Rolling Up!

You need ☑ fraction strips (optional) ☑ a calculator (optional, for the **Challenge**)

Activity

Welcome to every student's dream job: working at the fruit-roll plant during the school holidays.

1. The strip-making machines show the length of each finished fruit strip as a fraction of a maxi roll. Mini rolls need to be at least $\frac{1}{2}$ as long as maxi rolls. You must put aside any length less than $\frac{1}{2}$ before it reaches the roller. Should you put aside the following lengths?

a. $\frac{3}{8}$ b. $\frac{2}{3}$ c. $\frac{6}{10}$ d. $\frac{4}{7}$

e. $\frac{5}{11}$ f. $\frac{7}{13}$ g. $\frac{14}{29}$ h. $\frac{49}{98}$

2. These workers at the fruit-roll factory have different ways to check if a fraction is greater or less than $\frac{1}{2}$. How well does each method work? Explain your answer.

a. I double the numerator (top number). If this double is more than the denominator (bottom number), the fraction is more than $\frac{1}{2}$.

b. I go through my list of fractions equivalent to one-half: $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$... I'm not so sure what to do when the denominator is an odd number, like $\frac{7}{13}$.

c. I halve the denominator. If the half is less than the numerator, the fraction is greater than $\frac{1}{2}$.

3. To make a standard roll, you need lengths that are at least $\frac{3}{4}$ of a maxi roll.

a. Can you use these lengths for standard rolls?

i. $\frac{10}{12}$ **ii.** $\frac{74}{100}$ **iii.** $\frac{24}{32}$ **iv.** $\frac{33}{45}$

b. What methods could you use to decide if a fraction is smaller or greater than $\frac{3}{4}$?

4. To make a snack roll, the length of the fruit strip needs to be at least $\frac{2}{3}$ of a maxi roll. These workers are talking about their methods for deciding if a fraction is smaller or greater than $\frac{2}{3}$.

I divide the denominator by 3 and multiply the answer by 2. That gives me the numerator for a fraction equal to $\frac{2}{3}$. If that numerator is smaller than the numerator I started with, the fraction is greater than $\frac{2}{3}$. So for $\frac{68}{99}$, I go $99 \div 3 = 33$, $2 \times 33 = 66$. $\frac{66}{99} = \frac{2}{3}$, and 66 is less than 68, so $\frac{68}{99}$ is greater than $\frac{2}{3}$.

I divide the numerator by 2 and multiply the answer by 3. That gives me the denominator for a fraction equal to $\frac{2}{3}$. If that denominator is larger than the denominator I started with, the fraction is greater than $\frac{2}{3}$. So for $\frac{68}{99}$, I go $68 \div 2 = 34$, $3 \times 34 = 102$. $\frac{68}{102} = \frac{2}{3}$, and 102 is greater than 99, so $\frac{68}{99}$ is greater than $\frac{2}{3}$.

Show how Piripi and Marissa would check to see if $\frac{7}{12}$ and $\frac{10}{14}$ are greater than $\frac{2}{3}$.

5. Are these fruit strips greater than, equal to, or less than $\frac{2}{3}$?

a. $\frac{23}{33}$ b. $\frac{30}{45}$

6. a. Use 12, then 10, then 8, and then 3 as ☐ in the following statements. For each number, are the statements true or false?

