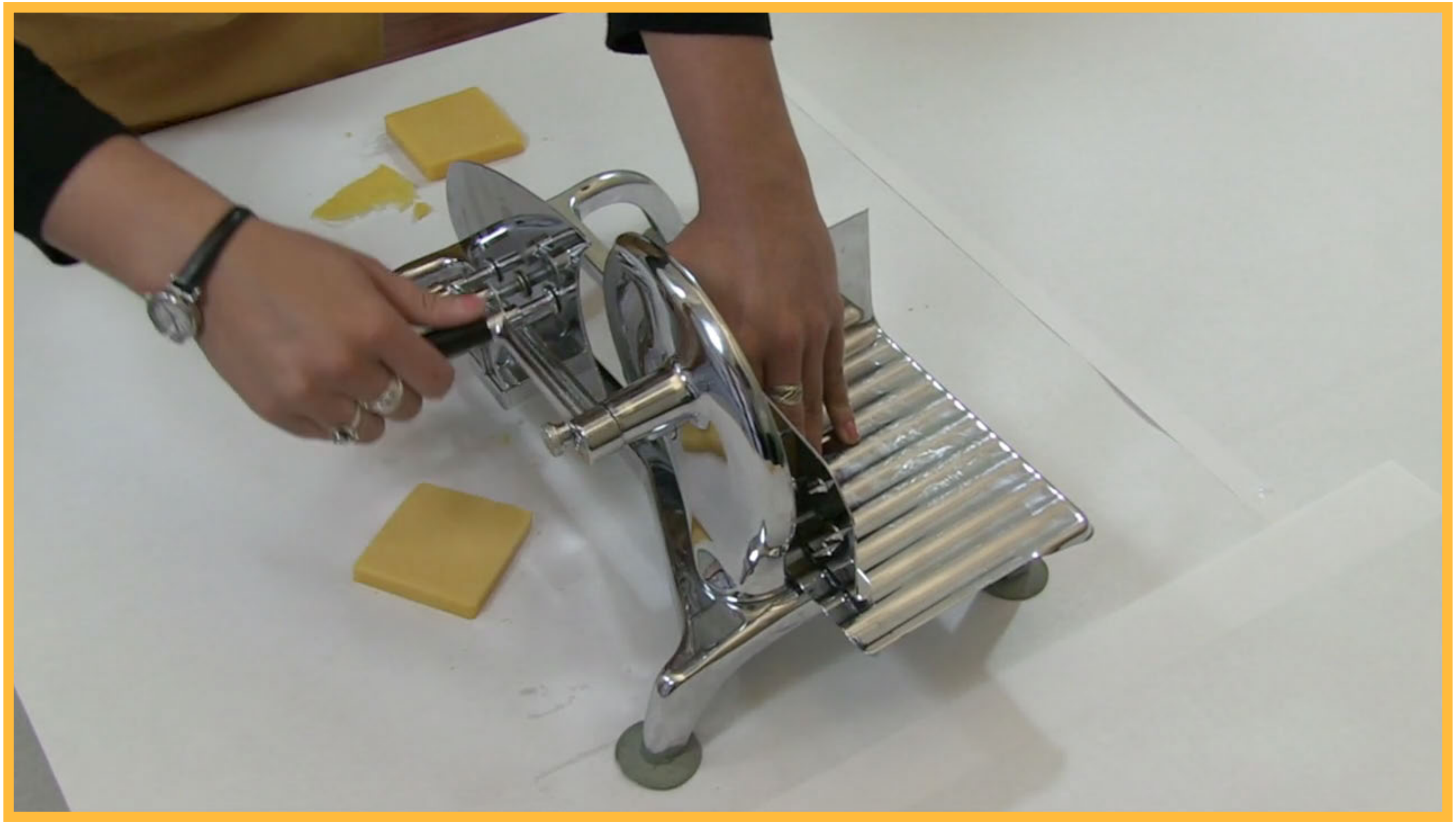
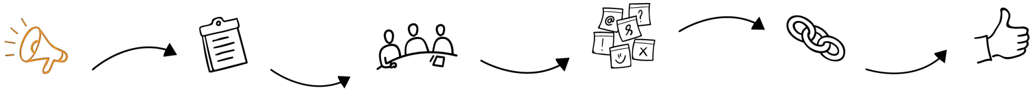
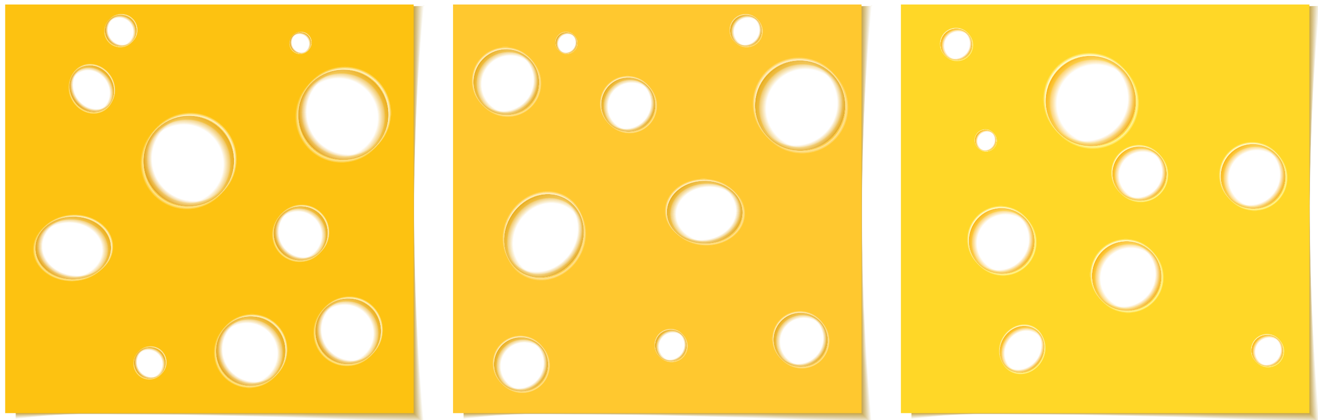
