

Name: _____

6.EE.1

Solve each expression.

2^3 _____

3^{4-2} _____

$(17-9)^2$ _____

Solve each expression.

4^3 _____

5×4^2 _____

$5^3 \div 5^2$ _____

Solve each expression.

8^2 _____

$4^3 - 5$ _____

$(1 + 4)^3$ _____

Solve each expression.

1^8 _____

$2^{10 \div 2} \div 8$ _____

$2^4 \div 2$ _____

Write the expressions but do not solve.

thirteen minus five, all to the third power _____

seven cubed _____

five squared plus three _____

Name: _____

6.EE.1

Whole-Number Exponents

Directions: Solve each expression.

1. 2^4 _____

2. 3^3 _____

3. 4^{4-2} _____

4. 5×2^3 _____

5. $(18-9)^2$ _____

6. $4^3 \div 4^2$ _____

Directions: Write the expressions but do not solve.

7. eight to the fifth power minus two

8. four raised to the three-minus-two power

9. six cubed

10. the quantity of seven minus one, all raised to the fourth power

Name: _____

6.EE.1

Whole-Number Exponents

Directions: Solve each expression.

1. 4^3 _____

2. 1^6 _____

3. $5^3 - 2$ _____

4. $6^{6 \div 3} \div 3$ _____

5. $(2 + 5)^3$ _____

6. $3^3 \div 3$ _____

Directions: Write the expressions but do not solve.

7. seven cubed plus two

8. nine raised to the five-minus-two power

9. one fourth of the quantity three squared

10. twelve minus eight, all to the sixth power

Name: _____

6.EE.2

Write the expressions using numbers and symbols.

the sum of d and 5

the product of 7 and b

Write the expressions using numbers and symbols.

14 divided by j

w subtracted from 2

Write the expressions using numbers and symbols.

divide g by 4

subtract m from 12

Write the expressions using numbers and symbols.

multiply 9 and r

add c to 1

Solve each problem.

The volume of a cube is given by the expression s^3 , and its surface area is given by the expression $6s^2$, where s is the length of the cube's side. What is the volume of a cube with a side length of 4 inches? _____

The volume of a cube is given by the expression s^3 , and its surface area is given by the expression $6s^2$, where s is the length of the cube's side. What is the surface area of a cube with a side length of 4 inches? _____

Name: _____

6.EE.2

Variables (Letters Stand for Numbers)

Directions: Write the expressions using numbers and symbols.

1. the sum of c and 4 _____
2. the product of 5 and w _____
3. 16 divided by b _____
4. r subtracted from 9 _____

Directions: Which statement best describes the expression?

5. $(b + 7)(3 - h)$
 - a. The product of two numerals
 - b. The quotient of two factors
 - c. The sum of two numbers
 - d. The product of two factors

Directions: Solve the problem correctly.

6. The volume of a cube is given by the expression s^3 , and its surface area is given by the expression $6s^2$, where s is the length of the cube's side. What is the volume of a cube with a side length of 5 inches?

Name: _____

6.EE.2

Variables (Letters Stand for Numbers)

Directions: Write the expressions using numbers and symbols.

1. divide f by 3 _____

2. subtract k from 6 _____

3. multiply 8 and p _____

4. add d to 2 _____

Directions: Identify the coefficient in this expression.

5. $4(b + f)$ _____

Directions: In the expression below, what is the best description of $(b + 7)$?

6. $(b + 7)(3 - h)$
- a. The difference of two values
 - b. The factor multiplied by $(3 - h)$
 - c. The quotient of two factors
 - d. The product of two numerals

Directions: Solve the problem correctly.

7. The volume of a cube is given by the expression s^3 , and its surface area is given by the expression $6s^2$, where s is the length of the cube's side. What is the surface area of a cube with a side length of 5 inches?

