0.5 Prelude: Fractions

Practice exercises

1. There are 2,624 students at a local university.

   (a) Of those students, 673 of those students placed into this algebra class. What fraction of students placed into algebra?

   $\frac{673}{2624}$

   (b) The Dean said that approximately 1 in 4 students, or $\frac{1}{4}$ of all students, placed into algebra. Is that correct? Check by determining if your answer to part (a) $\approx \frac{1}{4}$ by comparing decimal approximations.

   $1 \div 4 = .25$

   $673 \div 2624 = .2564\ldots \approx 25$

   Yes

   I think close enough.

2. Gas mileage is usually rounded down to the nearest one decimal place. Gas mileage is measured in miles per gallon (mpg).

   (a) Xu does gig work delivering take-out food from local restaurants. He started the week with a full tank of gas and drove 319 miles. When he went to fill the tank, he needed 11.3 gallons. What was Xus gas mileage?

   $\frac{319 \text{ miles}}{11.3 \text{ gallons}} = 319 \div 11.3 = 28.2300\ldots \approx$ **28.2 mpg**

   (b) Margaret and Cathy are on a cross-country trip. They've driven from Minnesota to Maine (approximately 1,430 miles). They have bought gas a few times along the way: 12.7 gallons, then 14.0 gallons, then 13.1 gallons, and then 12.4 gallons. What was Margaret and Cathy's gas mileage?

   $12.7 + 14.0 + 13.1 + 12.4 = 52.2$ gallons

   $1430 \text{ miles} \div 52.2 \text{ gallons} = 27.3946.. \approx$ **27.4 mpg**

   (c) How could you do the calculation in part (b) one line on your calculator by using parentheses?

   $1430 \div (12.7 + 14.0 + 13.1 + 12.4) = 27.3946\ldots$:)

   Note: need parentheses around bottom of fraction so the + are calculated before the ÷.

3. In January 2015, Graham had 47 albums in his vinyl collection. By September 2023 (that's 8 years, 9 months later), he had 783 albums. Approximately how many albums per month did Graham buy?

   (a) Figure out the answer step by step.

783 − 47 = 736 new albums

8 years × 12 months = 96 months

96 months + 9 months = 105 months

$\frac{736 \text{ albums}}{105 \text{ months}} = 736 \div 105 = 7.0095 \approx$ **7 albums/month**

   (b) Now try to combine all of your calculations into one line on your calculator. Hint: write as a fraction first.

Now need parentheses on both top and bottom of fraction

$\frac{783-47}{8\times12+9} = (783-47) \div (8\times12+9) = 7.0095\ldots$ ☺

4. It took Mariam 3 hours to complete the reading for her Religion class. The reading was 102 pages long.

   (a) How fast did she read measured in pages per hour? Write the answer as a fraction and as a decimal.

$\frac{102 \text{ pages}}{3 \text{ hours}} = 102 \div 3 =$ **34 pages per hour**

   (b) Reading speed is often measured in words per minute. Assuming there are approximately 500 words per page, calculate Mariam's reading speed step by step.

think of the units as cancelling

$102 \text{ pages} \times \frac{500 \text{ words}}{\text{page}} = 102 \times 500 = 51{,}000 \text{ words}$

$3 \text{ hours} \times \frac{60 \text{ minutes}}{\text{hour}} = 3 \times 60 = 180 \text{ minutes}$

$\frac{51{,}000 \text{ words}}{180 \text{ minutes}} = 51000 \div 180 = 283.3333\ldots \approx$ **283 words/min**

   (c) How could you do the calculation in part (b) one line on your calculator by using parentheses? Hint: the "hours" cancel!

$(102 \times 500) \div (3 \times 60) = 283.3333\ldots$ ☺

Not sure about the one-line? Do step-by-step first ☺

Again used parentheses around top and bottom of fraction