

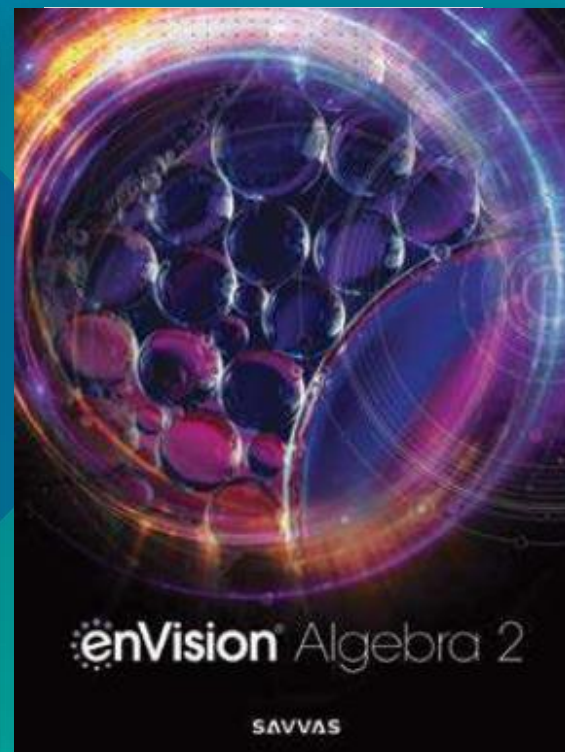
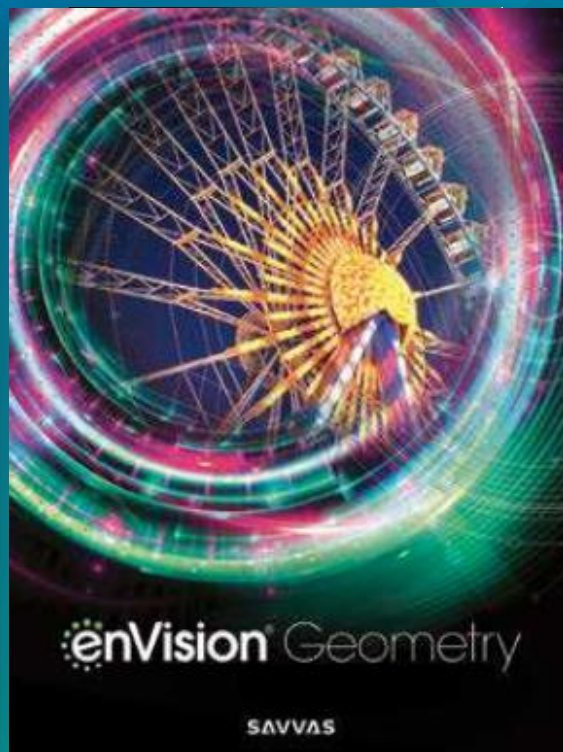
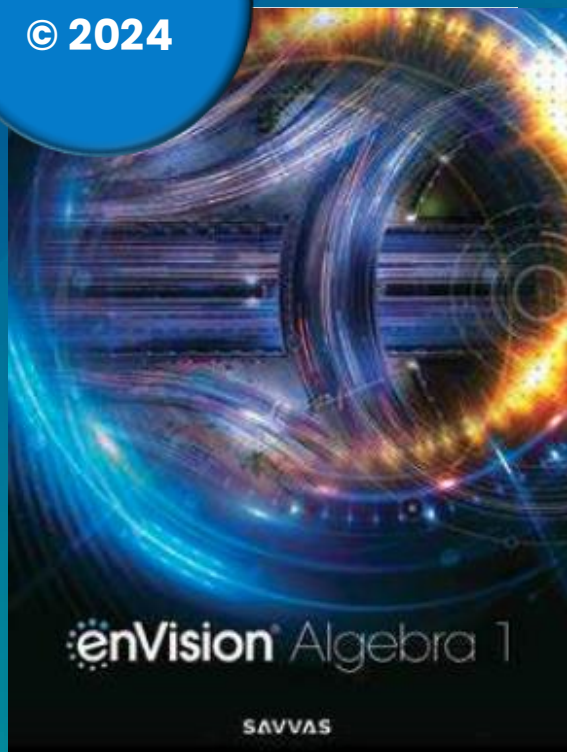
Welcome

Scottsdale *Unified*
SCHOOL DISTRICT



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for being current enVision Algebra users!

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enVision[®] A|G|A

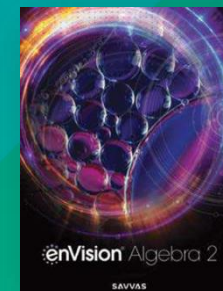
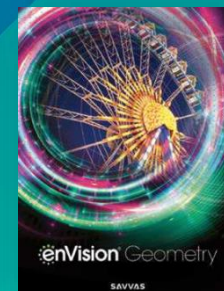
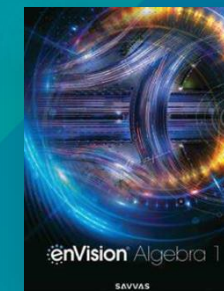
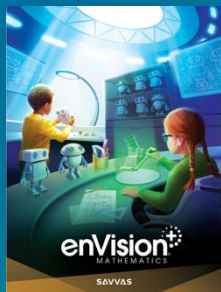
The Future of Math
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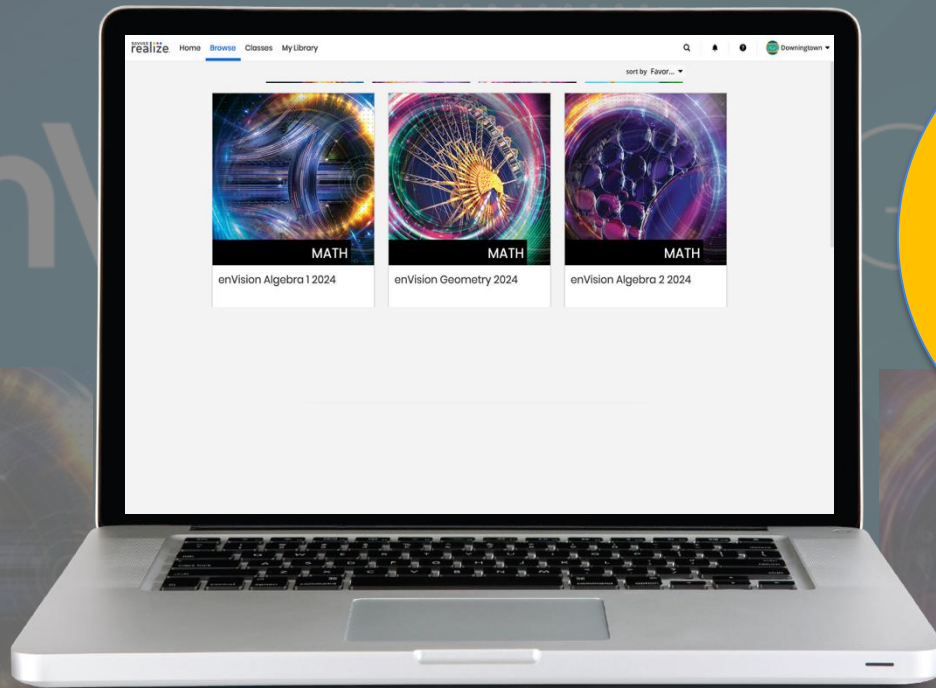
TAB