Name: _____

6.EE.3

Simplify.

$$e + e + e + e + e + e =$$

$$8j - 2j =$$

Simplify.

$$5 + 8h + 7 + 3h =$$

$$m + m + m + m + 5m =$$

Expand the expression using the distributive property.

$$2(6 + r) =$$

$$4(5z - 7) =$$

Expand the expression using the distributive property.

$$(9 + 3k)2 =$$

$$(8a + 6b)3 =$$

Apply the distributive property to convert the expression to the greatest common factor multiplied by a term in parentheses.

$$42c + 12 = \underline{\hspace{10em}}$$

$$36 - 3p = \underline{\hspace{10em}}$$

Name: _____

6.EE.3

Generate Equivalent Expressions

Directions: Simplify.

1. $b + b + b + b =$ _____

2. $7m - 3m =$ _____

3. $4 + 9g + 6 + 3g =$ _____

Directions: Expand the expression using the distributive property.

4. $4(3 + r) =$ _____

5. $9(2p - 5) =$ _____

6. $(4 + 7g)6 =$ _____

Directions: Apply the distributive property to convert the expression to the greatest common factor multiplied by a term in parentheses.

7. $36a + 9 =$ _____

8. $40 + 50d =$ _____

9. $28 - 7f =$ _____

Name: _____

6.EE.3

Generate Equivalent Expressions

Directions: Simplify.

1. $h + h + h + 4h =$ _____

2. $22w + 12w =$ _____

3. $81z + 5 - 46z - 5 =$ _____

Directions: Expand the expression using the distributive property.

4. $13(e + 3) =$ _____

5. $7(7p - 2) =$ _____

6. $(4u + 8v)5 =$ _____

Directions: Apply the distributive property to convert the expression to the greatest common factor multiplied by a term in parentheses.

7. $15 + 21b =$ _____

8. $30 - 18f =$ _____

9. $60g + 48h =$ _____

Name: _____

6.EE.4

Is each equation always true, regardless of the value of the variable?

1. $b + b = 2b$

2. $g \times g \times g = g^3$

3. $2r - r = r$

4. $a^3 \div a^4 = a$

5. $(w + 1)^2 = 2w$

6. $d^4 \times d^2 = d^6$

7. $5n^2 - 4n^2 = n^2$

8. $j \div k = 1 \div k \div j$

9. $g \times h = h + g$

10. $4c^2 + p = c^2 + 4p$

Name: _____

6.EE.4

Identify Equivalent Expressions

Directions: Is each equation always true, regardless of the value of the variable?

1. $m + m = 2m$

2. $w \times w = w^2$

3. $3y - y - y = y$

4. $b^3 \div b^4 = b$

5. $(e + 1)^2 = 2e$

6. $c^3 \times c^2 = c^5$

7. $3v^2 - 2v^2 = v^2$

8. $f \div h = 1 \div h \div f$

9. $5k - 3k^2 = k^2$

10. $a \times 1 \div d = a \div d$

Name:

6.EE.4

Identify Equivalent Expressions

Directions: Is each equation always true, regardless of the value of the variable?

1. $q^2 = 4q$

2. $c \times d = d + c$

3. $p = p^2 \div p$

4. $f \div g = f + g$

5. $k \times k \times k \times k = k^4$

6. $c \times b = b \times c \times 1$

7. $h^2 = 2h^4 \div 2h$

8. $j^2 = (j + 2)^2$

9. $3m^2 + p = m^2 + 2p$

10. $r \times s \times r = r^2s$

Name: _____

6.EE.5

Solve each equation for y .

Hint: $y < 10$.

$$y + 2 = 7$$

$$y - 8 = 1$$

$$(y - 2) \div 5 = 1$$

Solve each equation for y .

Hint: $y < 10$.

$$4y = 16$$

$$y^2 + 3 = 12$$

$$y^3 = 64$$

Solve the problem.

When substituted for ' y ', does each number make the inequality, $2y > 11$, true or false?

$$y = 6 \quad \underline{\hspace{2cm}}$$

$$y = 5 \quad \underline{\hspace{2cm}}$$

$$y = 3 \quad \underline{\hspace{2cm}}$$

$$y = 7 \quad \underline{\hspace{2cm}}$$

Solve the problem.