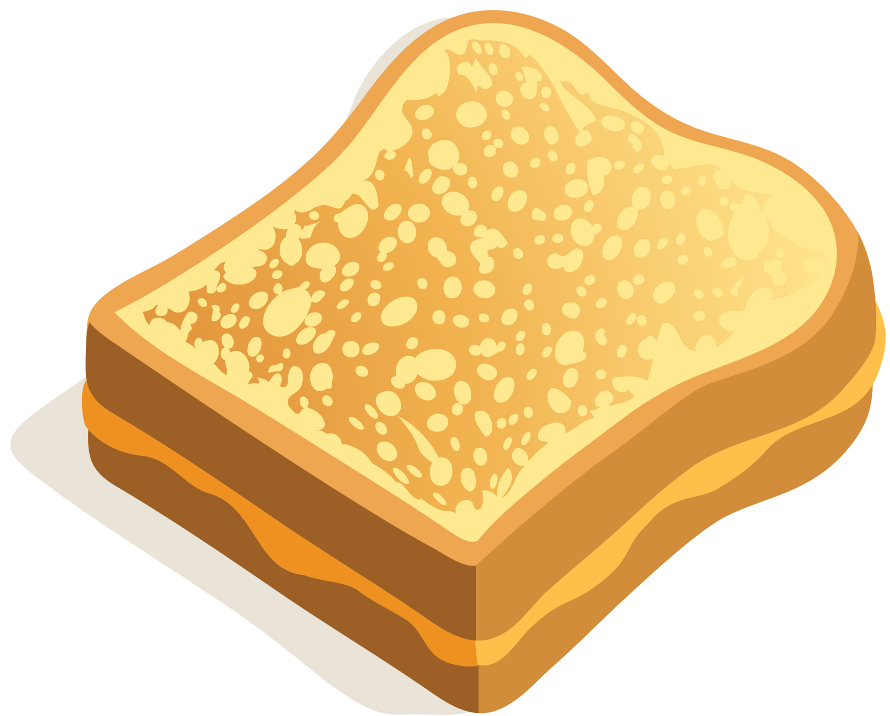
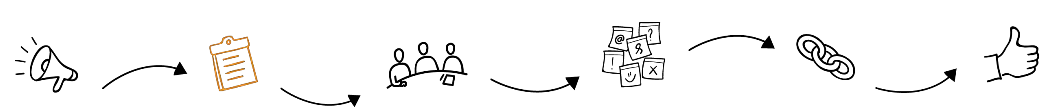








