

Work on the problems below with one or two students nearby.

Call me over if you have questions or want to check answers!

**Don't worry if some of this seems unfamiliar.** The worksheet is an exercise to help you learn the material and think about **new** things. It is not a test, and you don't need to be able to do all of it right away.

1. Evaluate each of the following sums, and express your answer as a reduced fraction.

(a)  $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3}$

(b)  $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4}$

(c)  $\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \frac{1}{4 \cdot 5}$

2. Guess a formula (in terms of  $n$ ) for the sum

$$S_n = \frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \cdots + \frac{1}{n(n+1)}.$$

3. Using your formula, find a formula for  $S_n + \frac{1}{(n+1)(n+2)}$ . What do you observe?