TAB

TAB

enVision[®] A|G|A A High-Quality K-12 Pathway



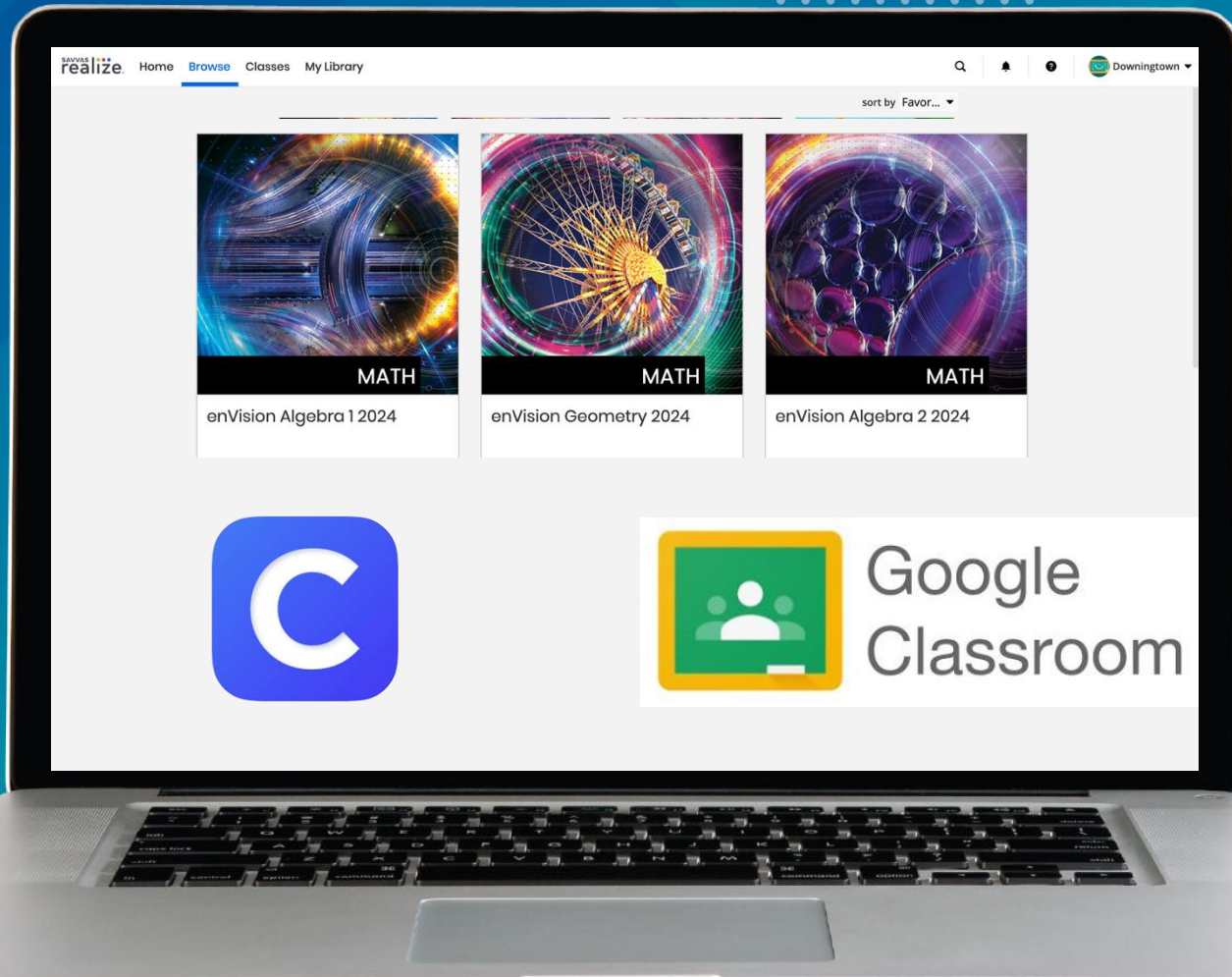


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TOPIC 1

Solving Equations and Inequalities

NOTES

TOPIC READINESS ASSESSMENT

AVAILABLE ONLINE

TAB

Name _____

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1 Readiness Assessment

1. Which list shows numbers ordered from least to greatest?

- ☐ A. $1.01, 1.01, 1.01$
☐ B. $1.01, 1.01, 1.01$
☐ C. $1.01, 1.01, 1.01$
☐ D. $1.01, 1.01, 1.01$

2. Which statement is true?

- ☐ A. A debt of \$17 is a greater value than a debt of \$20.
☐ B. One half an apple is equivalent to 8 fourths apples.
☐ C. 0.01 is a smaller increase in sales than 0.001.
☐ D. Below zero is a lower temperature than 3 below zero.

3. Select all the statements about the number -3 that are true.

- ☐ A. It is a rational number.
☐ B. It is a whole number.
☐ C. It is an integer.
☐ D. It is a rational number.
☐ E. It is an irrational number.

4. Which statement is true?

- ☐ A. All integers are whole numbers.
☐ B. All rational numbers are natural numbers.
☐ C. Some rational numbers are integers.
☐ D. Some integers are rational.

5. The height of a house is 52 ft. A tree inside the house is 7 ft more than twice as tall. What is the height of the tree?

$$h = (\frac{111}{11})h$$

6. $8\frac{1}{2} - 9 = 12$, what is the value of k ?

- ☐ A. 1
☐ B. 7
☐ C. 9
☐ D. 63

7. Select all the properties that are used below to solve $7y - 15 = -25$.

$$7y - 15 = -25$$

$$7y = -10$$

$$y = -\frac{10}{7}$$

- ☐ A. Identity Property of Multiplication
☐ B. Addition Property of Equality
☐ C. Distributive Property
☐ D. Inverse Property of Multiplication
☐ E. Commutative Property of Addition

8. Where is $205 + \sqrt{5}$ located on a number line?

- ☐ A. between 7 and 8
☐ B. between 8 and 9

9. Write and simplify an absolute value expression to find the distance between -3 and 8 on a number line.

$$| -3 - 8 | = 11$$

10. Which of the following is equivalent to the expression $-3a + 2b - 10$?

- ☐ A. $-3a$
☐ B. -12
☐ C. -10
☐ D. -10

11. Evaluate $\sqrt{25} + \sqrt{9}$ for $x = \frac{1}{2}$.

- ☐ A. $\frac{1}{2}$
☐ B. $\frac{1}{2}$
☐ C. $\frac{1}{2}$
☐ D. $\frac{1}{2}$

12. Solve and graph the solution for $x + 1 = 5$.

$$x + 1 = 5$$

$$x = 4$$

13. Which expression is equivalent to $\frac{1}{2}(6y - 12)$?

- ☐ A. $3y - 4$
☐ B. $3y - 12$
☐ C. $3y - 4$
☐ D. $3y - 4$

14. Suppose $x = -2$ and $y = 8$. Select all the inequalities that are true.

- ☐ A. $x < y$
☐ B. $x \geq y$
☐ C. $x > y$
☐ D. $x < y$
☐ E. $x < y$

15. Which expression is equivalent to the sum of x and 8, divided by 12?

- ☐ A. $\frac{x+8}{12}$
☐ B. $\frac{x+8}{12}$
☐ C. $\frac{x+8}{12}$
☐ D. $\frac{x+8}{12}$

16. What is the value of $\frac{1}{2}(\frac{1}{2})$?

- ☐ A. $\frac{1}{4}$
☐ B. $\frac{1}{4}$
☐ C. $\frac{1}{4}$
☐ D. $\frac{1}{4}$

17. Using dimensional analysis, what unit of time will make the statement true?

$$\text{seconds} \times \frac{\text{minutes}}{\text{day}} = \text{seconds}$$

18. If the formula for the circumference of a circle is $C = 2\pi r$ and a path has circumference $C = 24$, what is the radius of the path?

- ☐ A. $r = 24$
☐ B. $r = \frac{24}{\pi}$
☐ C. $r = 12$
☐ D. $r = \frac{12}{\pi}$

Topic Readiness Assessment Assess students' understanding of prerequisite concepts and skills using the Topic Readiness Assessment found at [SavvasRealize.com](https://www.savvasrealize.com). These auto-scored online assessments provide students with a breadth of technology-enhanced item types.

Individualized Study Plan Based on their performance, students will be assigned a study plan tailored to their specific learning needs.



Item Analysis for Diagnosis and Intervention

Item	DOK	Skills Review and Practice	Standards	Item	DOK	Skills Review and Practice	Standards
1	2	NS12	6.NS.C.7	10	1	R01	6.NS.D.14
2	2	NS01	6.NS.C.7.B	11	2	R02	7.NS.A.3
3	1	NS01	8.NS.A.1	12	2	A06	7.EE.B.4
4	1	R19	8.NS.A.1	13	1	NS03	7.EE.A.1
5	2	R01	7.EE.B.3	14	2	NS01	6.NS.C.7.C
6	2	A02	7.EE.B.4.A	15	1	R01	6.EE.A.2.A
7	2	NS04	7.EE.B.4.A	16	2	NS01	6.NS.C.7.C
8	2	NS12	8.NS.A.2	17	2	R03	6.RP.A.3.D
9	2	NS01	7.NS.A.1.C	18	2	R03	7.G.B.3

The Distributive Property

REVIEW

In the equation $a(b + c) = ab + ac$, the Distributive Property distributes the coefficient outside the parentheses to each term inside the parentheses by multiplying.

Simplify $-\frac{2}{3}(6x - 9)$ by using the Distributive Property.

$$-\frac{2}{3}(6x - 9)$$

← Distribute the coefficient to each term inside the parentheses.

$$-\frac{2}{3}(6x) - \left(-\frac{2}{3}\right)(\square)$$

$$-\square x + 6$$

← Simplify. Pay close attention to the signs of the numbers. Change the subtraction of a negative to addition.

Simplify $(4 - \frac{5}{2}x)6$ by using the Distributive Property.

$$(4 - \frac{5}{2}x)6$$

$$4(\square) - \frac{5}{2}x(\square)$$

← Distribute the coefficient to each term inside the parentheses.

$$24 - \square x$$

← Simplify.

PRACTICE Simplify each expression using the Distributive Property.

