

2. Estimating products can be done by rounding each number to the place of the _____

3. In order to estimate with division, round both the _____

Looking Ahead

Following the order of operations is necessary when simplifying formulas and expressions. The following example shows the importance of the order of operations when determine an individual's monthly net pay amount.

Example Preview

A recent graduate from a liberal arts college acquired a job as a sociologist. Her yearly salary is \$34,500. Her employer withholds \$5175 in state and federal income taxes and \$2639.25 in FICA taxes throughout the year. Determine her monthly net pay amount.

Solution

The monthly net pay amount is the annual salary minus withholdings for all required taxes, divided over 12 months of the year. In this case, we need to subtract \$5175 and \$2639.25 from the yearly salary before dividing by 12.

$$\text{Monthly Net Pay: } \frac{\$34,500 - (\$5175 + \$2639.25)}{12} = \frac{\$26685.75}{12} \approx \$2223.81$$

Therefore, the sociologist can expect to collect a monthly paycheck of \$2223.81.

6.R.1 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. An estimate of the sum $71.369 + 49.1$ is 120.
2. One way to estimate the product of decimal numbers is to round the numbers to the rightmost nonzero digit before performing the multiplication.
3. An estimate of the quotient $16.469 \div 3.87$ would be 4.

4. Experience and understanding are needed to decide whether or not a particular answer is reasonably close to an estimate.
5. According to the rules for order of operations, addition and subtraction should be performed before multiplication and division.

Practice

Estimate each answer, then find the actual answer.

6.
$$\begin{array}{r} 29.03 \\ + 3.79 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 51.21 \\ - 25.13 \\ \hline \end{array}$$

8. $(6.3)(1.6)$

9. $3.1 \overline{)6.36}$

10. Simplify $3.1(50 - 25.8) - 12.9$

Applications

Solve.

11. Jim is packing three sculptures in a box for shipping. The weights of the sculptures are 5.63 pounds, 12.4 pounds, and 3 pounds. The shipping materials weigh 17.4 pounds.
 - a. Estimate the total weight.

- b.** Find the actual weight.
- 12.** Peter Sagan rode 125.09 miles in 5.35 hours.
- a.** Estimate how fast he was riding per hour.
- b.** What was his average speed per hour (to the nearest hundredth)?