When substituted for ' y ', does each number make the inequality, $9 + y < 15$, true or false?

$$y = 4 \quad \underline{\hspace{2cm}}$$

$$y = 5 \quad \underline{\hspace{2cm}}$$

$$y = 6 \quad \underline{\hspace{2cm}}$$

$$y = 7 \quad \underline{\hspace{2cm}}$$

Name: _____

6.EE.5

Solving Equations and Inequalities by Substitution

Directions: Solve each equation for y . *Hint: $y < 10$.*

1. $y + 3 = 4$ _____

2. $y + 5 = 10$ _____

3. $y - 5 = 2$ _____

4. $y - 7 = 1$ _____

5. $6y = 24$ _____

6. $y^3 = 125$ _____

7. $y^2 + 4 = 20$ _____

8. $(y - 2) \div 6 = 1$ _____

Directions: Solve each problem.

9. If $y = 6$, is the inequality true or false?

$y + 3 < 12$ _____

10. If $y = 7$, is the inequality true or false?

$y + 3 < 12$ _____

11. If $y = 8$, is the inequality true or false?

$y + 3 < 12$ _____

12. If $y = 9$, is the inequality true or false?

$y + 3 < 12$ _____

Name: _____

6.EE.5

Solving Equations and Inequalities by Substitution

Directions: Solve each equation for y . *Hint: $y < 10$.*

1. $4 + y = 6$ _____

2. $3 + y = 8$ _____

3. $9 - y = 5$ _____

4. $10 - y = 1$ _____

5. $28 \div y = 7$ _____

6. $(y + 1)^2 = 9$ _____

7. $6y + 1 = 19$ _____

8. $10 - 81 \div y = 1$ _____

Directions: Solve each problem.

12. If $y = 3$, is the inequality true or false?

$y^y > 25$ _____

9. If $y = 4$, is the inequality true or false?

$3y > 12$ _____

10. If $y = 5$, is the inequality true or false?

$7y + 6 < 42$ _____

11. If $y = 6$, is the inequality true or false?

$|y| > 9 - 3$ _____

Name: _____

6.EE.6

Isaiah divided all the money in his pocket evenly among his nine grandchildren. Nobody counted the amount that each child got. Write an equation to describe this. Use 'M' for the total amount Isaiah gave away. Use 'e' for the amount that each child got.

Maggie gets in line at the grocery store to buy 7 apples. While in line, she calculates that the apples will cost \$5 altogether. Write an equation to show how the cost of a single apple (call it 'a') relates to the total cost.

Fred buys an apple, a banana, and a pineapple. His total bill is \$2. Write an equation that relates the cost of each of these three items to the total cost.

Seven eggs sat in a basket overnight. A fox came and took an unknown amount, and a raccoon came and took an unknown amount. In the morning, there were only three eggs left. Write an equation showing how seven eggs were reduced to three eggs. Use 'f' for the number the fox took and 'r' for the number the raccoon took.

Taylor makes pancakes at her restaurant. She knows that one cup of powdered pancake mix will make 5 pancakes. Help Taylor write an equation to know how many pancakes can be made from any number of cups of pancake mix she chooses to use. Use 'P' for the number of pancakes and 'm' for the number of cups of pancake mix.

Name:

6.EE.6

Real-World Variables

Directions: Solve each problem.

1. Cassie gets in line at the grocery store to buy 5 apples. While in line, she calculates that the apples will cost \$3 altogether. Write an equation to show how the cost of a single apple (call it 'a') relates to the total cost.

2. Conner steps on a scale holding three bricks of equal weight. The scale reads 250 pounds. Write an equation relating Conner's weight and the weight of the bricks to the total weight shown on the scale. Use 'C' for Conner's weight and 'b' for the weight of a single brick.

3. Vince divided all the money in his pocket evenly among his five grandchildren. Nobody counted the amount that each child got. Write an equation to describe this. Use 'M' for the total amount Vince gave away. Use 'e' for the amount that each child got.

4. Greg gets in line at the hardware store to buy 20,000 nails. While in line, he calculates that the nails will cost \$300 altogether. Write an equation to show how the cost of a single nail (call it 'n') relates to the total cost.

Name:

6.EE.6

Real-World Variables

Directions: Solve each problem.