1. $2(5x - 4)$

2. $\frac{1}{4}(12x - 8)$

3. $-\frac{2}{5}(3 - x)$

4. $5(\frac{x}{5} - 2)$

5. $-(\frac{2}{3}x + 4)$

6. $\frac{1}{10}(30x - 50)$

7. $(\frac{3}{7}x + 2)14$

8. $(4x - 1)\frac{3}{4}$

9. $-\frac{1}{8}(x + y)$

10. $-6(\frac{2}{9}x - y)$

11. $(4 + x)\frac{1}{3}$

12. $-\frac{1}{2}(x + 4y)$

13. $\frac{4}{5}(10x - 15y)$

14. $(\frac{1}{6}y - \frac{1}{3}x)12$

15. $-\frac{1}{11}(33 - 44x)$

Course and Topic Readiness Assessments Provide Individualized, Just-in-Time Intervention Pathways

TAB



Skills Review & Practice

Requisite Skills

Number Sense

Algebra

Functions

Data and Probability

Geometry

New in
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NS03

NS01

R01

NS01

R03

R03

NS01

18

2

STEM Projects

TOPIC 1 PROJECT **enVision STEM**

Did You Know?
The average American teenager spends about **9 hours each day** on a digital device.

90% of Americans own a cellphone
64% of Americans own a smartphone

In general, people keep their cellphones on and with them at all times.

1 GB = 250 songs, 435 photos, 5 mins of HD video

How Teens Spend Their Screen Time

- 3% creating digital content
- 7% other
- 25% playing games or browsing the Internet
- 39% watching videos, listening to music, or reading
- 26% using social media



Name _____

Topic 1 enVision STEM Project
Solving Equations and Inequalities

Identify Your Dream Smartphone
List four things you want your smartphone to be able to do. Give details.

List two things you do not want your smartphone to do. Explain your choices.

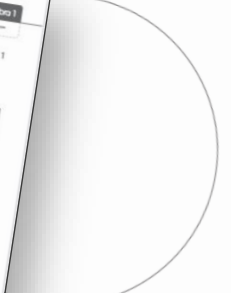
enVision Algebra 1

Name _____

Topic 1 enVision STEM Project
Solving Equations and Inequalities

Allocate Memory on Your Dream Smartphone
Divide the memory on your smartphone into sections for each of the things you want your smartphone to do. Remember to include a section for the operating system. Write the percentage of memory each section occupies.

Smartphone Memory



enVision Algebra 1

Name _____

Topic 1 enVision STEM Project
Solving Equations and Inequalities

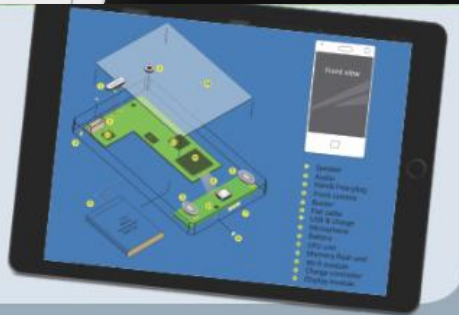
Design Your Dream Smartphone
Use your memory allocation worksheet to decide how many gigabytes of memory your smartphone should have.
How many gigabytes will be allocated to each section? Write equations to show how the memory will be used.
Remember: 1 GB = 250 songs or 435 photos or 5 mins of HD video
Draw a diagram showing your smartphone and what it will do.

enVision Algebra 1

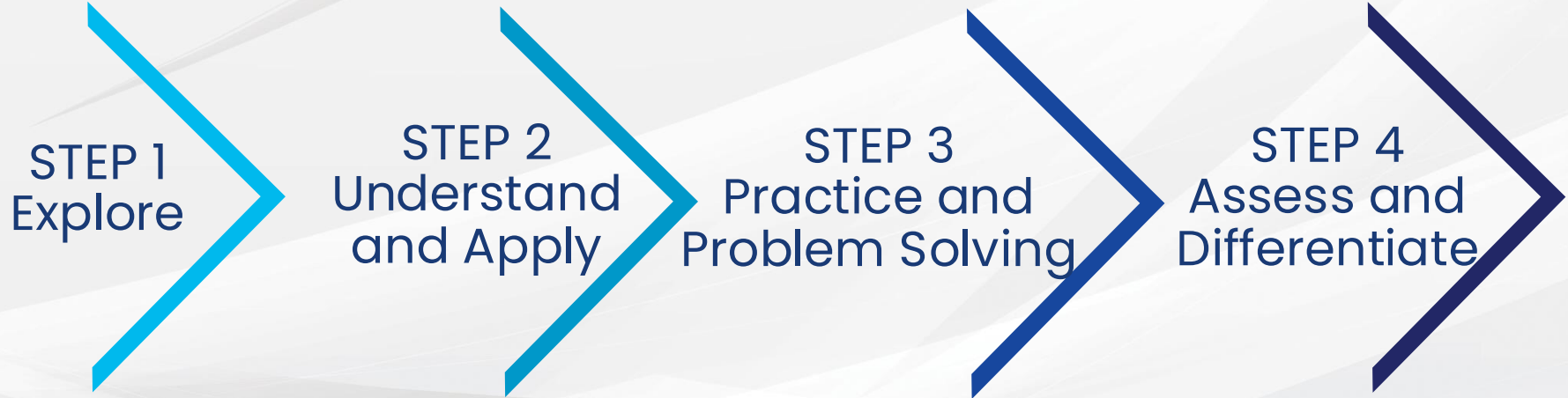


Your Task: Design a Smartphone

Smartphones are many things to many people. You and your classmates will decide what a new smartphone will be able to do, how you want it to look and feel, and how much storage it should have.



Same Lesson Design



STEP 1
Explore

STEP 2
Understand
and Apply

STEP 3
Practice and
Problem Solving

STEP 4
Assess and
Differentiate

plus some updates

“

...studies have found that students taught partly or fully through *problem-based learning* showed greater gains in learning.

(Grant & Branch, 2005; Horton et al., 2006; Johnston, 2004; Jones & Kalinowski, 2007; Ljung & Blackwell, 1996; McMiller, Lee, Saroop, Green, & Johnson, 2006; Toolin, 2004)

CRITIQUE & EXPLAIN

Avery states that the graph of $g(x)$ is the same as the graph of $f(x)$ with every point shifted vertically.

ESSENTIAL QUESTION

How does modifying the input of a linear function rule transform the graph?

I CAN...

transform linear functions.

- A. Give an argument to support Avery's statement.
- B. Give an argument to support Cindy's statement.
- C. **Look for Relationships** What do you know about linear equations that might support either of their statements?



CRITIQUE & EXPLAIN

INSTRUCTIONAL FOCUS Students explore how the graphs and equations of two lines are related. This prepares students for learning about transformations of linear functions.

STUDENT COMPANION Students can complete the Critique & Explain activity in their Student Companion.

Before WHOLE CLASS

Implement Tasks that Promote Reasoning and Problem Solving **ETP**

Q: What do you notice about the two lines?

[Answers may vary. Sample: The lines are parallel.]

During SMALL GROUP

Support Productive Struggle in Learning Mathematics **ETP**

Q: What is the relationship between a point on line f and the point with the same x -coordinate on line g ?

[The y -coordinate on line g is 2 units greater.]

Q: How are the equations for the two lines similar? How are they different?

[The slopes are the same, but the y -intercepts are different.]

For Early Finishers

Q: Copy the graphs of f and g . Add the graph of $h(x) = 2x - 1$. Describe how h compares to both f and g .

[Check students' graphs. The y -intercept of h is two units less than the y -intercept of f and four units less than the y -intercept of g . The x -intercept of h is one unit to the right of the x -intercept of f and two units to the right of the x -intercept of g .]

After WHOLE CLASS

Facilitate Meaningful Mathematical Discourse **ETP**

Q: How would you write the equation of the function n if n represented a shift of g up 3 units?

[$n(x) = 2x + 6$; Each y -value would shift up 3:

$n(x) = 2x + 3 + 3$ or $n(x) = 2x + 6$.]

Q: How do the x -values change from g to n for corresponding y -values?

[The x -values of n are 1.5 units to the left of the x -values of g when the y -values of n and g are the same.]

Q: Do you think an equivalent equation can be written for n that would describe this translation of g to the left?

[Yes, add 1.5 to the x -coordinate in g .

So $2(x + 1.5) + 3 = n(x) = 2x + 6$.]

HABITS OF MIND

Generalize Would the same arguments apply to the equations of other pairs of parallel lines?

[No; this rule would not apply to any pair of horizontal or vertical parallel lines.]

Use with CRITIQUE & EXPLAIN

Before



WHOLE CLASS

During



SMALL GROUP

After



WHOLE CLASS

Facilitate Meaningful Mathematical Discourse **ETP**

Q: How would you write the equation of the function n if n represented a shift of g up 3 units?

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Use with CRITIQUE & EXPLAIN

TAB

ETP

Aligned to
NCTM's
Principles to Actions



Lesson Design



STEP 1
Explore

STEP 2
Understand
and Apply

3-3

Transforming Linear Functions

I CAN... transform linear functions.

VOCABULARY

- transformation
- translation

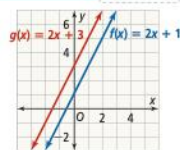
APPLICATION

LEARN TOGETHER

What are ways to stay positive and work toward goals?

CRITIQUE & EXPLAIN

Avery states that the graph of g is the same as the graph of f with every point shifted vertically. Cindy states that the graph of g is the same as the graph of f with every point shifted horizontally.