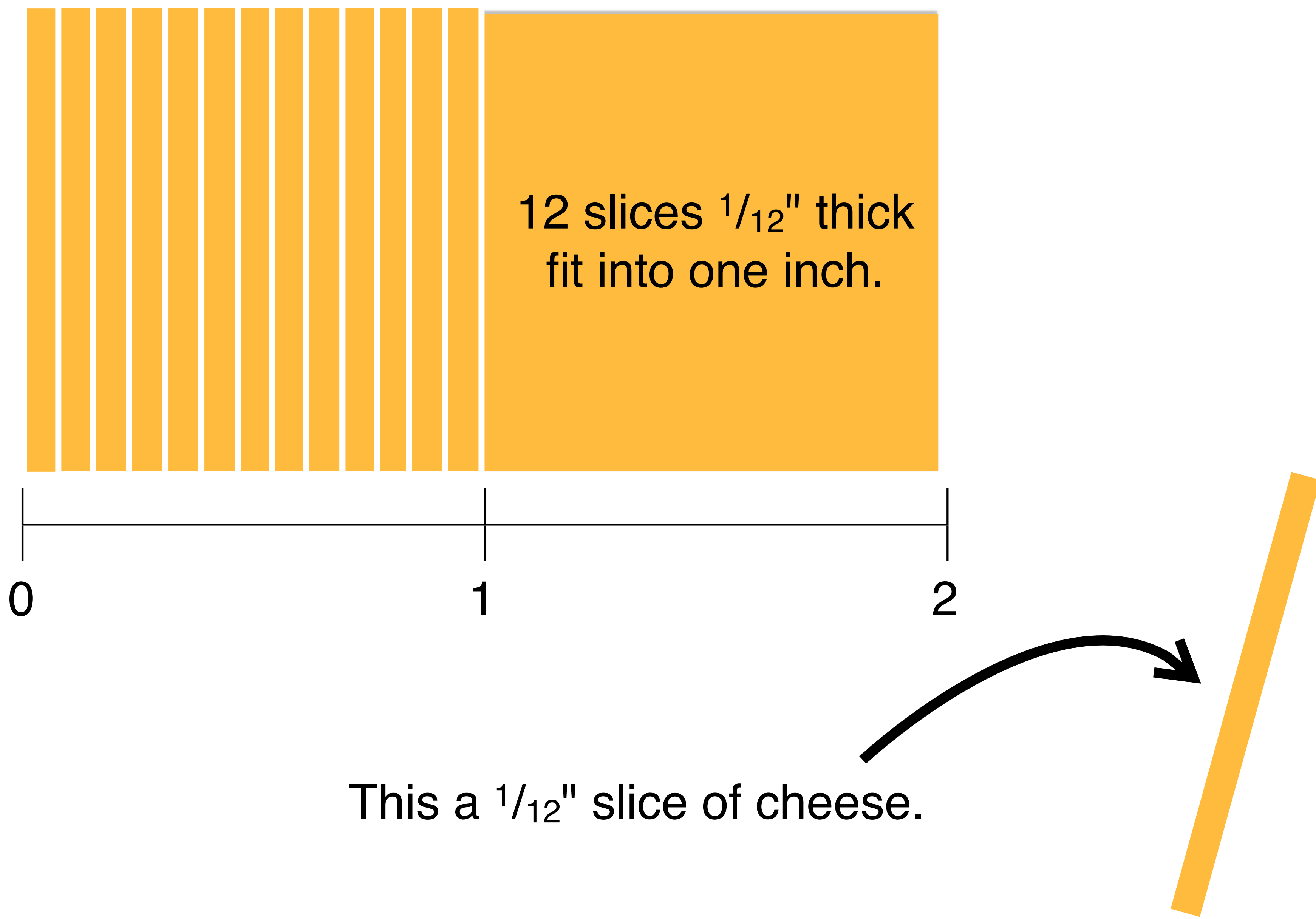
Each grilled cheese sandwich uses 3 slices of cheese. If the chef has 570 slices of cheese, how many grilled cheese sandwiches can she make?



