Unit 4, Lesson 6

Equivalent Equations

Goals

- Comprehend that “equivalent equations” are equations that have exactly the same solutions, and that multiple equivalent equations can represent the same relationship.
- Determine and explain (orally and in writing) whether two equations are equivalent.
- Identify operations that can be performed on an equation to create equivalent equations.

Learning Targets

- I can tell whether two expressions are equivalent and explain why or why not.
- I know and can identify the moves that can be made to transform an equation into an equivalent one.
- I understand what it means for two equations to be equivalent, and how equivalent equations can be used to describe the same situation in different ways.

Lesson Narrative

In this lesson, students learn that **equivalent equations** are equations with the exact same solutions. Students see that the moves that generate equivalent expressions (for example, applying the distributive property or combining like terms) can also create equivalent equations. Additionally, an equivalent equation can be created by adding the same value to each side or multiplying each side by the same non-zero number. Students have seen moves like this before, when solving one-variable equations in middle school. What is new here is an awareness that each of the equations created as a part of the solving process is *equivalent* to the original equation.

Students also regard equivalent equations as synonymous statements about a relationship. They use context to interpret the solution to equivalent equations, and to think about why it makes sense that equivalent equations have the same solution. In doing so, students reason abstractly and quantitatively (MP2).

Standards

Building On	**6.EE.4**
Addressing	**A-CED.2, A-REI.1, A-SSE.1**
Building Toward	**HSA-REI.A**

Instructional Routines

- MLR8: Discussion Supports

Required Materials

Materials to Gather

- Four-function calculators: Activity 3

Student Facing Learning Goals

Let's investigate what makes two equations equivalent.

6.1 Two Expressions

Warm-up

5 min

Activity Narrative

The purpose of this *Warm-up* is to help students recall what it means for two expressions to be equivalent. The given expressions are in forms that are unfamiliar to students but are not difficult to evaluate for integer values of the variable. This is by design—to pique students' curiosity while keeping the mathematics accessible.

Standards

Building On **6.EE.4**

Building Toward **HSA-REI.A**

Launch

Arrange students in groups of 2. Assign one partner the first expression and the other partner the second expression.

Student Task Statement

Your teacher will assign you one of these expressions:

$$\frac{n^2-9}{2(4-3)} \qquad \text{or} \qquad (n+3)\cdot\frac{n-3}{8-3\cdot 2}$$

Evaluate your expression when n is:

1. 5
2. -1
3. With your partner, select 2 other values to try. Consider different kinds of numbers like fractions, decimals, large numbers, small numbers, negative numbers, and so on.

Student Response

For both expressions, the values are:

1. 8
2. -4
3. Sample response: For $n = 0.5$, the expression is -4.375. For $n = 100$, the expression is 4,995.5.

Building on Student Thinking

When evaluating their expression, some students may perform the operations in an incorrect order. For example, when finding the value of $8 - 3 \cdot 2$ in the second expression, they may find $8 - 3$ and then multiply by 2. Ask them whether the subtraction or multiplication should be performed first. Remind them about the order of operations as needed.

Activity Synthesis

Ask a few students from each group for their results. Then, ask students what they wonder about the results. Students are likely curious if the values of the two expressions will be the same for other values of n. If they noticed that all the given values of n are odd numbers, they might wonder if even values of n would give the same result. If time permits, consider allowing students to try evaluating the expressions using a value of their choice.

Discuss questions such as:

- "Were you surprised that these expressions have the same result for different values of n?" (No, because using distribution in the denominator results in the same values, so the other parts with the n may do the same thing.)
- "If (or when) you tried using other values of n, what did you find?" (They were the same for all the different kinds of numbers we tried.)
- "Do you think that the two expressions will have the same value no matter what value of n is used? How do you know?" (Yes, because the distributive property shows that the numerators are equivalent and so are the denominators.)