- Give an argument to support Avery's statement.
- Give an argument to support Cindy's statement.
- Look for Relationships** What do you know about linear equations that might support either of their statements?

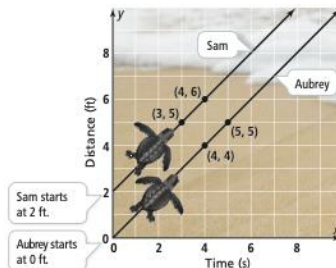
ESSENTIAL QUESTION

How does modifying the input of a linear function rule transform the graph?

EXAMPLE 1 Vertical Translations of Linear Functions

The positions of 2 baby sea turtles making their way to the water after hatching from their eggs is recorded. They move at the same speed, with Sam starting 2 ft ahead of Aubrey's starting point.

- What function represents each turtle's position as they make their way toward the shore?



Find the speed of each turtle by finding the slope of each line.

$$\text{Aubrey: } m = \frac{5-0}{5-0} = 1 \quad \text{Sam: } m = \frac{6-2}{4-0} = 1$$

Both turtles are moving at 1 ft/s.

The function $f(x) = x$ represents Aubrey's distance from his starting point, and $g(x) = x + 2$ represents Sam's distance from his starting point.

CONTINUED ON THE NEXT PAGE

3-3

Transforming Linear Functions

I CAN... transform linear functions.

VOCABULARY

- transformation
- translation

APPLICATION

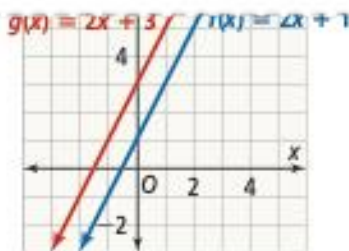
CRITIQUE & EXPLAIN

Avery states that the graph of g is the graph of f with every point shifted vertically. Cindy states that the graph of g is the same as the graph of f with every point shifted horizontally.

- Give an argument to support Avery's statement.
- Give an argument to support Cindy's statement.
- Look for Relationships** What do you know about linear equations that might support either of their statements?



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desmos



ESSENTIAL QUESTION

How does modifying the input of a linear function rule transform the graph?

EXAMPLE 1

Vertical Translations of Linear Functions

The positions of 2 baby sea turtles making their way to the water after hatching from their eggs is recorded. They move at the same speed, with Sam starting 2 ft ahead of Aubrey's starting point.

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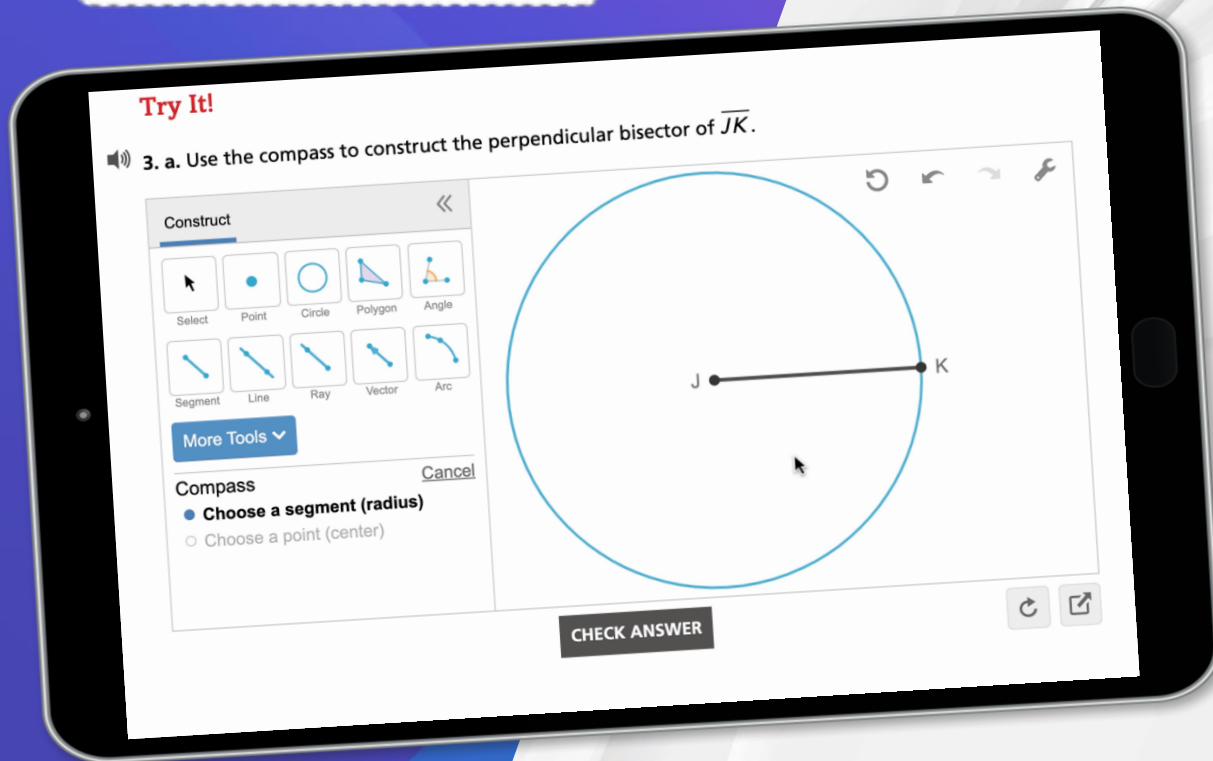
EMBEDDED INTERACTIVITIES



- Helps deepen understanding
- Delivered throughout the program
- Savvas-exclusive features for engaging, dynamic exploration

Dare to Compare!

- Online and **offline** access





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Interactive Student Edition



Solving Equations and Inequalities

TOPIC ESSENTIAL QUESTION

What general strategies can you use to solve simple equations and inequalities?

TOPIC OVERVIEW

enVision[®] STEM Project: Design a Smartphone

1-1 Operations on Real Numbers

1-2 Solving Linear Equations

1-3 Solving Equations with a Variable on Both Sides

1-4 Literal Equations and Formulas

1-5 Solving Inequalities in One Variable

Mathematical Modeling in 3 Acts: Collecting Cans

1-6 Compound Inequalities

English and Spanish

enVision® Algebra 1

SAVVAS

3-3

Transforming Linear Functions

I CAN... transform linear functions.

VOCABULARY

- transformation
- translation

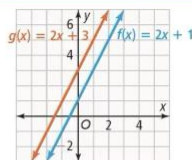
APPLICATION

LEARN TOGETHER

What are ways to stay positive and work toward goals?

CRITIQUE & EXPLAIN

Avery states that the graph of g is the same as the graph of f with every point shifted vertically. Cindy states that the graph of g is the same as the graph of f with every point shifted horizontally.



- Give an argument to support Avery's statement.
- Give an argument to support Cindy's statement.
- Represent and Connect** What do you know about linear equations that might support either of their statements?

ESSENTIAL QUESTION

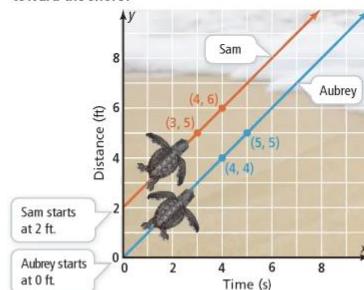
How does modifying the input or the output of a linear function rule transform its graph?

EXAMPLE 1

Vertical Translations of Linear Functions

The positions of 2 baby sea turtles making their way to the water after hatching from their eggs is recorded. They move at the same speed, with Sam starting 2 ft ahead of Aubrey's starting point.

- What function represents each turtle's position as they make their way toward the shore?



Find the speed of each turtle by finding the slope of each line.

$$\text{Aubrey: } m = \frac{5-0}{5-0} = 1$$

$$\text{Sam: } m = \frac{6-2}{4-0} = 1$$

Both turtles are moving at 1 ft/s.

The function $f(x) = x$ represents Aubrey's distance from his starting point, and $g(x) = x + 2$ represents Sam's distance from his starting point.

CONTINUED ON THE NEXT PAGE

Exit 5-4: Ex 2: Vertical Translations of the Absolute Value Function & Try It! Tools

EXAMPLE 2 Vertical Translations of the Absolute Value Function

ESSENTIAL QUESTION ES

STUDY TIP

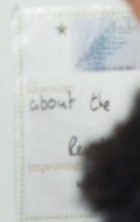
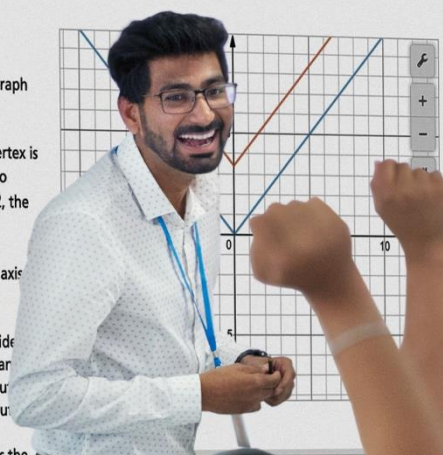
How does adding a constant to the output affect the graph of $f(x) = |x|$?

