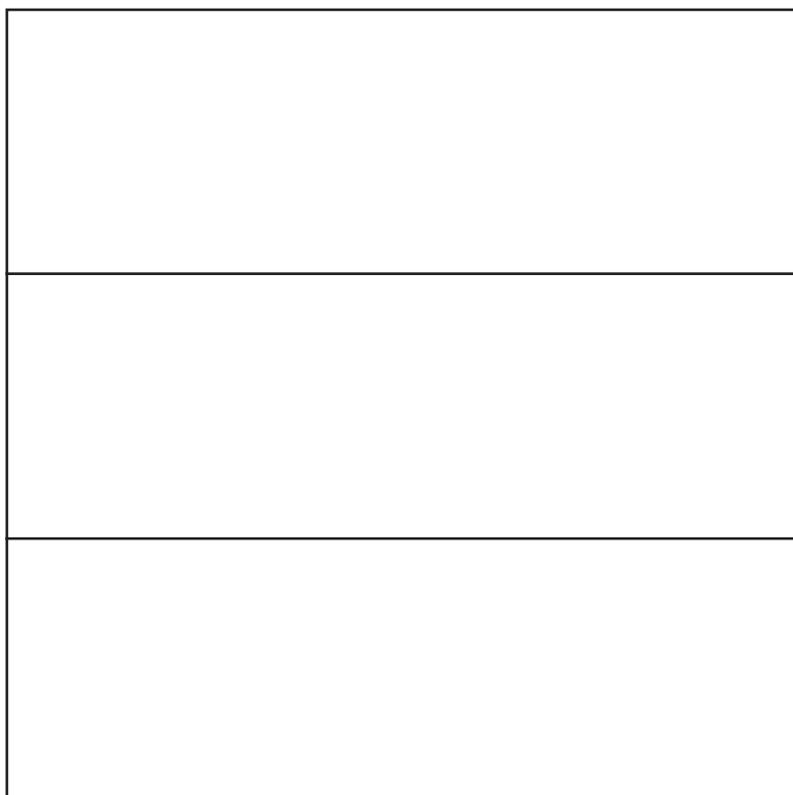
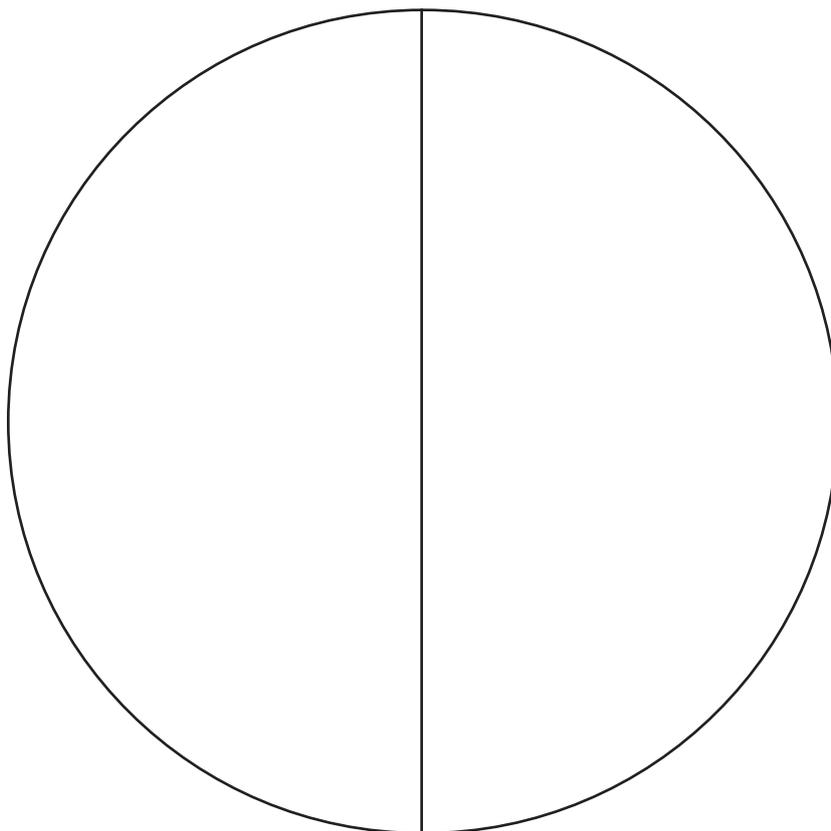
4. $\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$