Tell students that it would be impossible to check every value of n to see if the expressions would give the same value. There are, however, ways to show that these expressions must have the same value for any value of n. We call expressions that are equal no matter what value we use for the variable **equivalent expressions**.

Remind students that in middle school they had seen simpler equivalent expressions. For example, they know that $3(x+5)$ is equivalent to $3x+15$ by the distributive property (without trying different values of x).

Explain to students that they'll learn more about how to identify or write equivalent expressions—and about equivalent equations—in this unit.

6.2 Much Ado about Ages

15 min

Activity Narrative

In this activity, students examine simple relationships that can each be expressed with many equations. Writing multiple equations for the same relationship and doing so in context prepares students to later consider more rigorously what makes equations equivalent.

As students write equations for the first relationship, identify students who use all numbers and those who use both numbers and variables.

For the second question, students may explain Tyler's claim concretely (using values of m and y) or more abstractly (using the structure of the equations). For instance, they may reason that:

- When the middle child is 12, the youngest child is 7, and that substituting $m=12$ and $y=7$ to $2m-2y$ gives $2(12)-2(7)$ or $24-14$, which is 10. At all other ages of the two children, the expression $2m-2y$ always has a value of 10.
- $2m-2y=10$ is twice of $m-y=5$. If the difference between m and y is 5, then twice the difference between m and y must be twice 5, which is 10, so the two equations are still describing the same relationship.

Identify students who reason in these ways so they can share later.

Standards

Addressing A-CED.2

Building Toward HSA-REI.A

Launch

Give students a couple of minutes to answer the first question and ask them to pause for a discussion before moving on.

Invite students to share their equations. Record and display the equations for all to see. Along the way, consider organizing them into categories (numerical equations, equations in one variable, and equations in two variables).

Solicit from students some thoughts on the following questions. (It is not necessary to resolve the questions at the moment.)

- "Consider the equations you wrote for each situation. Are they all equivalent? Why or why not?"
- "What do you think it means for two equations to be equivalent?"

Some students might say that each equation accurately represents the same relationship between the ages, so the equations must be equivalent. Those who wrote variable equations might say that the equations are equivalent because the same value for the variable makes each equation true.

After students have had a chance to consider these questions, prompt them to complete the remaining questions.

Student Task Statement

1. Write as many equations as possible that could represent the relationship between the ages of the two children in each family described. Be prepared to explain what each part of your equation represents.
    a. In Family A, the youngest child is 7 years younger than the oldest, who is 18.
    b. In Family B, the middle child is 5 years older than the youngest child.
2. Tyler thinks that the relationship between the ages of the children in Family B can be described with $2m - 2y = 10$, where m is the age of the middle child and y is the age of the youngest. Explain why Tyler is right.
3. Are any of these equations **equivalent** to one another? If so, which ones? Explain your reasoning.

$3a + 6 = 15$ $3a = 9$ $a + 2 = 5$ $\frac{1}{3}a = 1$

Student Response

1. a. Sample responses:
    - $18 - 7 = 11$, where 11 is the age of the youngest child.
    - $11 + 7 = 18$
    - $18 - 11 = 7$
    - $18 - 7 = a$, where a is the age of the youngest child.
    - $a + 7 = 18$
    - $18 - a = 7$

    b. Sample responses:

    - $y = m - 5$, where m is the age of the middle child and y the age of the youngest.
    - $y + 5 = m$
    - $m - y = 5$
2. See *Activity Narrative* for sample responses.
3. Yes, they are all equivalent. Sample reasoning:
    - They are all true when $a = 3$. They are also all not true when a is not 3.
    - We can perform the same operation on both sides of one equation and get another equation.

Building on Student Thinking

Some students may say that $2m - 2y = 10$ doesn't describe the relationship between the ages because it doesn't involve the number 5. Encourage students to think of some values for m and y that *do* make the equation true. After they find some pairs of m and y, ask them what they notice about the pairs.

Are You Ready for More?