This is a block of cheese that is two inches long.

0 1 2

This a $^{1}/_{12}$" slice of cheese.



12 slices 1/12" thick fit into one inch.
0
1
2
This a 1/12" slice of cheese.

SERP

Sylvia's bedroom is $21\frac{1}{2}$ feet wide. She is going to lay wood flooring throughout her entire bedroom. Each strip of wood flooring is $\frac{3}{4}$ foot wide. How many strips will Sylvia need?

Does one of the following approaches help solve the problem? More than one of them? All of them? Which one do you think is most helpful? Why?

$$21\frac{1}{2} \div \frac{3}{4} = n$$

$$\frac{3}{4} \times n = 21\frac{1}{2}$$

$$\frac{86}{4} \div \frac{3}{4} = n$$

$$\frac{43}{2} \times \frac{4}{3} = n$$

Discuss with a partner and then be ready to share your thinking.

Sylvia's bedroom is $21\frac{1}{2}$ feet wide. She is going to lay wood flooring throughout her entire bedroom. Each strip of wood flooring is $\frac{3}{4}$ foot wide. How many strips will Sylvia need?

Does one of the following approaches help solve the problem? More than one of them? All of them? Which one do you think is most helpful? Why?

All four approaches are valid.

This approach is most similar to cheese slicing and challenges students to make sense of an equation that uses division of fractions.

$$21\frac{1}{2} \div \frac{3}{4} = n$$

$$\frac{3}{4} \times n = 21\frac{1}{2}$$

This approach is also fine, but it is ambiguous in the meaning of the multiplication problem... some might think that $n \times 3/4 = 21\ 1/2$ is a better equation for the situation.

This approach is the same as the one above, but it converts the mixed number to an improper fraction and also adjusts to use a common denominator. Relation to whole number division in most apparent this approach.

$$\frac{86}{4} \div \frac{3}{4} = n$$

$$\frac{43}{2} \times \frac{4}{3} = n$$

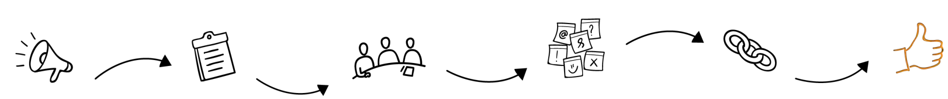
This approach is commonly used and convenient. Changes the mixed number to an improper fraction and uses the reciprocal. However, connection to the situation less apparent.

Explore More!

There are other ways to think about division of fractions. Try these two questions. They both use division, but why? And how do you know what to divide by what?

1. The water level in the reservoir has gone down $2\frac{1}{2}$ feet in the last month and a half. How fast is the water level going down per month?

2. Farmer Schmidt owns $\frac{3}{4}$ of a square mile of land. Her field is a rectangle. One side is $\frac{2}{3}$ of a mile. How long is the other side?



Explore More! (answers)

There are other ways to think about division of fractions. Try these two questions. They both use division, but why? And how do you know what to divide by what?

1. The water level in the reservoir has gone down $2\frac{1}{2}$ feet in the last month and a half. How fast is the water level going down per month?

   $2^1/_2$ is $^5/_2$. One and a half is $^3/_2$. So we have $(^5/_2) \div (^3/_2)$, which is $^5/_3$ (or $1^2/_3$). Answer: One and two-thirds feet per month.

   One great way to decide what to divide is to restate the problem with friendly numbers. Suppose the reservoir went down 6 feet in two months. Clearly it's 3 feet per month, and that's $6 \div 2$.

2. Farmer Schmidt owns $\frac{3}{4}$ of a square mile of land. Her field is a rectangle. One side is $\frac{2}{3}$ of a mile. How long is the other side?

   The area is $^3/_4$. Length times width is area, so width is area $\div$ length. That's $(^3/_4) \div (^2/_3)$, or $^9/_8$. The other side of the field is $^9/_8$ $(1^1/_8)$ miles long.