1. Mikey buys a kiwi, a lemon, a mango, and a nectarine . His total bill is \$2. Write an equation that relates the cost of each of these items to the total cost.

2. Eight eggs sat in a basket overnight. A fox came and took an unknown amount, and a raccoon came and took an unknown amount. In the morning, there were only three eggs left. Write an equation showing how eight eggs were reduced to three eggs. Use 'f' for the number the fox took and 'r' for the number the raccoon took.

3. A shirt-making machine can make 11 shirts per hour, but the first shirt made each day is never good enough to sell because the machine isn't fully warmed up. Write an equation that shows how many sellable shirts can be made in 'h' hours, assuming the machine is turned on once and never turned off.

4. Tracy makes pancakes at her restaurant. She knows that one cup of powdered pancake mix will make 8 pancakes. Help Tracy write an equation to know how many pancakes can be made from any number of cups of pancake mix she chooses to use. Use 'P' for the number of pancakes and 'm' for the number of cups of pancake mix.

Name: _____

6.EE.7

Solve each equation.

$x + 6 = 13$ _____

$5 + z = 9$ _____

$2b = 2$ _____

$c \times 8 = 32$ _____

$e + 43 = 83$ _____

$123 + g = 300$ _____

$9j = 153$ _____

Solve each equation.

$y + 9 = 16$ _____

$7 + a = 14$ _____

$8c = 72$ _____

$d \times 12 = 108$ _____

$f + 94 = 161$ _____

$581 + h = 581$ _____

$1,735 = 5n$ _____

Solve each word problem.

Alice buys 18 shirts for a total of \$99. Express this as an equation, using 'x' as the cost of each shirt. Then, solve the equation for the value of 'x'.

Troy has a stamp collection with an unknown number of stamps. He adds 16 stamps to it and then counts 31 in the total collection. Write this as an equation, using 'x' for the number of stamps he started with. Then, solve the equation for the value of 'x'.

Name: _____

6.EE.7

Equations of the Form $x + p = q$ and $px = q$

Directions: Solve each equation.

1. $x + 3 = 5$ _____

2. $8 + z = 11$ _____

3. $6b = 6$ _____

4. $c \times 9 = 36$ _____

5. $e + 57 = 91$ _____

6. $172 + g = 400$ _____

7. $8j = 128$ _____

8. $390 = 30m$ _____

Directions: Solve each problem.

9. Frieda has an unknown number of ping-pong balls. She buys 310 more and then counts that she has a total of 500. Write an equation to describe this scenario. Use 'x' for the original number of ping-pong balls. Then, solve the equation for the value of 'x'.

10. Five siblings pool their money to buy a volleyball costing \$13.95. They each contribute the same amount, 'x'. Write an equation to describe the situation. Then, solve the equation for the value of 'x'.

Name: _____

6.EE.7

Equations of the Form $x + p = q$ and $px = q$

Directions: Solve each equation.

1. $y + 6 = 13$ _____

2. $4 + a = 10$ _____

3. $7c = 28$ _____

4. $d \times 12 = 60$ _____

5. $f + 83 = 150$ _____

6. $213 + h = 213$ _____

7. $14k = 238$ _____

8. $1968 = 4n$ _____

Directions: Solve each problem.

9. Doug has a stamp collection with an unknown number of stamps. He adds 28 stamps to it and then counts 43 in the total collection. Write this as an equation, using 'x' for the number of stamps he started with. Then, solve the equation for the value of 'x'.

10. Sophia buys 13 shirts for a total of \$52. Express this as an equation, using 'x' as the cost of each shirt. Then, solve the equation for the value of 'x'.

Name: _____

6.EE.8

Write a mathematical statement to express the inequality. Use 'x' for the unknown number.

an unknown number is less than 9

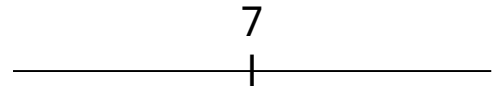
5 is greater than an unknown number

Provide three values of 'x' that satisfy the inequality.