Here is a puzzle:

$$\begin{aligned} m + m &= N \\ N + N &= p \\ m + p &= Q \\ p + Q &= ? \end{aligned}$$

Which expressions could be equal to $p + Q$?

$2p + m$ $\quad$ $4m + N$ $\quad$ $3N$ $\quad$ $9m$

Extension Student Response

$2p + m$ and $9m$

Activity Synthesis

Select previously identified students to share their explanation of why Tyler's claim is true, in the order shown in the *Activity Narrative*. If no students mention the last approach, bring it up.

Next, emphasize two main points:

- **Equivalent equations** have exactly the same solutions, or exactly the same values that make each of the equations true. All of the equations in the last question are equivalent because they have 3 as the solution and they all have no other solutions.
- Suppose we start with a true equation, where the two sides are equal. If we perform the same operation to both sides of the equation and get a new equation where the two sides are also equal, we can say that the two equations are equivalent. For instance:
    - Subtracting both sides of $3a + 6 = 15$ by 6 gives $3a = 9$. If $3a + 6$ and 15 are equal, then the expressions or numbers we get by subtracting 6 from each one are also equal. We can conclude that $3a + 6 = 15$ and $3a = 9$ are equivalent.
    - Dividing both sides of $3a + 6 = 15$ by 3 gives $a + 2 = 5$. If $3a + 6$ is equal to 15, the result of dividing $3a + 6$ by 3 is equal to dividing 15 by 3. We can conclude that $3a + 6 = 15$ and $a + 2 = 5$ are equivalent.

Ask students:

- "How can we show that $\frac{1}{3}a = 1$ is equivalent to $3a = 9$?" (Multiplying both sides of $\frac{1}{3}a = 1$ by 9 gives $3a = 9$.)
- "How can we show that $a + 2 = 5$ is equivalent to $\frac{1}{3}a = 1$?" (Subtracting 2 from both sides of $a + 2 = 5$ and then multiplying both sides of the resulting equation, $a = 3$, by $\frac{1}{3}$ gives $\frac{1}{3}a = 1$.)

If no students notice that we have made these moves when solving equations, bring it to their attention. Highlight that solving an equation essentially involves writing a series of equivalent equations that eventually isolates the variable on one side.

6.3 What's Acceptable?

15 min

Activity Narrative

This activity further develops the idea of equivalent equations and does so in the context of a situation. Students pay attention to the moves that create equations with the same solution and those that don't. They also make sense of both the moves and the solutions in terms of the given situation. The work here gives students opportunities to reason concretely and abstractly (MP2). In an upcoming lesson, they will think about why these moves lead to equations with the same solution.

Standards

Addressing **A-REI.1, A-SSE.1**

Instructional Routines

- MLR8: Discussion Supports

Launch

Arrange students in groups of 2, and provide access to calculators. Ask students to read the opening paragraph and display the equation $x - 0.1x + 2.70 = 56.70$ for all to see. Ask students to explain how the equation represents Noah's purchase.

Then, give students a couple of minutes to discuss the first question with their partner and ask them to pause for a whole-class discussion. Once students understand that the solution to the equation is the original price of a pair of jeans and that substituting 60 for x makes the equation true, move on to the rest of the activity.

Tell students that they will see a series of equations that are related to the original equation and that can be interpreted in terms of the situation. For each equation, their job is to determine either what move was made to the original equation, or what the equation means in context. Next, they should check if the equation has the same solution as the original. (To help students understand the task and if needed, consider working on Equation A as a class.)

If time is limited, ask one partner in each group to take Equations A, C, E and the other partner to take B, D, F.