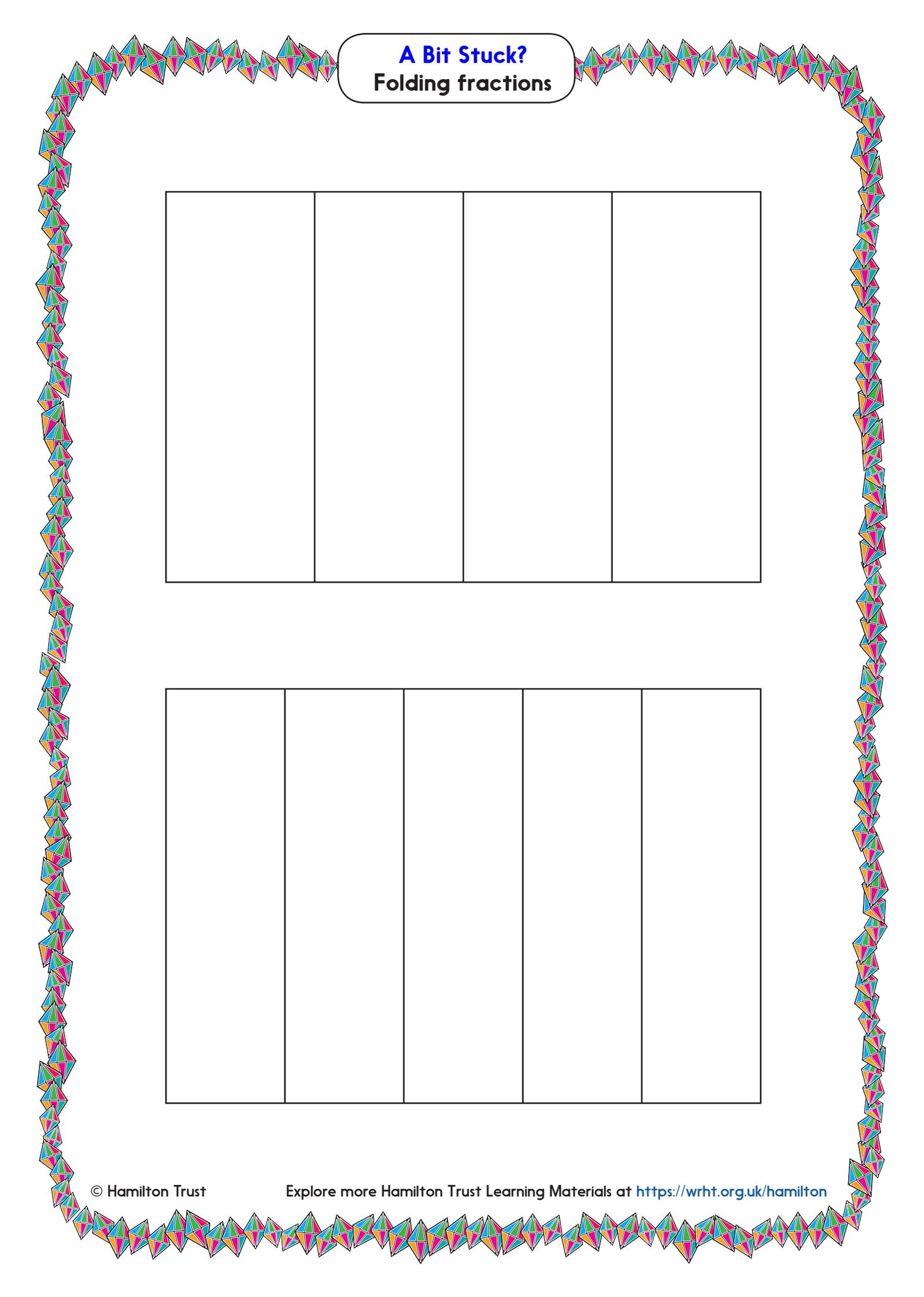
5. $\frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$