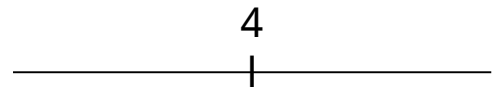
$$x > 67$$

Graph each inequality.

an unknown number is greater than 7



an unknown number is less than 4



Provide three values of 'x' that satisfy both inequalities at the same time.

$$x < 4 \text{ and } x > 2.3$$

Answer the word problem correctly.

The lowest point in Missouri is 230 feet above sea level. Using 'x' as a variable to represent all land in Missouri, write an inequality that describes Missouri's elevation. _____

The highest point in Missouri is 1,772 feet above sea level. Using 'x' as a variable to represent all land in Missouri, write an inequality that describes Missouri's elevation. _____

Name: _____

6.EE.8

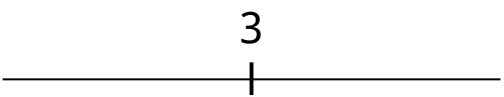
Real-World Inequalities

Directions: Write a mathematical statement to express the inequality. Use 'x' for the unknown number.

1. an unknown number is less than 4 _____

2. 8 is greater than an unknown number _____

Directions: Graph the inequality.

3. an unknown number is greater than 3 

Directions: Provide three values of 'x' that satisfy the inequality.

4. $x > 52$ _____

Directions: Provide three values of 'x' that satisfy both inequalities at the same time.

5. $x < 5$ and $x > 2.5$ _____

Directions: Answer the word problem correctly.

6. The highest point in Montana is 12,799 feet above sea level. Using 'x' as a variable to represent all land in Montana, write an inequality that describes Montana's elevation.

Name: _____

6.EE.8

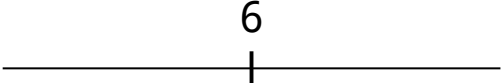
Real-World Inequalities

Directions: Write a mathematical statement to express the inequality. Use 'x' for the unknown number.

1. an unknown number is greater than 5 _____

2. 2 is less than an unknown number _____

Directions: Graph the inequality.

3. an unknown number is less than 6 

Directions: Provide three values of 'x' that satisfy the inequality.

4. $x < 1 \frac{1}{4}$ _____

Directions: Provide three values of 'x' that satisfy both inequalities at the same time.

5. $26 < x < 28$ _____

Directions: Answer the word problem correctly.

6. The lowest point in Montana is 1,820 feet above sea level. Using 'x' as a variable to represent all land in Montana, write an inequality that describes Montana's elevation.

Name: _____

6.EE.9

1. Connie earns \$11 per hour as a cashier. Write an equation that shows her earnings (E) after 'h' hours.

2. Use your equation from #1 to determine how much Connie will earn after working 40 hours this week.

3. Using your equation from #1, how many hours will Connie have to work to earn \$1,001?

4. Connie owes taxes equaling 10 percent of all her earnings. Help her write an equation to determine how much she owes in taxes (T) out of total earnings (E).

5. Janice and Katie are sisters. Their parents give them an allowance each week. Katie spent all of hers last week and has none left. Janice has \$8. Write an equation that relates the value of Janice's money to Katie's assuming neither spends any money for the foreseeable future, and they each get the same amount for an allowance.

Name:

6.EE.9

Real-world Dependent and Independent Variables

Directions: Solve each word problem.

1. Nichole and Mindy are sisters. Their parents give them an allowance each week. Mindy spent all of hers last week and has none left. Nichole has \$6. Write an equation that relates the value of Nichole's money to Mindy's assuming neither spends any money for the foreseeable future, and they each get the same amount for an allowance.

2. Charlotte's grandma drives at a constant speed of 25 miles per hour. Write an equation that shows how many miles she will travel after an unknown number of hours.

3. Zoey drives her car 60 miles per hour on the highway. Write an equation that relates her distance traveled (d) to the time elapsed (t).

4. Use your equation from #3 to determine how far Zoey travels in 4 hours.

5. Use your equation from #3 to determine how many hours it will take Zoey to travel 300 miles.

Name:

6.EE.9

Real-world Dependent and Independent Variables

Directions: Solve each word problem.

1. Stuart is three years younger than his brother Robert. Write an equation that shows Stuart's age with respect to Robert's.