Access for Students with Disabilities

Representation: Internalize Comprehension. Provide students with a partially completed graphic organizer that displays the original equation before each of the related equations. This will help focus students' attention on the moves that may have been made.
Supports accessibility for: Visual-Spatial Processing, Organization

Student Task Statement

Noah is buying a pair of jeans and using a coupon for 10% off. The total price is $56.70, which includes $2.70 in sales tax. Noah's purchase can be modeled by the equation:

$$x - 0.1x + 2.70 = 56.70$$

1. Discuss with a partner:
   a. What does the solution to the equation mean in this situation?
   b. How can you verify that 70 is not a solution but 60 is the solution?
2. Here are some equations that are related to $x - 0.1x + 2.70 = 56.70$. Each equation is a result of performing one or more moves on that original equation. Each can also be interpreted in terms of Noah's purchase. For each equation, determine either what move was made or how the equation could be interpreted. (Some examples are given here.) Then check if 60 is the solution of the equation.

   Equation A $100x - 10x + 270 = 5,670$

   - What was done?
   - Interpretation? The price is expressed in cents instead of dollars.
   - Same solution?

   Equation B $x - 0.1x = 54$

   - What was done? Subtract 2.70 from both sides of the equation.
   - Interpretation?
   - Same solution?

   Equation C $0.9x + 2.70 = 56.70$

   - What was done?
   - Interpretation? 10% off means paying 90% of the original price. 90% of the original price plus sales tax is $56.70.
   - Same solution?
3. Here are some other equations. For each equation, determine what move was made or how the equation could be interpreted. Then check if 60 is the solution to the equation.

   Equation D $x - 0.1x = 56.70$

   - What was done?
   - Interpretation? The price after using the coupon for 10% off and before sales tax is $56.70.
   - Same solution?

Equation E $x - 0.1x = 59.40$

- What was done? Subtract 2.70 from the left and add 2.70 to the right.
- Interpretation?
- Same solution?

Equation F $2(x - 0.1x + 2.70) = 56.70$

- What was done?
- Interpretation? The price of 2 pairs of jeans, after using the coupon for 10% off and paying sales tax, is \$56.70.
- Same solution?

4. Which of the six equations are equivalent to the original equation? Be prepared to explain how you know.

Student Response

1. Sample response:
   a. The solution is the value of x that makes the equation a true statement. It tells us the original price of the jeans.
   b. Evaluating the expression on the left when $x = 70$ gives 65.70, not 56.70. Evaluating the expression for $x = 60$ gives 56.70, so $56.70 = 56.70$, which is a true statement.
2. Sample response:
   - Equation A: $100x - 10x + 270 = 5,670$. Move: Multiply each side by 100. Same solution.
   - Equation B: $x - 0.1x = 54$. Interpretation: The price after using the coupon for 10% off but before adding sales tax is \$54. Same solution.
   - Equation C: $0.9x + 2.70 = 56.70$. Move: Combining like terms in the expression on the left. Same solution.
3. Sample response:
   - Equation D: $x - 0.1x = 56.70$. Move: Subtract 2.70 from the left side. Not the same solution.
   - Equation E: $x - 0.1x = 59.40$. Interpretation: The price after using the coupon for 10% off and before sales tax is \$59.40. Not the same solution.
   - Equation F: $2(x - 0.1x + 2.70) = 56.70$. Move: Multiply the left side by 2. Not the same solution.
4. Equations A, B, and C. They have the same solution as the original equation.

Activity Synthesis

Display the original equation and Equations A–F for all to see. Invite students to share what was done to the original equation to get each of those equations and whether they have the same solution. Along the way, compile a list of moves that lead to equations with the same solution and those that lead to different solutions.

Ask students to observe the list and see what kinds of moves produce the Equations A–C and D–F. Record the moves that create equations with the same solutions, such as:

- Adding or multiplying both sides of the equal sign by the same number

- Applying properties of operations (commutative, associative, or distributive)
- Combining like terms

Also record the moves that create equations with different solutions, such as:

- Adding or multiplying a different number to the two sides, or performing an operation to only one side
- Adding different expressions to the two sides
- Performing different operations on each side

(The lists don't need to be comprehensive because students will examine these moves more closely later.)