Compare the graphs of
 $g(x) = |x| - 4$ and
 $g(x) = |x| + 2$ with the graph of $f(x) = |x|$.

For $g(x) = |x| - 4$, the vertex is at $(0, -4)$. For $g(x) = |x| + 2$, the vertex is at $(0, 2)$.

The graphs have the same axis of symmetry, $x = 0$.

For a constant, k , outside the absolute value bars changes the output of $f(x)$, or the output, by k . This change the input of $f(x)$ by k , in the input, translates the graph of $f(x)$ by k units.



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Have a Growth Mindset and Learn Together

Encourage effort, persistence, and teamwork

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STEP 2 Understand & Apply

INTRODUCE THE ESSENTIAL QUESTION

Establish Mathematics Goals to Focus Learning

Introduce students to transformations of linear functions. Explain that a constant k added to the input or the output of the function causes the graph of the function to shift horizontally or vertically. Multiplying the function input or output by a constant causes the graph of the function to compress or stretch.

EXAMPLE 1 Vertical Translations of Linear Functions

Use and Connect Mathematical Representations

Q: What does it mean to add a constant k to the output of a function?

[The constant is added to the y -value of the original function.]

Q: How does the 2-unit vertical translation describe Sam's position on the beach compared to Aubrey's?

[Sam will always be 2 meters closer to the water than Aubrey.]

Learn Together: Stay Positive Approach goals and tasks with positivity helps you and others learn. Ask: How does staying positive help you work well with others?

ADDITIONAL EXAMPLES

EXAMPLE 2 Help students understand how a translation by a negative value of k appears in a linear function rule.

Q: What type of translation does the rule for function g describe? [Horizontal]

Q: Subtracting a negative value of k from the input of the linear function translates the graph in which direction? [to the left]

EXAMPLE 3B Help students understand how multiplying the input of a linear function by different values of k affect the graph.

Q: When you multiply the input of the function $f(x) = mx + b$ do you affect the y -intercept?

[Answers may vary. Sample No; the input is x and b , the y -intercept is not multiplied by x .]

Q: What happens if $k = 1$? [The original function is unchanged.]

Learn Together: Stay Positive Approaching goals and tasks with positivity helps you and others learn. Ask: How does staying positive help you work well with others?

Growth Mindset: Take on Challenges with Positivity
When you struggle with a challenge, you build connections in your brain. What can you tell yourself so you keep a positive attitude? Don't give up when you struggle? What can you do when something seems hard?

STEP 1 Explore

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CRITIQUE & EXPLAIN

INSTRUCTIONAL FOCUS Students explore how the graphs and equations of two lines are related. This prepares students for learning about transformations of linear functions.

STUDENT COMPANION Students can complete the Critique & Explain activity in their Student Companion.

Before **WHOLE CLASS**

Implement Tasks that Promote Reasoning and Problem Solving **STP**

Q: What do you notice about the two lines?
[Answers may vary. Sample: The lines are parallel.]

During **SMALL GROUP**

Support Productive Struggle in Learning Mathematics **STP**

- Q:** What is the relationship between a point on line f and the point with the same x -coordinate on line g ?
[The y -coordinate on line g is 2 units greater.]
- Q:** How are the equations for the two lines similar? How are they different?
[The slopes are the same, but the y -intercepts are different.]

For Early Finishers

- Q:** Copy the graphs of f and g . Add the graph of $h(x) = 2x - 1$. Describe how h compares to both f and g .
[Check students' graphs. The y -intercept of h is two units less than the y -intercept of f and four units less than the y -intercept of g . The x -intercept of h is one unit to the right of the x -intercept of f and two units to the right of the x -intercept of g .]

After **WHOLE CLASS**

Facilitate Meaningful Mathematical Discourse **STP**

- Q:** How would you write the equation of the function n if n represented a shift of g up 3 units?
[$n(x) = 2x + 6$; Each y -value would shift up 3:
 $n(x) = 2x + 3 + 3$ or $n(x) = 2x + 6$.]
- Q:** How do the x -values change from g to n for corresponding y -values?
[The x -values of n are 1.5 units to the left of the x -values of g when the y -values of n and g are the same.]
- Q:** Do you think an equivalent equation can be written for n that would describe this translation of g to the left?
[Yes, add 1.5 to the x -coordinate in g .
So $2(x + 1.5) + 3 = n(x) = 2x + 6$.]

HABITS OF MIND

Use with CRITIQUE & EXPLAIN

Generalize: Would the same arguments apply to the equations of other pairs of parallel lines?

[No: this rule would not apply to a pair of horizontal or vertical parallel lines.]



Critique & Explain is Powered by Desmos.
Activities are available at SavvasRealize.com

CRITIQUE & EXPLAIN

Many notice that the graph of g is the same as the graph of f with every point shifted vertically. Some think that the graph of g is the same as the graph of f with every point shifted horizontally.

A. Give an argument to support Alay's statement.
[Enter your answer]

B. Give an argument to support Cindy's statement.
[Enter your answer]

C. Look for Relationships: What do you know about these equations that might support your answer?

$g(x) = 2x + 3$
 $f(x) = 2x + 1$

3-3 Transforming Linear Functions

CRITIQUE & EXPLAIN

Many notice that the graph of g is the same as the graph of f with every point shifted vertically. Cindy states that the graph of g is the same as the graph of f with every point shifted horizontally.

A. Give an argument to support Alay's statement.
[Enter your answer]

B. Give an argument to support Cindy's statement.
[Enter your answer]

C. Look for Relationships: What do you know about these equations that might support your answer?

INSTRUCTIONAL QUESTION How does modifying the input of a linear function cube transform the graph?

SAMPLE 1 Vertical Translations of Linear Functions
The position of 2 balls was being tracked that way to the water after building from their eggs is recorded. They move at the same speed, with Sam starting 1 ft ahead of Audrey's starting point.

SAMPLE STUDENT WORK

- A. The y -intercept of f is two units less than the y -intercept of g .
- B. The x -intercept of f is one unit to the right of the x -intercept of g .
- C. Equivalent linear expressions can be written in different ways, so it is possible that a horizontal transformation of f and a vertical transformation of f could yield equivalent equations for g .

Lesson Design



STEP 1
Explore

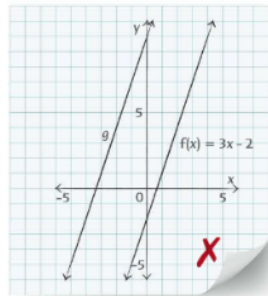
STEP 2
Understand
and Apply

STEP 3
Practice and
Problem Solving

PRACTICE & PROBLEM SOLVING

Understand

10. **Reason** Describe the transformation of the function $f(x) = \frac{1}{3}x - 2$ that makes the slope 2 and the y-intercept -8.
11. **Look for Relationships** Why do translations produce parallel lines?
12. **Error Analysis** A student graphs $f(x) = 3x - 2$. On the same grid they graph the function g which is a transformation of f made by subtracting 4 from the input of f . Describe and correct the error they made when graphing g .



13. **Look for Relationships** Let $f(x) = \frac{1}{3}x - 3$. Suppose you subtract 6 from the input of f to create a new function g , then multiply the input of function g by 4 to create a function h . What equation represents h ?
14. **Use Structure** Describe each transformation. Then write the equation of the transformed function.

$$f(x) = 2x + 1$$

$$g(x) = \frac{1}{3}x + 2$$

	Transformation	Description	Function
a.	$f(x) - 5$		
b.	$g(x) + 4$		
c.	$3g(x)$		
d.	$\frac{1}{2}f(x)$		

Practice

Item Analysis

Example

Items

DOK

Engage Through Student Choice

Promote student agency by allowing students to choose practice items. You may structure this choice in many ways.

For example:

Assign each section a point value. Students choose at least one item from each section and items chosen should have a minimum of 20 total points.

Understand, Apply 2 points each

Practice 1 point each

Assessment Practice 1 point each

Performance Task 3 points

9, 10, 21, 27

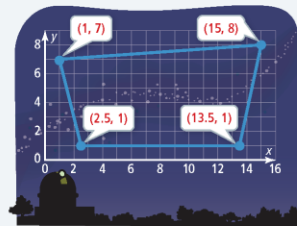
4

SAT/ACT Practice

34. How is the graph of the function $g(x) = \frac{2}{5}x + 6$ transformed from the graph of the function $f(x) = \frac{2}{5}x$?

New
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36. **Performance Task** The science club members chart a constellation in the sky with a set of coordinates. They then reposition their view of the sky so that the constellation is translated 10 units to the right and 6 units up from the initial position.

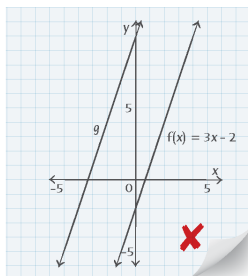


- a. Choose one side of the constellation. Write the equation for the line after a translation 10 units to the right.
- b. What is the equation for the line in Part A after a translation 6 units up?
- c. How does the equation in Part B compare to the equation for the original line on the graph?