2. Heather earns \$9 per hour as a cashier. Write an equation that shows her earnings (E) after 'h' hours.

3. Use your equation from #2 to determine how much Heather will earn after working 40 hours this week.

4. Using your equation from #2, how many hours will Heather have to work to earn \$999?

5. Heather owes taxes equaling 10 percent of all her earnings. Help her write an equation to determine how much she owes in taxes (T) out of total earnings (E).

Name: _____

EE Test

6.EE.1 Solve each expression.

$$3^3 = \underline{\hspace{2cm}}$$

$$(8-6)^{6 \div 2} = \underline{\hspace{2cm}}$$

6.EE.1 Write each expression but do not solve.

Nine cubed minus one = _____

Six plus two, all squared = _____

6.EE.3 Simplify each expression.

$$3q + 2q - q = \underline{\hspace{2cm}}$$

$$46f + 2 - 42f - 1 = \underline{\hspace{2cm}}$$

$$6(c + 4) - 21 = \underline{\hspace{2cm}}$$

$$96r - 84 = 12(\underline{\hspace{1cm}} - \underline{\hspace{1cm}})$$

6.EE.5 Solve each equation.
Hint: $y < 10$

$$7y + 7 = 56, \quad y = \underline{\hspace{2cm}}$$

$$42 - 6y = 6, \quad y = \underline{\hspace{2cm}}$$

$$(y + 1)^2 = 9, \quad y = \underline{\hspace{2cm}}$$

$$1 + 72 \div y = 10, \quad y = \underline{\hspace{2cm}}$$

6.EE.2 Write each expression using numbers and symbols.

The product of q and 9 = _____

Divide u by 8 = _____

Subtract v from 3 = _____

The sum of 7 and w = _____

6.EE.4 Is each equation always true, regardless of the value of the variable?

$$a + b + c = abc(1 + 1 + 1) \quad \underline{\hspace{2cm}}$$

$$e^2 \times e = e^3 \quad \underline{\hspace{2cm}}$$

$$3(g + 4h) = 12h + 3g \quad \underline{\hspace{2cm}}$$

$$6j - 5j^2 = j^2 \quad \underline{\hspace{2cm}}$$

6.EE.6 Adam steps on a scale holding four bricks of equal weight. The scale reads 360 pounds. Write an equation relating Adam's weight and the weight of the bricks to the total weight shown on the scale. Use 'A' for Adam's weight and 'b' for the weight of a single brick.

Name: _____

EE Test

6.EE.6

A shirt-making machine can make 20 shirts per hour, but the first two shirts made each day are never good enough to sell because the machine isn't fully warmed up. Write an equation that shows how many sellable shirts can be made in 'h' hours, assuming the machine is turned on once and never turned off.

6.EE.7

Solve each equation.

$$a + 18 = 92, \quad a = \underline{\hspace{2cm}}$$

$$9b = 189, \quad b = \underline{\hspace{2cm}}$$

$$546 + c = 987, \quad c = \underline{\hspace{2cm}}$$

$$d \times 54 = 324, \quad d = \underline{\hspace{2cm}}$$

6.EE.8

Write a possible value of 'x' for each inequality.

$$x > 100, \quad x = \underline{\hspace{2cm}}$$

$$x < 1, \quad x = \underline{\hspace{2cm}}$$

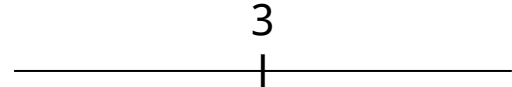
6.EE.8

"You must be taller than 48 inches to ride." Write an inequality to describe the height, 'h', of any rider.

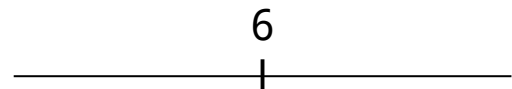
6.EE.8

Graph each inequality.

An unknown number is greater than 3.



6 is greater than an unknown number.



6.EE.9

Solve each word problem.

Joey drives his car 80 miles per hour on the highway. Write an equation that relates his distance traveled (d) to the time elapsed (t).

Use your equation to determine how many hours it will take Joey to travel 320 miles.
