

# KEY POINTS

## Section 1.1 Expressions

- Letters are used to represent numbers
- Algebraic expressions represent calculations with numbers
- Algebraic expressions can be read, written, and evaluated
- Terms and factors are used to build expressions
- Recognizing patterns

## Section 1.2 Equations

- What is an equation?
- What is a solution to an equation?
- Writing equations
- What is an identity?
- Using equations to solve problems

# Warm - Up

Section 1.1  
Expressions

Write down as many formulas as you can for areas and volumes.

# Share Out

Section 1.1  
Expressions

Formulas

Characteristics of Expressions

# Examples

## Section 1.1 Expressions

### Example #1

The formula for body mass index is weight in kilos divided by height, in meters, squared. Write the formula: \_\_\_\_\_

1. What does the calculation  $\frac{70}{2^2}$  represent?
2. What is the effect on the body mass index when  $h$  is increased and  $w$  is unchanged?
3. What is the effect on the body mass index when  $w$  is decreased and  $h$  is unchanged?

# Examples

## Section 1.1 Expressions

### Example #2

If the tag price on a pair of jeans is  $p$  dollars and the sales tax is 5.6%, how much do you pay?

### Brainstorm!

### Formulas

# Examples

## Section 1.1 Expressions

### Example #3

Read each of the following expressions and describe to your partner the sequence of operations.

1.  $2(n+1) - 3$

2.  $(2n+1) - n$

3.  $2l + w$  and  $2(l + w)$

4.  $(a+b)^2$  and  $(a^2+b^2)$

# Examples

## Example #4

Evaluate  $3x - 4y$  and  $4x^2 + 9x + 7y$  using the following:

1.  $x = 2, y = -5$

Section 1.1  
Expressions

# Practice

## Section 1.1 Expressions

Evaluate the expressions using the values given

1.  $4x^2 + 2y^4$ ;  $x = 2$ ,  $y = -1$

Describe the sequence of operations that produces the expression.

2.  $5(x - 2)$

3.  $4 - 2(x - 1)$



# Practice

## Section 1.1 Expressions

Write an expression for the sequence of operations.

4. Add  $x$  to 1, triple, subtract 2

5. Subtract  $x$  from 2, double, add 8

# Practice

## Section 1.1 Expressions

Write an expression for the sales tax on a car.

6. Tax rate is 5%, price is \$ $d$

7. Tax rate is 7%, price is \$550 less than the sticker price

# Practice

## Section 1.1 Expressions

A family buys 12 bags of hamburger buns and 60 hamburger patties. Write an expression that will help us to find the total cost if the hamburger buns cost  $h$  dollars and the hamburger patties cost  $p$  dollars.

# Homework

Section 1.1 Pages 6 -7

**Expressions** # 2 - 10 even, 13, 15, 20 - 23, 25, 26, 28, 30, 33,  
34, 56 - 58

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# Warm-Up

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1. Tax rate is 5%, price is \$d

# Discussion

## Section 1.2 Equations

$$3x + 2 = 10 - x$$

This is known as an \_\_\_\_\_.

Is this \_\_\_\_\_ true or false?

# Discussion

Section 1.2  
Equations

X	$3X + 2$	$10 - X$



# Examples

## Section 1.2 Equations

### Example #1

You started with \$ $p$ , paid \$40 for a pair of jeans, and had \$30 left.

Equation: \_\_\_\_\_

### Example #2

You started with \$80, paid \$ $p$  for a pair of jeans, and had \$35 left.

Equation: \_\_\_\_\_

# Examples

## Section 1.2 Equations

### Example #3

For each of the following equations, which of the given values is a solution?

a)  $3-4t = 5-(2 + t)$ , for the values  $t = -3, 0$

b)  $3x^2 + 5 = 8$ , for the values  $x = -1, 0, 1$

# Examples

## Section 1.2 Equations

### Example #4

You have \$10.00 to spend on  $n$  bottles of soda, costing \$1.50 each. Are the following expressions? Equations? Justify your answers.

a)  $1.50n$

b)  $1.50n = 6.00$

c)  $10 - 1.50n$

d)  $10 - 1.50n = 2.50$

# Practice

## Section 1.2 Equations

Write an equation representing the situation if  $c$  is the cost of movie tickets in dollars.

1. The cost for a family of four to attend the movies is \$42.

Write in words the statement represented by the equation.

2.  $0.25x = 12$

# Practice

## Section 1.2 Equations

Determine if the given value of the variable is a solution to the equation.

3.  $x + 4 = x^2 - 16$ ;  $x = 4$ ;  $x = -4$

Solve the equation.

4.  $v + 5 = 15$

5.  $x^2 = 49$

# Practice

Section 1.2  
Equations

Construct a table showing the values of the expression  
 $2 + 3x$  for  $x = 0, 1, 2, 3, 4$

# Homework

Section 1.2  
Equations

Pages 11 - 13

# 2, 3, 5 - 13, 16 - 18, 21, 23, 25 - 35 odd, 37, 39,  
40, 42, 43, 44