Next, give students a couple of examples of how the equations and their solutions could be interpreted in context. For example:

- Equation A shows the cost calculation in cents, so the original price of a pair of jeans is unchanged.
- Equation D shows the discounted price, excluding tax, to be \$56.70, but in the original equation, the price \$56.70 including tax. This means that, in Equation D, the original price of one pair of jeans is different than in the first equation.

Prompt students to interpret 1–2 other equations and to explain why the solution in each equation (or the price of one pair of jeans) is equal or unequal to that in the initial equation. Here are possible interpretations:

- Equation B shows the discounted price before sales tax to be \$54, which is \$2.70 less than \$56.70. This is also the case in the initial equation, so the original price of the jeans is still the same.
- Equation C shows the discounted price as 90% of the original price, which is the same as 10% less than the original price (100%). The original price is unchanged.
- Equation E shows the discounted price, before tax, to be \$59.40. This is more than the pre-tax price in the initial equation, so the original price of the jeans here must be higher.
- Equation F shows the price of 2 pairs of jeans, including the discount and tax, to be \$56.70. This means the price of a pair of jeans must be much less than in the initial equation.

Access for English Language Learners

MLR8 Discussion Supports. For each observation that is shared, invite students to turn to a partner and restate what they heard using precise mathematical language.
Advances: Listening, Speaking

Access for Students with Disabilities

Representation: Develop Language and Symbols. Create a display of important terms and vocabulary. Keep this display visible throughout the remainder of the unit. Invite students to suggest language or diagrams to include that will support their understanding of combining like terms, and of the commutative, associative, and distributive properties.
Supports accessibility for: Conceptual Processing, Language

Lesson Synthesis

To help students connect the various ideas in this lesson and articulate their understanding, ask them questions such as:

- "How would you explain '**equivalent equations**' to a classmate who is absent today?"
- "The equation $5y = 6$ represents purchasing 5 tubs of yogurt for \$6. In this equation, what does the solution represent?" (the cost of one tub of yogurt)
- "Which of these equations are equivalent to the equation $5y = 6$ (about the yogurt)? How do you know?"
  - $15y = 18$
  - $5y = 12$
  - $5y + 4 = 10$
  - $5y - 1 = 3$
    (The first and the third equations are equivalent to the original equation because they have the same solution. There is an acceptable move that was done to the original equation to get to these equivalent equations: multiplying each side of the equation by 3, and adding 4 to each side of the equation.)
- "For the equations that you think are equivalent, what do they mean in the context of the yogurt purchase?" (The equation $15y = 18$ can be interpreted as buying 3 times as many tubs of yogurt costs 3 times as much. The third equation can be interpreted as the total cost of 5 tubs of yogurt and something else that costs \$4 is \$10.)

6.4 Box of Beans and Rice

Cool-down

5 min

Standards

Addressing **A-REI.1**

Launch

Give students continued access to calculators.

Student Task Statement

A cardboard box, which weighs 0.6 pound when empty, is filled with 15 bags of beans and a 4-pound bag of rice. The total weight of the box and the contents inside it is 25.6 pounds. One way to represent this situation is with the equation $0.6 + 15b + 4 = 25.6$.

1. In this situation, what does the solution to the equation represent?
2. Select all equations that are also equivalent to $0.6 + 15b + 4 = 25.6$.
   - Equation A: $15b + 4 = 25.6$
   - Equation B: $15b + 4 = 25$
   - Equation C: $3(0.6 + 15b + 4) = 76.8$
   - Equation D: $15b = 25.6$
   - Equation E: $15b = 21$

Student Response

1. The weight, in pounds, of one bag of beans

2. B, C, and E

Responding to Student Thinking

Points to Emphasize

If most students struggle with finding all of the equivalent equations, revisit this *Cool-down* before related work. For example, display Equations A–E, and invite students to name two that are equivalent and explain why before this activity:

Integrated Math 1, Unit 4, Lesson 7, Activity 2 Explaining Acceptable Moves

Lesson 6 Summary

Suppose we bought 2 packs of markers and a $0.50 glue stick for $6.10. If p is the dollar cost of 1 pack of markers, the equation $2p + 0.50 = 6.10$ represents this purchase. The solution to this equation is 2.80.

