

Name: \_\_\_\_\_ 10/2/2019  
Math 150-E Quiz 2

Please put away all papers and electronic devices except for a calculator. Show enough work that it is clear how you arrived at your answer. Answers can be given as fractions or as decimals rounded to 4 decimal places, unless otherwise instructed. Box/circle your final answers. Good luck!

1. A 2019 Ford Fiesta has an average fuel economy of 31 miles per gallon (mi/g). The average price of gasoline in New York State is \$2.75 per gallon (USD/g). Using these rates, answer the following questions.

(a) (8 points) How far can you drive on \$1 worth of gasoline?

(b) (8 points) How much does the gasoline cost to drive 1 mile?

2. (8 points) A box-shaped cargo container measures 8 ft wide, 8.5 ft tall, and 40 ft long. Find the volume of the cargo container in cubic-yards, i.e.  $\text{yd}^3$ . (Note: 1 yd = 3 ft.)

3. (8 points) A 200 watt lightbulb is turned on for 1 week. How many kilowatt-hours (kw-hr) of energy does this use? (Note: 1 kw = 1000 watts)

4. Your favorite bakery has recently increased the price of one bagel from \$0.75 to \$0.95.

(a) (8 points) Find the absolute change in the price of one bagel.

(b) (8 points) Find the relative change (i.e. percent change) in the price of one bagel.

5. The average rent for an apartment in Queens is \$2,586. The average rent for an apartment in Brooklyn is \$2,940.
- (a) (8 points) Use relative difference (i.e. percent difference) to compare rent in Queens to rent in Brooklyn.
- (b) (8 points) Use relative difference (i.e. percent difference) to compare rent in Brooklyn to rent in Queens.
6. Suppose the price of a particular stock increased by 20% in the first year, increased by 45% in the second year, and then decreased by 55% in the third year.
- (a) (8 points) Over all three years, what was the relative change (i.e. percent change) experienced by this stock price? (Note: It does not matter what price the stock started at, only that was not zero.)
- (b) (4 points) Would your answer to part (a) change if the price decreased by 55% in the first year, increased by 20% in the second year, and increased by 45% in the third year? (Note: these are the same relative changes, only applied in a different order.)

7. Write the following numbers using scientific notation.

(a) (6 points) 58,656.02

(b) (6 points) 0.000000048341

8. Let  $A$  and  $B$  be the two numbers given below using scientific notation.

$$A = 6.4 \times 10^{-58}$$

$$B = 3.8 \times 10^{77}$$

Express your answers to the following question using scientific notation.

(a) (6 points) Find  $A \times B$ .

(b) (6 points) Find  $A \div B$ .