PRACTICE & PROBLEM SOLVING

UNDERSTAND

- 10. Reason** Describe the transformation of the function $f(x) = \frac{1}{3}x - 2$ that makes the slope 2 and the y-intercept -8.
- 11. Look for Relationships** Why do translations produce parallel lines?
- 12. Error Analysis** A student graphs $f(x) = 3x - 2$. On the same grid they graph the function g which is a transformation of f made by subtracting 4 from the input of f . Describe and correct the error they made when graphing g .



- 13. Look for Relationships** Let $f(x) = \frac{1}{2}x - 3$. Suppose you subtract 6 from the input of f to create a new function g , then multiply the input of function g by 4 to create a function h . What equation represents h ?
- 14. Use Structure** Describe each transformation. Then write the equation of the transformed function.

$$f(x) = 2x + 1 \qquad g(x) = \frac{1}{3}x + 2$$

	Transformation	Description	Function
a.	$f(x) - 5$		
b.	$g(x) + 4$		
c.	$3g(x)$		
d.	$\frac{1}{2}f(x)$		

PRACTICE

Given $f(x) = 3x + 5$, describe how the graph of g compares with the graph of f .

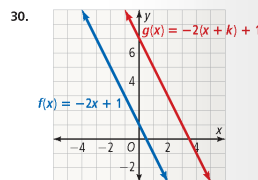
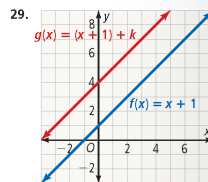
SEE EXAMPLES 1, 2, AND 3

15. $g(x) = (3x + 5) + 8$ 16. $g(x) = (3x + 5) - 4$
 17. $g(x) = 3(x + 10) + 5$ 18. $g(x) = 3(x - 1) + 5$
 19. $g(x) = 3(0.1x) + 5$ 20. $g(x) = 5(3x + 5)$
 21. $g(x) = 3(2x) + 5$ 22. $g(x) = 8(3x + 5)$

Given $f(x) = 2x + 3$, describe how the value of k affects the slope and y-intercept of the graph of g compared to the graph of f . SEE EXAMPLE 3

23. $g(x) = 3(2x + 3)$ 24. $g(x) = 2(0.5x) + 3$
 25. $g(x) = \frac{1}{6}(2x + 3)$ 26. $g(x) = 2(\frac{1}{8})x + 3$
 27. $g(x) = (2x + 3) - 3$ 28. $g(x) = 2(x + 0.5) + 3$

Find the value of k for each function g . Then describe the graph of g as a transformation of the graph of f .

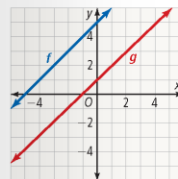


New in
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Real Connections The cost of renting a tractor is a \$100 security deposit plus an hourly rate.



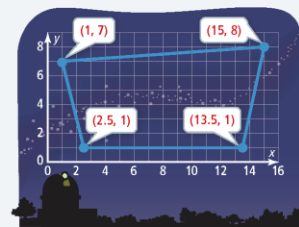
- a. The function f represents the cost of renting the tractor. The function g represents the cost if the hourly rate were doubled. Write each function.
- b. How would the slope and y-intercept of the graph g compare to the slope and y-intercept of the graph of f ?
- 32. Construct Arguments** Kiyana said the graph of g below represents a vertical translation of the function $f(x) = x + 1$ by 4 units. Dawn argued that the graph of g represents a horizontal translation of f by 4 units. Who is correct? Explain.



- 33. Higher Order Thinking** The graph of a linear function f has a negative slope. Describe the effect on the graph of the function if the transformation has a value of $k < 0$.
- a. adding k to the outputs of f
 b. adding k to the inputs of f
 c. multiplying the outputs of f by k
 d. multiplying the inputs of f by k

ASSESSMENT PRACTICE

- 34.** How is the graph of the function $g(x) = \frac{2}{5}x + 6$ transformed from the graph of the function $f(x) = \frac{2}{5}x$?
- Ⓐ Moved up 6 units
 Ⓑ Moved down 6 units
 Ⓒ Moved left 6 units
 Ⓓ Moved right 6 units
- 35. SAT/ACT** Which of the following describes the differences between the graph of f and the graph of the output of f multiplied by 3?
- Ⓐ The slope changes by a factor of 3; the y-intercept does not change.
 Ⓑ Both the slope and y-intercept change by a factor of 3.
 Ⓒ The slope does not change; the y-intercept changes by a factor of 3.
 Ⓓ Neither the slope nor y-intercept change.
- 36. Performance Task** The science club members chart a constellation in the sky with a set of coordinates. They then reposition their view of the sky so that the constellation is translated 10 units to the right and 6 units up from the initial position.



- a. Choose one side of the constellation. Write the equation for the line after a translation 10 units to the right.
- b. What is the equation for the line in Part A after a translation 6 units up?
- c. How does the equation in Part B compare to the equation for the original line on the graph?

PROBLEM SOLVING



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The Value of 'm' in $f(x)=mx$

$1. m=1 \rightarrow f(x)=x$		$2. m=2 \rightarrow f(x)=2x$	
x	$f(x)$	x	$f(x)$
-2	-2	-2	-4
-1	-1	-1	-2
0	0	0	0
1	1	1	2
2	2	2	4

Si marcamos los puntos de la tabla y los conectamos,

- 4

+ 5

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affect... pt of the... of g
SEE EXAMPLE 3

$$= 3(2x + 3)$$

$$24. g(x) = 2(0.5x) + 3$$

Supporting Students At Home

New in
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Name _____

enVision Algebra 1

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Dear Family,



Join on SavvasRealize.com to
succeed in math with
enVision® Algebra 1. This
resource connects to our
math terms and phrases.



resources you can
better understand
topic support that
support that provide
find additional resources.



Sincerely,





Question 30

PERIMETER The function $f(s) = 4s$ represents the perimeter of a square with side length s . Write a function $g(s)$ to represent the perimeter of a square with side lengths that are twice as great. Describe the graph of $g(s)$ compared to $f(s)$.

- ☐ A) $g(s) = 16s$; The graph of $g(s) = 16s$ is the graph of $f(s) = 4s$ stretched vertically by a factor of 4.
- ☐ B) $g(s) = 8s$; The graph of $g(s) = 8s$ is the graph of $f(s) = 4s$ stretched vertically by a factor of 2.
- ☐ C) $g(s) = 8s$; The graph of $g(s) = 8s$ is the graph of $f(s) = 4s$ stretched horizontally by a factor of 2.
- ☐ D) $g(s) = 16s$; The graph of $g(s) = 16s$ is the graph of $f(s) = 4s$ stretched horizontally by a factor of 2.



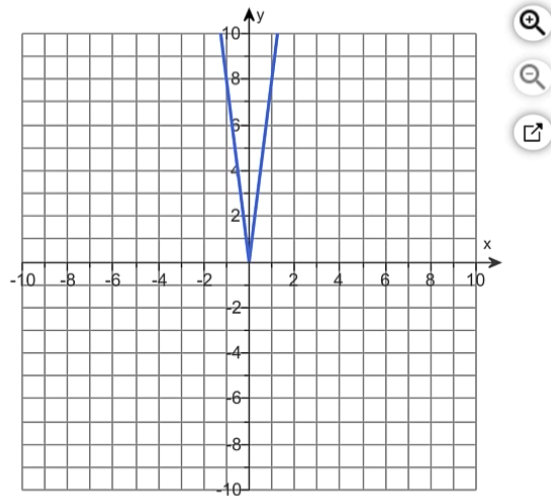


Sketch the graph of the function.

$$f(x) = |x| + 8$$

...

Use the graphing tool to graph the function.



...

[Help me solve this](#)[View an example](#)[Get more help ▲](#)[Clear all](#)[Check answer](#)[Review Progress](#)

Question

6

of 24

[◀ Back](#)[Next ▶](#)

+Add ▼



3-3: MathXL for School: Practice and Problem-Solving

+Add ▼



3-3: MathXL for School: Mixed Review

+Add ▼



3-3: MathXL for School: Additional Practice

+Add ▼



3-3: MathXL for School: Enrichment

+Add ▼



3-3: MathXL for School: Reteach to Build Understanding

Select a Program ⓘ



enVision Algebra 1
2024

Title

3-3: MathXL for School: Practice Problem-Solving Copy 1

Description

3-3: MathXL for School: Practice Problem-Solving

☐ Count towards standards
Include results in the standards report.

☐ Randomize order of items
This will randomize the item order of digital assignments.