Now suppose a friend bought 6 of the same packs of markers and 3 $0.50 glue sticks, and paid $18.30. The equation $6p + 1.50 = 18.30$ represents this purchase. The solution to this equation is also 2.80.

We can say that $2p + 0.50 = 6.10$ and $6p + 1.50 = 18.30$ are **equivalent equations** because they have exactly the same solution. Besides 2.80, no other values of p make either equation true. Only the price of $2.80 per pack of markers satisfies the constraint in each purchase.

$2p + 0.50 = 6.10$	How do we write equivalent equations like these?
$6p + 1.50 = 18.30$	There are certain moves we can perform!

In this example, the second equation, $6p + 1.50 = 18.30$, is a result of multiplying each side of the first equation by 3. Buying 3 times as many markers and glue sticks means paying 3 times as much money. The unit price of the markers hasn't changed.

Here are some other equations that are equivalent to $2p + 0.50 = 6.10$, along with the moves that led to these equations.

- $2p + 4 = 9.60$ — Add 3.50 to each side of the original equation.
- $2p = 5.60$ — Subtract 0.50 from each side of the original equation.
- $\frac{1}{2}(2p + 0.50) = 3.05$ — Multiply each side of the original equation by $\frac{1}{2}$.
- $2(p + 0.25) = 6.10$ — Apply the distributive property to rewrite the left side.

In each case:

- The move is acceptable because it doesn't change the equality of the two sides of the equation. If $2p + 0.50$ has the same value as 6.10, then multiplying $2p + 0.50$ by $\frac{1}{2}$ and multiplying 6.10 by $\frac{1}{2}$ keep the two sides equal.
- Only $p = 2.80$ makes the equation true. Any value of p that makes an equation false also makes the other equivalent equations false. (Try it!)

These moves—applying the distributive property, adding the same amount to both sides, dividing each side by the same number, and so on—might be familiar because we have performed them when solving equations. Solving an equation essentially involves writing a series of equivalent equations that eventually isolates the variable on one side.

Not all moves that we make on an equation would create equivalent equations, however!

For example, if we subtract 0.50 from the left side but add 0.50 to the right side, the result is $2p = 6.60$. The solution to this equation is 3.30, not 2.80. This means that $2p = 6.60$ is *not* equivalent to $2p + 0.50 = 6.10$.

Glossary

- equivalent equations

Lesson 6 Practice Problems

1 Student Task Statement

Which equation is equivalent to the equation $6x + 9 = 12$?

A. $x + 9 = 6$

B. $2x + 3 = 4$

C. $3x + 9 = 6$

D. $6x + 12 = 9$

Solution

B

2 Student Task Statement

Select **all** the equations that have the same solution as the equation $3x - 12 = 24$.

A. $15x - 60 = 120$

B. $3x = 12$

C. $3x = 36$

D. $x - 4 = 8$

E. $12x - 12 = 24$

Solution

A, C, D

3 Student Task Statement

Jada has a coin jar containing n nickels and d dimes worth a total of \$3.65. The equation $0.05n + 0.1d = 3.65$ is one way to represent this situation.

Which equation is equivalent to the equation $0.05n + 0.1d = 3.65$?

A. $5n + d = 365$

B. $0.5n + d = 365$

C. $5n + 10d = 365$

D. $0.05d + 0.1n = 365$

Solution

C

4

Student Task Statement

Select **all** the equations that have the same solution as $2x - 5 = 15$.

