

Divide and Conquer!

Activity 3

Use the chart to organize your thoughts about problems 1 and 2. Then use what you observe to answer questions 3, 4 and 5.

1. Naylah plans to make small cheese pizzas to sell at a school fundraiser. She has 9 bars of cheddar cheese. How many pizzas can she make if each takes the given amount of cheese?

Amount of Cheese	Think About It (in your own words)	Picture It	Write In Symbols	Process It (What do you actually do?)
a. $\frac{1}{3}$ bar of cheese?				
b. $\frac{1}{6}$ bar of cheese?				
c. $\frac{1}{4}$ bar of cheese?				
d. $\frac{3}{4}$ bar of cheese?				



Divide and Conquer!

Activity 3 (continued)

1. How many smaller bags of coffee can be made from a twelve-pound bag if each of the smaller bags contains the given amount?

Smaller Bag Amount	Think About It (in your own words)	Picture It	Write In Symbols	Process It (What do you actually do?)	Solve It
a. $\frac{1}{5}$ pound?					
b. $\frac{3}{5}$ pound?					
c. $\frac{1}{8}$ pound?					
d. $\frac{5}{8}$ pound?					



Divide and Conquer!
Activity 3 (continued)

3. Use ideas from your work on the questions about cheese pizzas and coffee bags to complete the following calculations.

a. $12 \div 1/4$	b. $12 \div 1/3$
c. $12 \div 2/3$	d. $15 \div 5/3$
e. $18 \div 5/6$	f. $21 \div 2/3$
g. Explain in words why $8 \div 1/3 = 24$ and $8 \div 2/3 = 12$. How are these two calculations related? Why is the answer to $8 \div 2/3$ exactly half the answer to $8 \div 1/3$?	

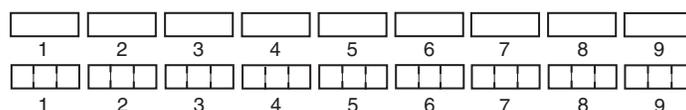
4. Describe a procedure that seems to make sense for dividing any whole number by any fraction.
5. Write a story problem that can be solved by the division $12 \div 2/3$. Explain why the calculation matches the story.



Teacher notes for Activity 3

Encourage students to use the “think about it” column to record their thoughts on the problems. For example, a student might write, “How many pizzas can she make with 9 bars of cheese if each takes $\frac{1}{3}$ bar of cheese? How many $\frac{1}{3}$ s are in 9? What do I multiply $\frac{1}{3}$ by to get 9? What do I get when I divide 9 by $\frac{1}{3}$?”

Encourage students to draw pictures or diagrams to help them think about the problems. For example, a student may draw the following diagram:

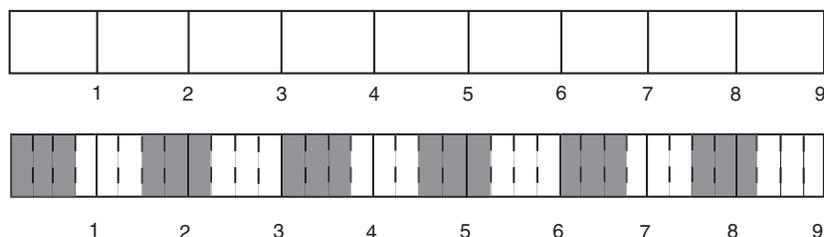


One student might use this diagram to say, “I need to find out how many $\frac{1}{3}$ ’s are in 9. This will tell me how many pizzas I can make. I need to divide 9 by $\frac{1}{3}$ to find how many pizzas. So $9 \div \frac{1}{3} = 27$, which means that I can make 27 pizzas with 9 bars of cheese.”

Another student may draw the above diagram and say, “I have 9 bars of cheese. Since each bar has three-thirds, I can multiply $9 \times \frac{1}{3}$ to find how many thirds in 9. So 27 pizzas can be made with 9 bars of cheese when each pizza takes $\frac{1}{3}$ cup of cheese.”

Some students may use common denominators and reason like this: “ $9 \div \frac{1}{3}$ is the same as $\frac{27}{3} \div \frac{1}{3}$. This means how many $\frac{1}{3}$ s are in 27 thirds, so the answer is 27.”

A diagram for the fourth situation in problem 1 is a bit different. Here the numerator of the divisor is not one. A student might draw the following diagram:



The student might reason, “I need to find how many $\frac{3}{4}$ s are in 9. This will tell me how many pizzas I can make. I divide 9 by $\frac{3}{4}$ to find how many pizzas. I can mark off $\frac{3}{4}$ size groups on the 9 bars of cheese and count to see that there are 12. So $9 \div \frac{3}{4} = 12$, which means that I can make 12 pizzas with 9 cups of cheese.”

(Some students may write this as $3 \times 4 \div 3 = 12$.)