Total items in test: 27

Share Playlist



Add Teacher

Search by Teacher Last Name, First Name



☒ Include teachers outside my school

Add a message (optional)

Cancel

Share

Remove

Check answer

Save

Review



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Name _____ **enVision Algebra 1**

8 Assessment Form A

- The graph of $g(x) = ax^2$ opens downward and is narrower than the graph of $f(x) = x^2$. Which of the following could be the value of a ?
A -3 B -0.6 C 0.5 D 2
- What is the average rate of change of the function $f(x) = 2x^2 + x + 5$ over the interval $-2 \leq x \leq 2$?
A -4 B -1 C 1 D 4
- Which statements about the graphs of functions $g(x) = -\frac{3}{2}x^2$ and $f(x) = x^2$ are true? Select all that apply.
A g is wider than f .
B f and g open in the same direction.
C f and g have the same vertex.
D f and g have the same axis of symmetry.
- Over what interval is the function increasing?

x	$y = \frac{-x^2}{2}$	(x, y)
-4	8	$(-4, 8)$
-2	-2	$(-2, -2)$
0	0	$(0, 0)$
2	-2	$(2, -2)$
4	-8	$(4, -8)$
- What is the vertex of the graph of function $f(x) = 2(x - 2)^2 + 3$?
A $x = -5$ B $x = -4$ C $x = 3$ D $x = 5$
- What is the axis of symmetry for the function $y = -(x - 3)^2 + 5$?
A $x = -5$ B $x = -3$ C $x = 3$ D $x = 5$
- Which of the following functions has a graph with a vertex that is a translation 5 units horizontally to the right of the vertex of the graph of $g(x) = (x + 2)^2 + 2$?
A $g(x) = -(x - 3)^2 + 2$
B $g(x) = (x + 7)^2 + 2$
C $g(x) = (x + 5)^2 + 2$
D $g(x) = -(x + 2)^2 + 5$
- Identify the vertex and y -intercept of the graph of the function $y = (x + 2)^2 - 3$.
vertex: _____
 y -intercept: _____
- The graph of h is a translation 4 units right and 1 unit down of the graph of $f(x) = x^2$. Write function h in vertex form.
A $h(x) = (x - 4)^2 - 1$ B $h(x) = (x + 4)^2 - 1$ C $h(x) = (x - 4)^2 + 1$ D $h(x) = (x + 4)^2 + 1$
- What is the axis of symmetry of the graph of the function $f(x) = 2x^2 + 8x - 5$?
A $x = -5$ B $x = -4$ C $x = -2$ D $x = 2$

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Name _____ **enVision Algebra 1**

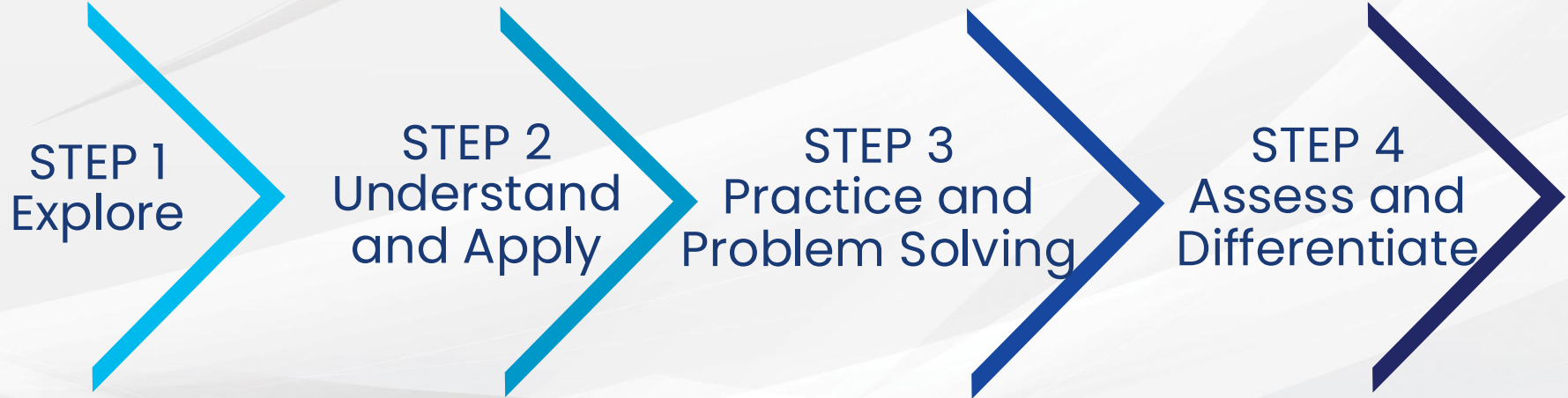
8 Performance Assessment Form A

A high school drama club is selling tickets for a fundraiser event. Based on data from past events, the number of tickets sold can be modeled by a linear function $Q(x) = -40x + 640$, where x is the price, in dollars, of each ticket.

- What is a reasonable domain and range for function Q ? Explain.
- The revenue R can be determined by multiplying the ticket price x by the number of tickets sold. Write a quadratic function R that correctly represents this model. Justify your answer.
- Graph function R below. Label the vertex. What does the vertex represent in this context? Explain.

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Lesson Design



STEP 1
Explore

STEP 2
Understand
and Apply

STEP 3
Practice and
Problem Solving

STEP 4
Assess and
Differentiate

Name _____

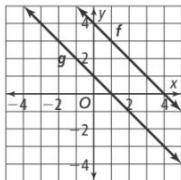
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3-3 Lesson Quiz

Transforming Linear Functions

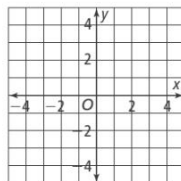
1. Given $g(x) = f(x) + k$, what value of k transforms function f into g ?



2. Given $f(x) = -7x + 9$ and $h(x) = -5f(x)$, what are the slope and y -intercept of function h ?

slope = _____ y -intercept = _____

3. Graph the function $f(x) = \frac{1}{3}x + 1$ and the function $g(x) = f(6x)$.



4. Given $f(x) = 8x + 1$ and $g(x) = f(x - 2)$, which equation represents g ?

- (A) $g(x) = 6x + 1$ (C) $g(x) = 8x + 15$
(B) $g(x) = 6x - 1$ (D) $g(x) = 8x - 15$

5. Keenan buys an embroidery machine for \$1,400. He uses it to embroider T-shirts. His total profit in dollars from selling the T-shirts is represented by the function $f(x) = 12x - 1,400$. When the machine breaks, he pays to have it fixed. How does that cost affect a graph of Keenan's profit?

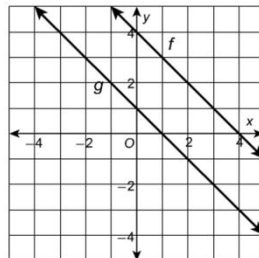
- (A) The graph is translated up 135 units.
(B) The graph is translated down 135 units.

Lesson Quiz

← Exit

3-3: Lesson Quiz ▼

Given $g(x) = f(x) + k$, enter the value for k that transforms the function f into g ?



$k =$

Review Progress

Question 1 of 5

← Back

Next →

Kaitlin



Score Summary		
Score 50% (3/6)		
You need more practice with:		
For linear functions, identify the effect on the graph of replacing $f(x)$ by $f(x)$.		
For linear functions, identify the effect on the graph of replacing $f(x)$ by $f(x + k)$.		
Questions		
Question 1	Incorrect	0 out of 1 point
Question 2	Partial	1 out of 2 point
Question 3	Correct	1 out of 1 point
Question 4	Correct	1 out of 1 point
Question 5	Incorrect	0 out of 1 point

Cornell



Score Summary		
Score 100% (6/6)		
Successfully completed:		
For linear functions, identify the effect on the graph of replacing $f(x)$ by $f(x)$.		
For linear functions, identify the effect on the graph of replacing $f(x)$ by $f(x + k)$.		
Questions		
Question 1	Correct	1 out of 1 point
Question 2	Correct	2 out of 2 point
Question 3	Correct	1 out of 1 point
Question 4	Correct	1 out of 1 point
Question 5	Correct	1 out of 1 point

Angelo



Score Summary		
Score 83.333% (5/6)		
You need more practice with:		
For linear functions, identify the effect on the graph of replacing $f(x)$ by $f(x + k)$.		
Successfully completed:		
For linear functions, identify the effect on the graph of replacing $f(x)$ by $f(x)$.		
Questions		
Question 1	Correct	1 out of 1 point
Question 2	Correct	2 out of 2 point
Question 3	Incorrect	0 out of 1 point
Question 4	Correct	1 out of 1 point
Question 5	Correct	1 out of 1 point

Name _____

3-3 Reteach to Build Understanding

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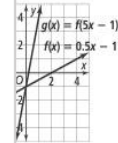
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Name _____

3-3 Additional Practice

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Name _____

3-3 Enrichment

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mpares to f .

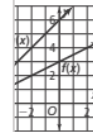
$= f(x + 8)$

$= f(5x)$

alue of k is 4, so
graph translates
4 units up.

he has made two

g? Describe the



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functions.

 x

f. The slope and

Name _____

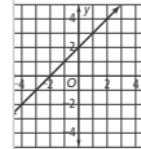
3-3 Additional Vocabulary Support

Transforming Linear Functions

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izontally, while
tions to other



and



Complete the vocabulary chart by filling in the missing information or graphing a line on the coordinate plane.