A. $2x = 10$

B. $2x = 20$

C. $2(x - 5) = 15$

D. $2x - 20 = 0$

E. $4x - 10 = 30$

F. $15 = 5 - 2x$

Solution

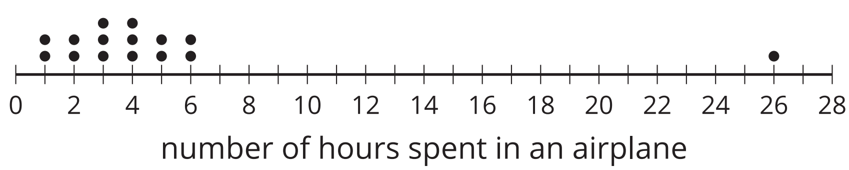
B, D, E

5

from Unit 3, Lesson 14

Student Task Statement

The number of hours spent in an airplane on a single flight is recorded on a dot plot. The mean is 5 hours and the standard deviation is approximately 5.82 hours. The median is 4 hours and the IQR is 3 hours. The value 26 hours is an outlier that should not have been included in the data.



When the outlier is removed from the data set:

a. What is the mean?

b. What is the standard deviation?

c. What is the median?

d. What is the IQR?

Solution

a. 3.5 hours

b. 1.59 hours

c. 3.5 hours

d. 3 hours

6 from Unit 4, Lesson 3

Student Task Statement

A basketball coach purchases bananas for the players on his team. The table shows total price in dollars, P, of n bananas.

Which equation could represent the total price in dollars for bananas?

number of bananas	total price in dollars
7	4.13
8	4.72
9	5.31
10	5.90

A. $P = 0.59n$

B. $P = 5.90 - 0.59n$

C. $P = \frac{5.90}{n}$

D. $P = n + 0.59$

Solution

A

7 from Unit 4, Lesson 4

Student Task Statement

Kiran is collecting dimes and quarters in a jar. He has collected $10.00 so far and has d dimes and q quarters. The relationship between the numbers of dimes and quarters, and the amount of money in dollars is represented by the equation $0.1d + 0.25q = 10$.

Select **all** the values (d, q) that could be solutions to the equation.

A. $(100, 0)$

B. $(20, 50)$

C. $(50, 20)$

D. $(0, 100)$

E. $(10, 36)$

Solution

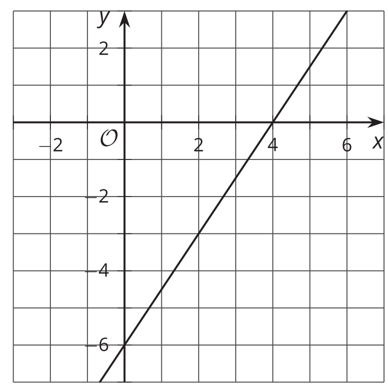
A, C, E

8 from Unit 4, Lesson 5

Student Task Statement

Here is a graph of the equation $3x - 2y = 12$.

Select **all** coordinate pairs that represent a solution to the equation.



A. $(2, -3)$

B. $(4, 0)$

C. $(5, -1)$

D. $(0, -6)$

E. $(2, 3)$

Solution

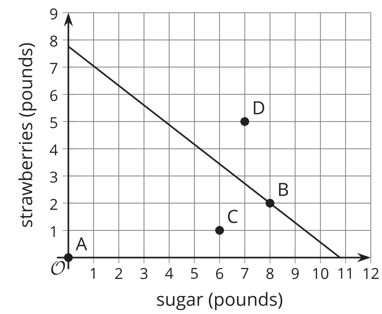
A, B, D

9 from Unit 4, Lesson 5

Student Task Statement

Jada bought some sugar and strawberries to make strawberry jam. Sugar costs $1.80 per pound, and strawberries cost $2.50 per pound. Jada spent a total of $19.40.

Which point on the coordinate plane could represent the pounds of sugar and strawberries that Jada used to make jam?



A. Point A

B. Point B

C. Point C

D. Point D

Solution

B