

ALPHABET SOUP

Some people express frustration about the time in their mathematics education when ‘they stopped using numbers and started using letters.’ This usually happens because they’ve had experiences where the symbols/letters had no meaning for them and were just things to be manipulated. But, with enough experience in building your own expressions, you will likely see that the letters *are* numbers and that expressions are very useful in many business (and other!) contexts.

1. What would the monthly **income** be for Bridge Bungees if:
 - a. They sold 3 jumps at \$100 each?
 - b. They sold 10 jumps at \$75 each?
 - c. They sold 21 jumps at \$80 each?
 - d. Create a rule to determine monthly income based on the number of jumps sold and the price of a single jump. Your rule can be written in sentences, bullet points, or using variables.
2. What would the monthly **expenses** be for Bridge Bungees if:
 - a. They pay \$500 to rent a building, \$100 in utilities, and \$200 in wages for each of their 10 employees?
 - b. They pay \$1,000 to rent a building, \$150 in utilities, and \$400 in wages for each of their 7 employees?
 - c. They pay \$1,500 to rent a building, \$215 in utilities, and \$350 in wages for each of their 11 employees?
 - d. Create a rule to determine monthly expenses based on rent, utilities, wages per employee, and number of employees. Your rule can be written in sentences, bullet points, or using variables.
3. Put your rules from Question 1c and 2c together to create a single rule for monthly **profit** for Bridge Bungees. Your rule can be written in sentences, bullet points, or using variables.



ON YOUR OWN

Alphabet Soup and 1-2-3-4 Expressions

Can I create and interpret expressions?

1. A large jet airplane carries 150,000 pounds of fuel at takeoff. It burns about 17,000 pounds of fuel for every hour of flight.
 - a. What is the approximate amount of fuel left after 1 hour of flight? 3 hours? 7 hours?
 - b. Write an expression showing the amount of fuel remaining after t hours of flight.
2. An amusement park charges \$75 for adult admission and \$50 for child admission. The park has daily operating expenses of \$35,000.
 - a. What is the expected profit (or loss) of the park on a day when 250 adult tickets and 500 child tickets were sold?
 - b. What is the expected profit (or loss) of the park on a day when 500 adult tickets and 750 child tickets were sold?
 - c. What is the expected profit (or loss) of the park on a day when A adult tickets and C child tickets were sold?
3. When we find the value of a mathematical expression, we follow a specific order of operations:

1st - Parenthesis

2nd - Exponents

3rd - Multiplication and division; from left to right

4th - Addition and subtraction; from left to right

None of the statements below are correct. Your job is to insert parentheses into the expressions on the left side of the equation in order to make the statements true.

- a. $12 - 8 \cdot 2 + 7 = 36$
 - b. $8 - 15 + 6 \div 3 = 1$
 - c. $24 + 16 \div 8 - 4 = 10$
 - d. $20 \div 7 - 2 + 5^2 \cdot 3 = 79$
4. If parentheses are added, each of the expressions below could have several different values when evaluated. Place parentheses in different places to see how many different values you can create for each expression.
 - a. $7 - 5 \cdot 8 + 6 \div 2$
 - b. $4 + 9 - 6 \div 2 \cdot 5 + 1$
 - c. $4 - 3 - 2 + 1$

