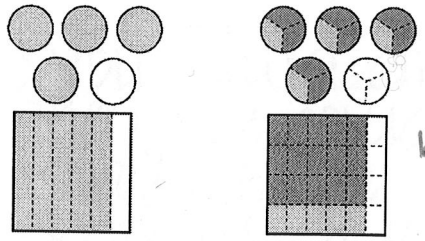
5.1.3 How can I calculate it without drawing?

Calculating Parts of Parts

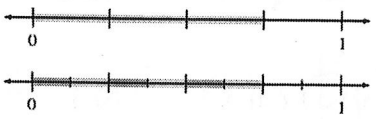
5-18 Each of the pairs of diagrams below shows a first and a second step that could be used to represent a multiplication problem. For each pair, write the corresponding multiplication problem and its solution.

a)



b)

c)



d)

a) $\frac{4}{5} \cdot \frac{2}{3} = \frac{8}{15}$

b) $\frac{5}{6} \cdot \frac{3}{4} = \frac{15}{24}$

c) $\frac{3}{4} \cdot \frac{1}{2} = \frac{3}{8}$

d) $\frac{1}{10} \cdot \frac{4}{10} = \frac{4}{100}$

5-19 How can you figure out the size of a part of a part without having to draw a diagram? Work with your team or your class to explore this question as you consider the example of $\frac{2}{3} \cdot \frac{4}{5}$.

a) **Describe** how you could draw a diagram to make this calculation.

b) How can you know what the numerator and denominator of a product will be without having to draw or envision a diagram each time?

5-20 PARTS OF PARTS, Part 2: Find each of the following parts of parts without drawing a diagram.

a) $\frac{2}{3} of \frac{2}{7}$

b) $\frac{6}{11} \cdot \frac{2}{7}$

5-22 Additional Challenge: *Hint: What fraction can be used for 70%?*

$\frac{2}{3}$ of 70%

5-18 On front

5-19 a) You could draw 3 rows and shade 2. Then, you could create 5 columns and shade 4. You would end up with 15 sections, 8 which were shaded twice.

b) You can multiply the numerators (top) and the denominators (bottom) to get the product.

5-20 a) $\frac{2}{3} \cdot \frac{2}{7} = \frac{4}{21}$ b) $\frac{6}{11} \cdot \frac{2}{7} = \frac{12}{77}$

5-22 $70\% = \frac{7}{10}$ of → multiply

$\frac{2}{3} \cdot \frac{7}{10} = \frac{14}{30}$ or $\frac{7}{15}$