

Practice New Skills: Unit Analysis

For #1-3, you must use Unit Analysis and show all work.

1. Usain Bolt set the world record for the 100m in 2009 with a time of 9.58 seconds. How many miles per hour is this?

$$60 \text{ seconds} = 1 \text{ minute}$$

$$60 \text{ minutes} = 1 \text{ hour}$$

$$0.3 \text{ meter} = 1 \text{ foot}$$

$$5280 \text{ feet} = 1 \text{ mile}$$

2. You plan to drive from San Francisco to New York City which is approximately 2,566 miles. Your car gets an average of 24 miles per gallon and the cost of gas averages \$2.94 per gallon. What will the gas cost for the trip?

3. How many seconds are in one year? There are 365 days in a year, 24 hours in a day, 60 minutes in an hour and 60 seconds in a minute.

Foundational Skills: Estimations with Percents

Using estimation with percent is a valuable skill. One estimation technique is to use benchmarks as with fractions. In your Day 3 homework, you made conversions between fractions and percents in a table like the one below. Complete this table.

$\frac{1}{10} =$	$\frac{1}{4} =$	$\frac{1}{3} =$
$\frac{2}{10} =$	$\frac{1}{2} =$	$\frac{2}{3} =$
$\frac{3}{10} =$	$\frac{3}{4} =$	

These are examples of useful benchmarks. Examples of some ways to estimate percentages using these benchmarks are given below.

Estimate 78% of 82:

- 78 is close to 75% or $\frac{3}{4}$
- 82 is close to 80 (convenient because it is divisible by 4)
- $\frac{1}{4}$ of 80 is 20
- So $\frac{3}{4}$ of 80 is 20×3 or 60
- So 78% of 82 is about 60

Estimate what percentage 41 is of 112.

- 41 is close to 40
- 3 times 40 is 120 which is close to 112
- So 40 is $\frac{1}{3}$ (one third) of 120
- So 41 is a little less than 33% of 121.

You may have other strategies to use in estimating percentages. There are many different ways to think of any given calculation.

Estimate each of the following values and explain your strategy. You should not use a calculator or write any calculations.

4. Estimate 38% of 267.

Explanation:

5. Estimate what percent 9 is of 86.

Explanation:

6. Estimate 18% of 72.

Explanation:

Thinking Back: Identifying the Error

Each example below contains an error. Circle the error in the problem and then show the corrected work and the answer in the second column.

<p>7.</p> $\frac{2}{5} \div \frac{3}{4}$ $\frac{5 \cdot 3}{2 \cdot 4} = \frac{15}{8}$	
<p>8.</p> $8 - 5(3 + 2)$ $3(3 + 2)$ $3(5)$ 15	
<p>9.</p> $\frac{5}{8} + \frac{3}{4} = \frac{8}{12} = \frac{2}{3}$	

Thinking Ahead About Powers of 10

We expect you to understand this material when you go to your next class. The answers are posted on your instructor’s website and you should check your work. If you need help, the following resources are available to you.

- Visit your instructor during office hours.
- Algebra Alcove

10. Evaluate the powers of 10. You may use a calculator if necessary, but look for a pattern that will allow you to evaluate the powers without a calculator.

$10^5 =$
$10^4 =$
$10^3 =$
$10^2 =$
$10^1 =$

11. Based on the pattern, evaluate the following powers of 10 without a calculator.

$10^7 =$

$10^{10} =$

12. Describe the pattern for the powers of 10.

13. Perform the following calculations. You may use a calculator to start, but look for patterns that will allow you to do the calculations without a calculator.

A	$62.45 \times 10 =$	$62.45 \div 10 =$
B	$62.45 \times 100 =$	$62.45 \div 100 =$
C	$62.45 \times 1000 =$	$62.45 \div 1000 =$
D	$62.45 \times 10^5 =$	$62.45 \div 10^5 =$
E	$62.45 \times 10^8 =$	$62.45 \div 10^8 =$

14. Describe how to multiply a number by a power of 10.

15. Describe how to divide a number by a power of 10.

Answer the following questions from the reading, *Brain-Based Learning, Part I*.

16. What is one thing from the reading that was new information to you and that you found interesting?

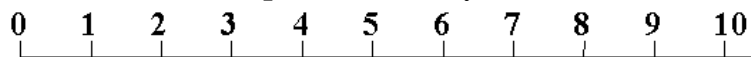
17. Based on the reading, why does this course have a theme?

18. Based on the reading, why are we using group work in algebra class?

19. The reading refers to “multiple stimulations”. What are two things you could do while studying for this course that would stimulate different regions of your brain?

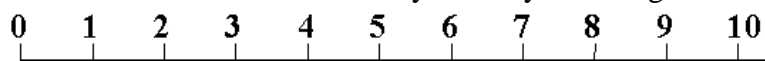
20. How long is information stored in working memory?

21. Indicate how **important** it is to you to understand how you learn (with 10 being the highest).



Why did you choose this number and not a lower number?

22. Indicate how **confident** are you that you are a good learner (with 10 being the highest).



Why did you choose this number and not a lower number?