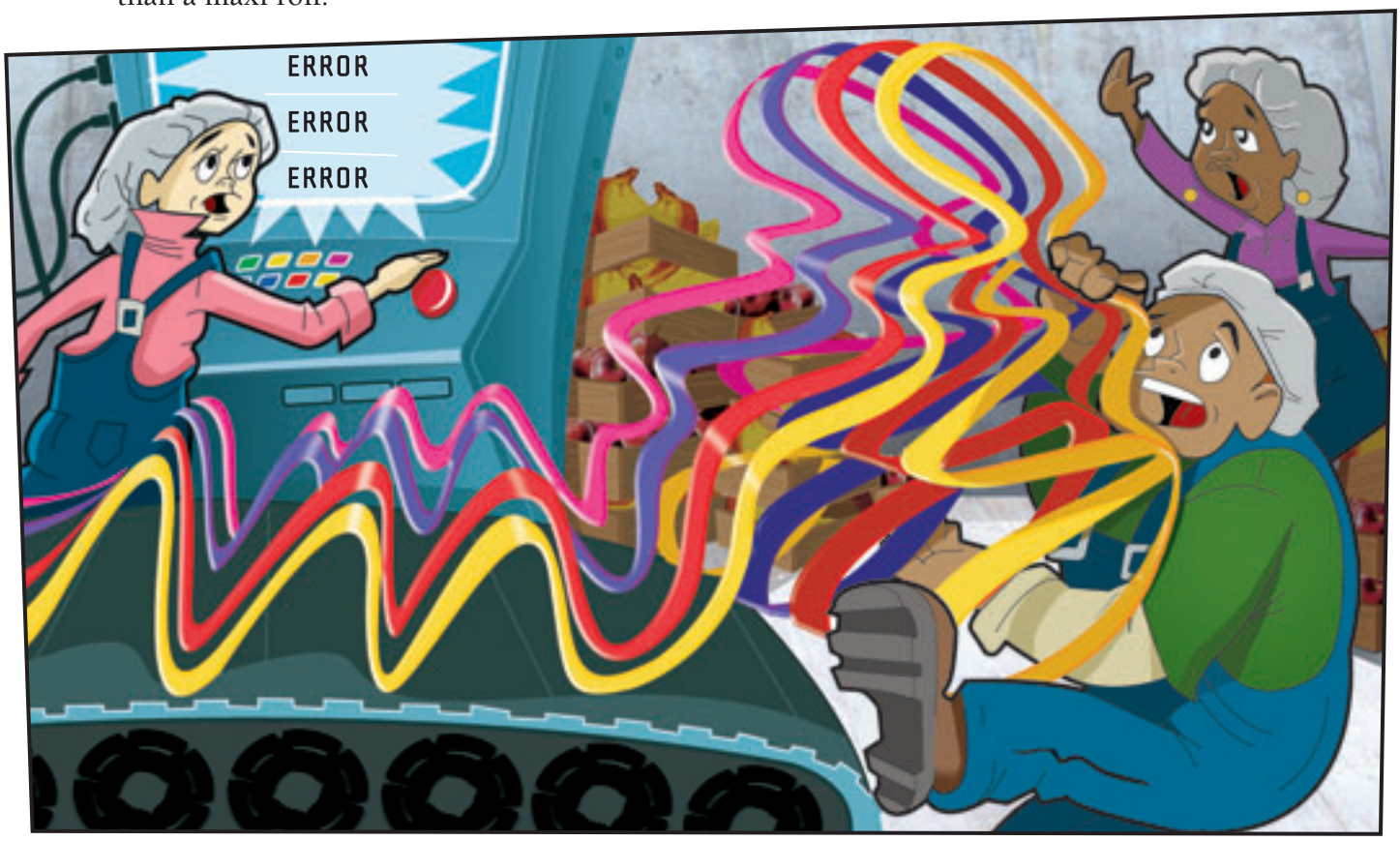
i. (☐ x 3) ÷ 4 has the same answer as (☐ ÷ 4) x 3.

ii. (☐ x 2) ÷ 3 has the same answer as (☐ ÷ 3) x 2.

b. Try the statements with two different numbers. Is your answer to **a** true for any numbers you might choose to multiply and divide by? Explain your answer.

Challenge

Sometimes the strip-making machine malfunctions and sends through lengths much greater than a maxi roll.



How many $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{3}{4}$ length rolls can be made from each strip below? Describe the methods you used.

a. $\frac{23}{4}$ b. $\frac{13}{3}$ c. $\frac{38}{5}$

d. $\frac{59}{7}$ e. $\frac{99}{8}$ f. $\frac{146}{9}$