

Multiplying and Dividing using Part-Part-Whole Charts
Created by Paula Warden July 2006

Math TEKS Objectives:

4.1 Number, operation, and quantitative reasoning. The student uses place value to represent whole numbers and decimals.

4.4 Number, operation, and quantitative reasoning. The student multiplies and divides to solve meaningful problems involving whole numbers.

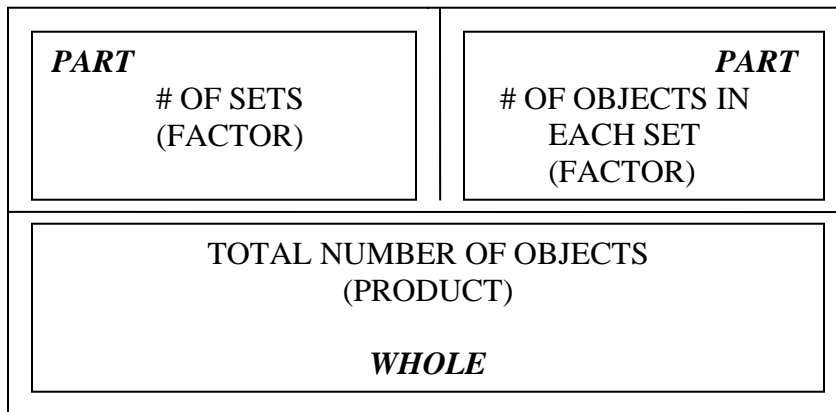
4.15 Underlying processes and mathematical tools. The student communicates about Grade 4 mathematics using informal language.

Lesson Objective: Students will use information from an historic document to practice multiplication and division problem solving with part-part-whole charts.

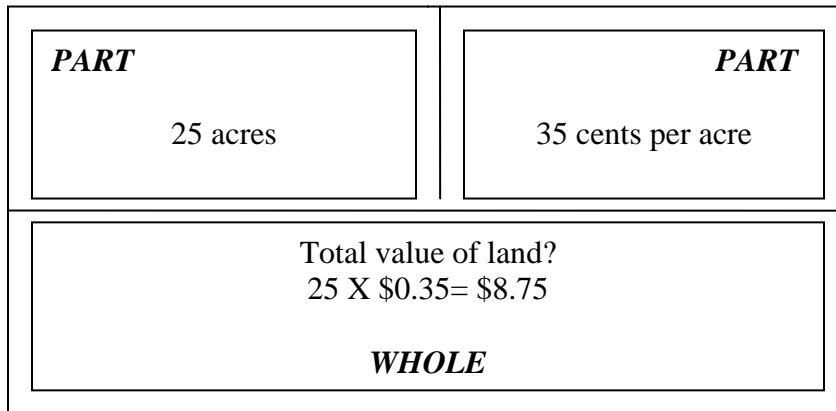
Focus: Lead discussion about previous lesson on Juneteenth Celebrations in Texas if applicable. Tell students they will be revisiting Mr. Browning’s property inventory.

Teach: Review the use of a Part-Part-Whole chart (see handout). Explain that multiplication and division work the same as addition and subtraction respectively on the chart.

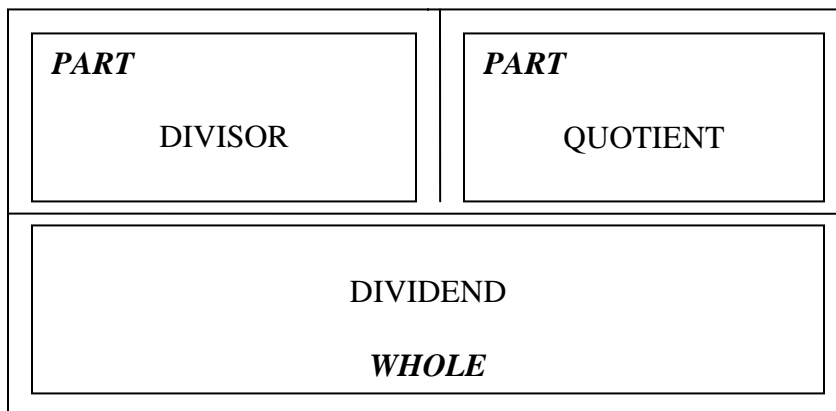
- In multiplication, the factors are the parts (sets and objects in each set) given in the problem and the product is the whole which is missing. An easy distinction between addition and multiplication is putting together like objects (add) versus looking at sets with objects in each set (mult.).



Example: Mr. Browning had 25 acres of land. Each acre was worth 35 cents. How much was all of Mr. Browning's land worth?



- In division, the divisor and quotient are the parts and the dividend is the whole. The problem will present the dividend (whole) and one of the parts. The other part will answer the question asked. In subtraction, you are “taking away”, separating, or comparing like objects. Division is splitting or dividing things up into equal groups.



Example: Mr. Browning had 10 laying hens that were worth a total of \$5.50. How much was each hen worth?

<i>PART</i> 10 laying hens	<i>PART</i> Cost per hen? $\$5.50 / 10 \text{ hens} =$ \$0.55 each
$\$5.50$ <i>Dividend-WHOLE</i>	

***Teacher note:** Always use a PPW chart with the parts on top and the whole on the bottom. This will help students easily transition into fractions and understanding the placement of numerators and denominators.

Using Primary Source and Practice:

http://tides.sfasu.edu/AA18/SHHVI_10.php?culture=1&chrono=5&index=0

Give students a copy of a portion of “An Inventory of the Property belonging to the estate of Nathan P. Browning” (see below).

Practice: Draw PART-PART-WHOLE charts on separate paper to determine whether multiplication or division is needed to complete the following equations. Please show all work and fill in each item listed below.

An Inventory of the property belonging to the
estate of Nathan P. Browning, decd. –

	=	TOTALS
Prairie tract of land including field: 360 acres @ \$3 each	=	
320 acres in Gonzales County @ \$0.50 each	=	
2240 acres in Robinson County @ \$0.25 each	=	
5 Yoke Oxen @ \$40 per yoke	=	
23 head of Cattle @ \$4 per head	=	
22 head of hogs @ \$3 per head	=	
4000 lbs pork @ \$0.04 each	=	
6 Cary plows @ _____ each	=	\$20.00
7 Shovels @ _____ each	=	\$ 7.00
7 Roosters @ _____ each	=	\$ 5.25
2 Sweeps @ _____ each	=	\$ 4.00
7 pair plow gear @ _____ each	=	\$10.50
9 Club axes @ _____ each	=	\$ 9.00

Challenge:

38 Bales of Cotton: 18,240 lbs @ 5 ½ cents =

How much does each bale of cotton weigh?

24 Bales seed Cotton in Gin: 17,760 lbs @ 6 cents =

How much does each bale of seed cotton weigh?