

Name _____ Date _____

Equivalent Algebraic Expressions

First you must solve the given expression and then compare (look for) matching answer: (YOU MUST USE ONE OF THE FOLLOWING METHODS – SHOW WORK)

Example: $-4 + 3(x - 2) + x$

Use circle & box

or

Use communitive property

$$-4 + 3x - 6 + x$$

$$-4 - 6 + 3x + x$$

$$-10 + 4x$$

$$-10 + 4x$$

- a) $10 - 4x$ b) $10 + 4x$ c) $-10 + 4x$ d) $-10 - 4x$

As you can see the answer is c. This matches the solution that you solved for.

1. $-2(x + 7) - 4$

3. $-9x - (2x - 3)$

a) $2 - 7x$

a) $11x - 3$

b) $-2 + 10x$

b) $-11x + 3$

c) $18 + 2x$

c) $7x - 3$

d) $-18 - 2x$

d) $-7x - 3$

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

4. $-8(2x - 1) + 3x - 2$

a) $8 + 6x$

a) $19x + 6$

b) $-8 - 6x$

b) $-19x - 10$

c) $-4 - 6x$

c) $13x - 6$

d) $4 + 6x$

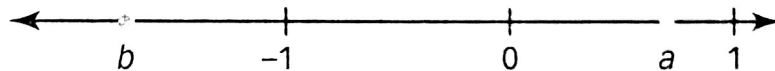
d) $-13x + 6$

Solve the problems.

- 1 On Monday, the value of a stock decreased by $\frac{1}{2}$ point. On Tuesday, the value increased by $\frac{3}{4}$ point. On Wednesday, the value decreased by $\frac{3}{8}$ point. What number represents the change in stock value after the three days?

- A $\frac{7}{8}$ point
B $\frac{2}{8}$ point
C $-\frac{1}{8}$ point
D $-\frac{13}{8}$ points

- 2 Which expression represents a negative number?



- A $a + b$
B $a - b$
C a
D $-b$

- 3 Identify the number that makes each statement true. You may select one or both numbers for each statement.

- | | | | |
|---|---|--|-------------------------------|
| A | $-3.7 + \square =$ a positive number. | <input type="checkbox"/> -4.9 | <input type="checkbox"/> 3.8 |
| B | $\square - 1\frac{1}{3} =$ a negative number. | <input type="checkbox"/> $\frac{4}{3}$ | <input type="checkbox"/> -5 |
| C | $\square + 8 = 0$ | <input type="checkbox"/> -8 | <input type="checkbox"/> 8 |
| D | $-4.52 + \square =$ a negative number. | <input type="checkbox"/> -5.48 | <input type="checkbox"/> 3.86 |

4 Which expression is equivalent to $\frac{5}{8} - \frac{3}{4}(8 - \frac{1}{3}) + 1$? Select Yes or No for each expression.

A $-\frac{33}{8}$ Yes No

B $-\frac{35}{8}$ Yes No

C $-6\frac{7}{8}$ Yes No

D $-4\frac{1}{8}$ Yes No

5 Jamal stands on a dock 1.5 meters above the surface of the water. A trout swims 4.8 meters below Jamal. What is the depth of the trout compared to the surface of the water?

Show your work.

Answer _____

6 Solve the problem.

Part A

Find a number that makes this statement true.

$$-2.5 + \square = \text{a positive number}$$

Give an example of a number that makes the statement true?

Answer _____

Part B

Write an equation showing that your answer makes the statement true.

Answer _____

Part C

Draw a number line and use arrows to show your equation.

Answer _____

Self Check *Go back and see what you can check off on the Self Check on page 1.*

Solve the problems.

1 Which is the *best* estimate of $-\frac{15}{16} \div \left(-\frac{1}{2}\right)$?

A 2

B $\frac{1}{2}$

C 0

D -2

2 Which is the *best* estimate of $-\frac{15}{16} + \left(-\frac{1}{2}\right)$?

A $1\frac{1}{2}$

B $\frac{1}{2}$

C $-\frac{1}{2}$

D $-1\frac{1}{2}$

3 Beth plays a video game in which she starts with 0 points. In round 1, she loses $3\frac{1}{2}$ points; in round 2, she wins $28\frac{1}{2}$ points; and in round 3, she loses another $3\frac{1}{2}$ points. What is her final score?

A $-18\frac{1}{2}$

B $18\frac{1}{2}$

C $21\frac{1}{2}$

D $35\frac{1}{2}$

- 4 Ally, Barbara, and Katherine will share the cost of a vacation rental for a week. Ally agrees to pay 30% of the cost. Barbara agrees to pay 0.45 of the cost. Katherine will pay the remaining balance. If the total rental cost is \$960, how much will Ally, Barbara, and Katherine each pay towards the week's rent?

Ally will pay \$ _____

Barbara will pay \$ _____

Katherine will pay \$ _____

- 5 Given the six rational numbers below, come up with the greatest sum, difference, product, and quotient, using two of the numbers for each operation.

$-5\frac{1}{2}$	3.75	-20.8	8	-4	$11\frac{1}{4}$
-----------------	------	-------	---	----	-----------------

Greatest sum: _____ + _____ = _____

Greatest difference: _____ - _____ = _____

Greatest product: _____ × _____ = _____

Greatest quotient: _____ ÷ _____ = _____

- 6 A credit-card statement shows that Mrs. Gerardo owes between \$35 and \$45. Estimate to decide which of the items shown in the box might be on her statement. Then write an equation to justify your choices.

Show your work.

Payment	+30.00
Clothing Store	-21.75
Grocery Store	-26.25
Clothing Return	+12.36
Toy Store	-19.99
Mel's Diner	-7.35
Minimart	-5.17

Answer _____

Self Check Go back and see what you can check off on the Self Check on page 1.

Read the problem below. Then explore whether or not the expressions are equivalent.

Ms. Lim asked her class to find an expression equivalent to $7 - 3(4 - 2x) - 10x$

One step in each of the following students' work is incorrect. Find and explain the error. Then write your own expression equivalent to the one given above.

Jon

$$\begin{aligned}7 - 3(4 - 2x) - 10x \\ 4(4 - 2x) - 10x \\ 16 - 8x - 10x \\ 16 - 18x\end{aligned}$$

Madison

$$\begin{aligned}7 - 3(4 - 2x) - 10x \\ 7 - 3(2x) - 10x \\ 7 - 6x - 10x \\ 7 - 16x\end{aligned}$$

Selina

$$\begin{aligned}7 - 3(4 - 2x) - 10x \\ 7 - 12 - 2x - 10x \\ -7 - 12x\end{aligned}$$

Now you will think about properties and the order of operations to solve the problem.

Jon didn't follow the order of operations. Explain what he did wrong.

Madison made a mistake when she combined terms. Explain what Madison did wrong.

Selina didn't use the distributive property correctly. Where did she go wrong? Explain your thinking. _____

Write an expression that is equivalent to $7 - 3(4 - 2x) - 10x$. Show your work.

How can you be sure you've used the properties of operations correctly to form an expression that is equivalent to the original one?

Use what you just learned about equivalent expressions to solve these problems.

Is $-8 - 2(3 + 2n) + 7n$ equivalent to $-30 - 13n$? Explain why or why not.

Is $-\frac{1}{4}y + 2\frac{1}{4}y + 2 - y$ equivalent to $y + 2$? Explain why or why not.