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

7. $\frac{2}{3} \times \frac{3}{4} = \frac{1}{2}$

A Bit Stuck?
Folding fractions

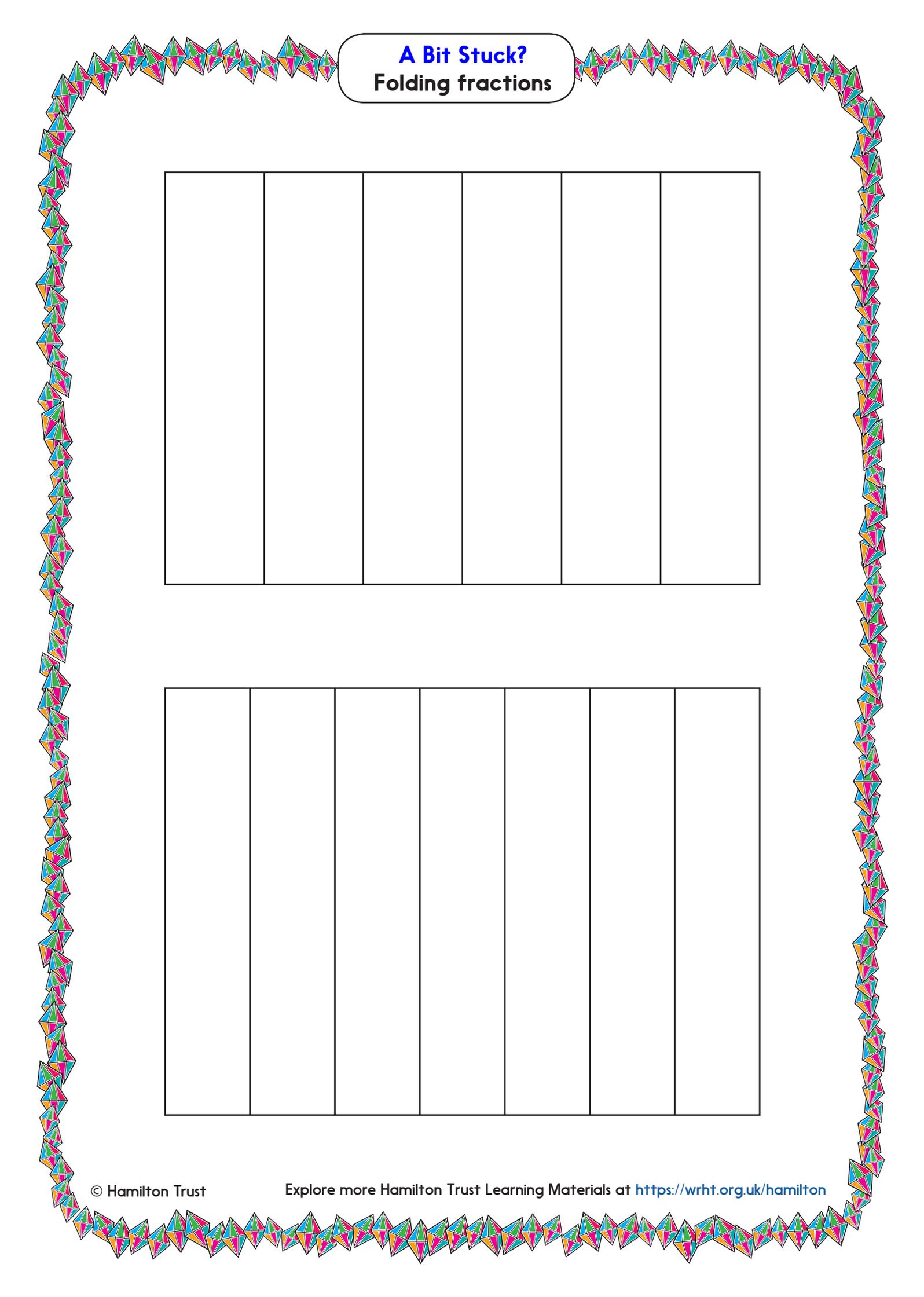




A Bit Stuck?
Folding fractions

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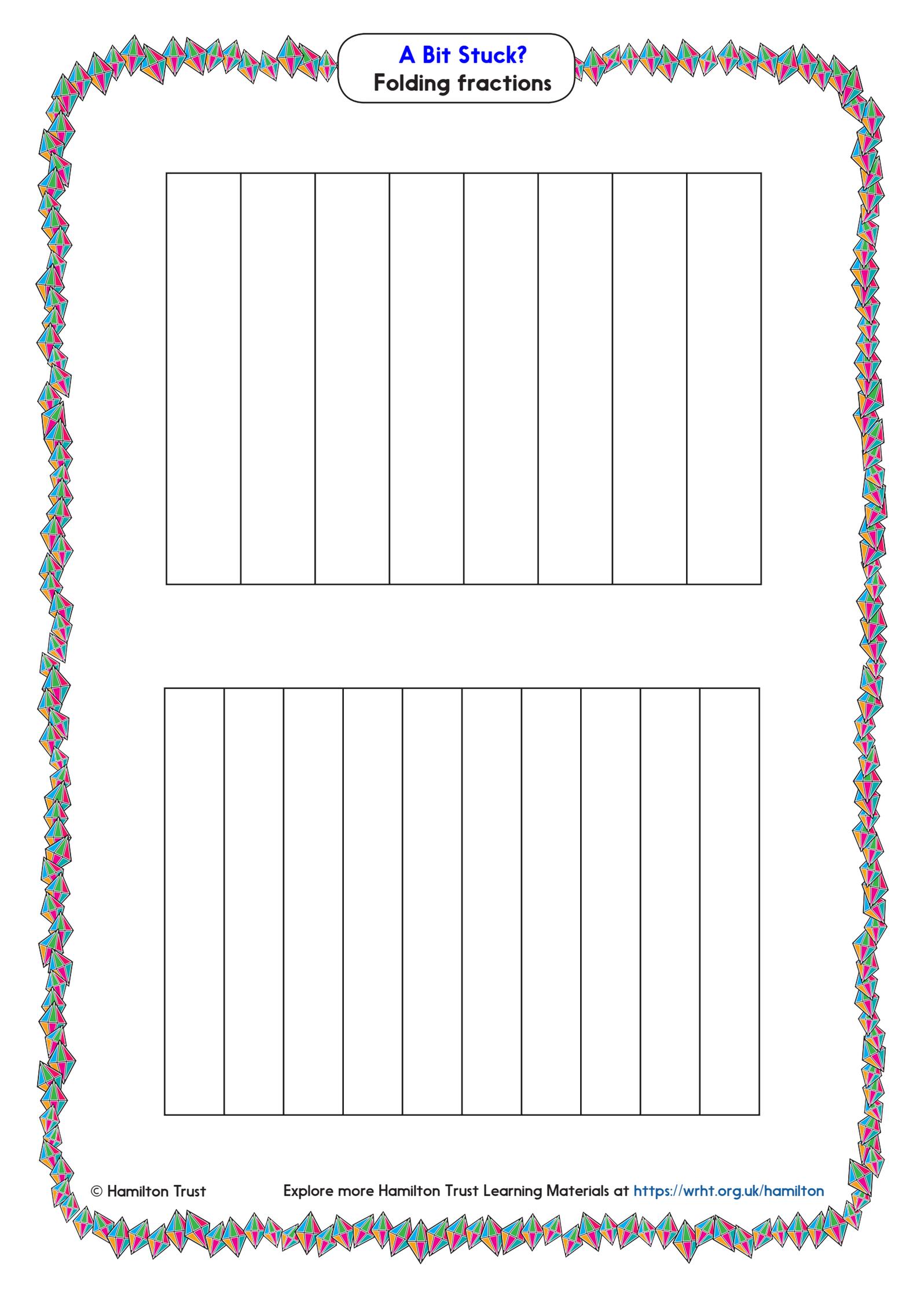
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A Bit Stuck?
Folding fractions

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A Bit Stuck?
Folding fractions

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Investigation

Fraction sequences

Look at this sequence of calculations:

$$\frac{1}{2} \times \frac{2}{3}, \quad \frac{2}{3} \times \frac{3}{4}, \quad \frac{3}{4} \times \frac{4}{5}$$

- How does the sequence 'work'?
- Calculate each of these:

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

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

$$\frac{3}{4} \times \frac{4}{5}$$

$$\frac{4}{5} \times \frac{5}{6}$$

$$\frac{5}{6} \times \frac{6}{7}$$

$$\frac{6}{7} \times \frac{7}{8}$$

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

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

- What would be the next calculation?
- Can you find and **describe** a **pattern** in the answers?
- Can you **predict** the next answer in the sequence?
- Can you write any rules or generalisations to describe this sequence?