Lesson 2: Writing, Evaluating, and Finding Equivalent Expressions with Rational Numbers

Classwork

**Exercise 1**

John’s father asked him to compare several different cell phone plans and identify which plan will be the least expensive for the family. Each phone company charges a monthly fee, but this fee does not cover any services: phone lines, texting, or internet access. Use the information contained in the table below to answer the following questions.

Cell Phone Plans

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of Plan | Monthly Fee  (Includes shared minutes) | Price per Phone Line | Price per line for Unlimited Texting | Price per line for Internet Access |
| **Company A** |  |  |  |  |
| **Company B** |  |  |  |  |
| **Company C** |  |  | *included in monthly fee* | *included in monthly fee* |

All members of the family may not want identical plans; therefore, we will let represent the number of phone lines, represent the number of phone lines with unlimited texting, and represent the number of phone lines with internet access.

**Expressions:**

Company A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Company B \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Company C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the expressions above, find the cost to the family of each company’s phone plan if:

1. Four people want a phone line, four people want unlimited texting, and the family needs two internet lines.

|  |  |  |
| --- | --- | --- |
| Company A | Company B | Company C |
|  |  |  |

Which cell phone company should John’s family use? Why?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Four** people want a phone line, **four** people want unlimited texting, and all four people want internet lines.

|  |  |  |
| --- | --- | --- |
| Company A | Company B | Company C |
|  |  |  |

Which cell phone company should John’s family use? Why?

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1. Two people want a phone line, **two** people want unlimited texting, and the family needs **two** internet lines.

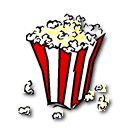
|  |  |  |
| --- | --- | --- |
| Company A | Company B | Company C |
|  |  |  |

Which cell phone company should John’s family use? Why?

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**Exercise 2**

Three friends went to the movies. Each purchased a medium-sized popcorn for dollars and a small soft drink for dollars.

* 1. Write the expression that represents the total amount of money (in dollars) the three friends spent at the concession stand.

* 1. If the concession stand charges for a medium-sized popcorn and for a small soft drink, how much did the three friends spend on their refreshments altogether?

**Exercise 3**

Complete the table below by writing equivalent expressions to the given expression and evaluating each expression with the given values.

|  |  |  |  |
| --- | --- | --- | --- |
| **Equivalent Expressions** | | | |
| **EXAMPLE:**  **Evaluate**  **,** |  |  |  |
| 1. Evaluate |  |  |  |
| 2. Evaluate  , |  |  |  |
| 3. Evaluate  , |  |  |  |

Lesson Summary

* An expression is a number or a letter, which can be raised to a whole number exponent. An expression can be a product whose factors are any one of the entities described above. An expression can also be the sum or difference of the products described above.
* To evaluate an expression, replace each variable with its corresponding numerical value. Using order of operations, the expression can be written as a single numerical value.
* When numbers are substituted into all the letters in an expression and the results are the same, then the expressions are equivalent.
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* When numbers are substituted into all the letters in an expression and the results are the same, then the expressions are equivalent.

Homework: Unit 3 Lesson 2

1. Sally is paid a fixed amount of money to walk her neighbor’s dog every day after school. When she is paid each month, she puts aside to spend and saves the remaining amount. Write an expression that represents the amount Sally will save in months if she earns dollars each month. If Sally is paid each month, how much will she save in months?

1. A football team scored touchdowns, extra points, and field goals.

Touchdown = 6 points, Extra Point = 1, and Field Goal = 3 points.

* 1. Write an expression to represent the total points the football team scored.
  2. Write another expression that is equivalent to the one written above.
  3. If each touchdown is worth points, each extra point is point, and each field goal is points, how many total points did the team score?

1. Write three other expressions that are equivalent to .

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