Word or Word Phrase	Definition	Picture or Example
Translation	Translations shift each point of the graph the same distance horizontally, vertically or both.	1.
Horizontal translation	2. Given $f(x)$, $k > 0$ $g(x) = f(\text{_____})$	
Vertical translation	Given $f(x)$, $k > 0$ $g(x) = f(x) + k$	3.

membership fee
or x months.
application fee is
percepts of the

STEP 4

Assess and Differentiate

Standard Analysis Question Analysis Student Analysis **Performance Analysis**

View student performance analysis and assign resources to help remediate or enrich.

Performance by Overall Score Break Point 70 %

Assign Resources

Novak, Melanie	42% (4.2/10)
Callaghan, Dan	45% (4.5/10)
Kinney, Lucien	45% (4.5/10)
Oneal, Victor	58% (5.8/10)
Kouma, Ayva	65% (6.5/10)

Assign Resources

Buxton, Robertt
Zimmerman, Eric
Salgado, Joe
King, Jenna
Palacios, Arianna

Standard Analysis Question Analysis Student Analysis **Performance Analysis**

View student performance analysis and assign resources to help remediate or enrich.

Performance by Overall Score Break Point 85 % **Show Performance**

Assign Resources

Novak, Melanie	42% (4.2/10)
Callaghan, Dan	45% (4.5/10)
Kinney, Lucien	45% (4.5/10)
Oneal, Victor	58% (5.8/10)

Assign Resources

Palacios, Arianna	85% (8.5/10)
Drew, Ivy	85% (8.5/10)
Ashton, Kelly	90% (9/10)

Ungrouped Students

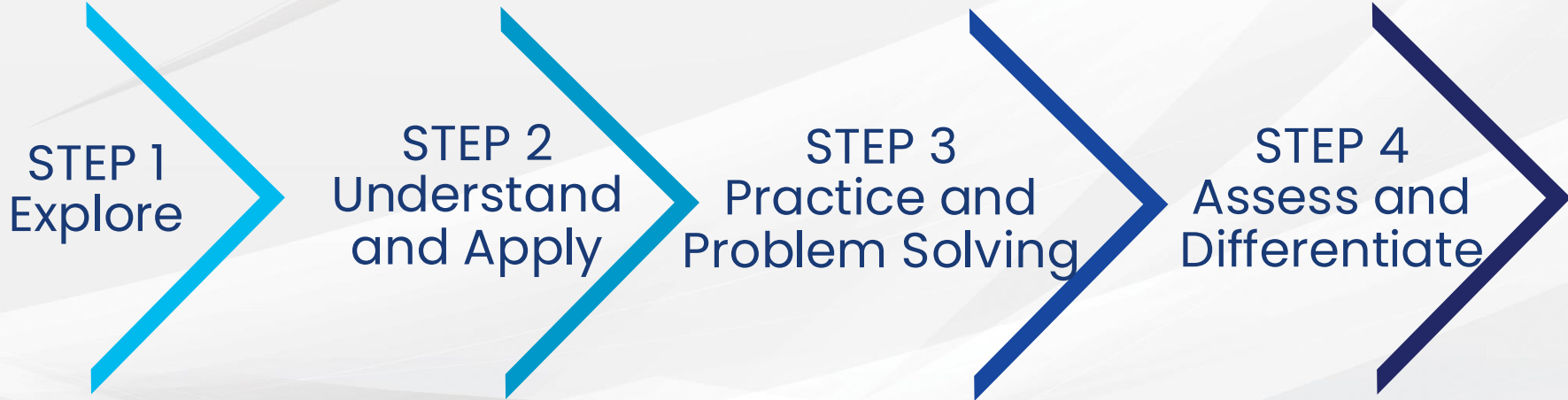
Alvarez, Lucia
Bird, Gillian
Sturky, Nick

Drag and drop

Adaptive Practice



Lesson Design



STEP 1
Explore

STEP 2
Understand
and Apply

STEP 3
Practice and
Problem Solving

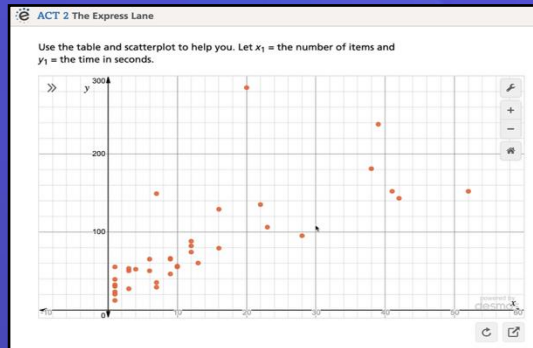
STEP 4
Assess and
Differentiate



ACT 1: The Hook



ACT 2: The Model



ACT 3: The Solution



Real-world scenarios with
interesting, reality-based problems

3-Act Math... When do I teach it?

The screenshot shows the Savvas Realize platform interface for enVision Algebra 1. The top navigation bar includes 'Home', 'Browse', 'Classes', and 'My Library'. The user 'Shelley Pepper' is logged in. The main content area displays a list of topics for 'enVision Algebra 1'. A callout box highlights 'Topic 3: Mathematical Modeling in 3 Acts: The Express Lane'.

enVision Algebra 1

Topic 3: Readiness Assessment

Topic 3: enVision STEM Project >

3-1: Domain and Relations and Functions

3-2: Linear Functions

3-3: Transforming Linear Functions

Topic 3: Mathematical Modeling in 3 Acts: The Express Lane

3-4: Arithmetic Sequences

3-5: Scatter Plots and Lines of Fit

3-6: Analyzing Lines of Fit

Topic 3: MathXL for School: Topic Review

Topic 3: Performance Assessment Form A

3-2: Linear Functions

3-3: Transforming Linear Functions

Topic 3: Mathematical Modeling in 3 Acts: The Express Lane

3-4: Arithmetic Sequences

3-5: Scatter Plots and Lines of Fit

Topic 3: The Express Lane - Act 3 Questions

Assign

3-Act Math... How do I teach it?

TAB

TOPIC 3 Mathematical Modeling in 3 Acts: The Express Lane

Lesson Overview

Objective

- Students will be able to:
- ✓ Use mathematical modeling to represent a problem situation and to propose a solution.
 - ✓ Test and verify the appropriateness of their math models.
 - ✓ Explain why the results from their mathematical models might not align exactly with the problem situation.

Essential Understanding

Many real-world problem situations can be represented with a mathematical model, but that model might not represent the real-world situation exactly.

Earlier in this topic, students:

- Interpreted statements that use function notation.

In this lesson, students:

- Develop a mathematical model to represent and propose a solution to a problem situation.

Later in this topic, students will:

- Find and analyze lines of best fit for scatter plots.

This mathematical modeling lesson focuses on application of both math content and math practices and processes.

- Students draw on their understanding of concepts related to linear models to develop a representative model.
- Students apply their mathematical model to test and validate its applicability to similar problem situations.

Mathematics Overview

The Importance of Modeling

Rather than presenting a problem with all the necessary information, diagrams, and graphs in advance, this task also asks students to participate in the formulation of a problem.

Students decide what questions are interesting, what quantities are important, and how they could access information. They choose which math concepts are relevant to the task, using approximations or assumptions in the solution when necessary. Finally, the task includes an actual, real-world answer. Students discuss possible sources of error inherent in using math to model real-world situations. Then they evaluate the usefulness of their models in the situation, improving them if necessary.

Student Companion

Students can do their work for the task on pages 61-62 of their Student Companion or on SavasRealize.com.

Applying Math Practices

Model With Mathematics

To solve the problem presented, students identify variables and the relationship among them, develop a model that represents the situation, and use the model to propose a solution. Students interpret their solutions and propose explanations for why their answer may not match the real-world answer.

Other Practices

Students also engage in sense-making, perseverance, and abstract and quantitative reasoning as they complete the task. In testing their models, students look for patterns in their models and use that structure to find a solution.

TOPIC 3 Mathematical Modeling in 3 Acts

The Express Lane

In this mathematical modeling task, students will explore and apply concepts related to collecting and using data to write a model. Students will analyze two lines at the grocery store for which data could be collected about several variables. They will use this data to create a linear model in order to make a decision. To do so, they apply concepts that they study in Topic 3.

ACT 1 The Hook

Play the video. The video shows two lines in a grocery store—an express lane and a regular lane. The express lane has 8 people with baskets while the regular lane has 3 people with carts.

After the question brainstorming, present to students the Main Question they will be tasked with answering. Remind students to write down their questions and conjectures.

MAIN QUESTION

Should you choose the express lane or the regular lane?



ACT 2 Model

Think about the task how long it takes to have them rank the include total number employee bagging whether the cashier.

Reveal the information the number of cash each customer is go and scatter plot will. Alternatively, you can What's the connect connect their ideas that they select on variables might be the situation? How make a decision?

INTERESTING?

Look for broad trends your students know the relationship be of what the y-inter 0 seconds, then the

TOPIC 3 Mathematical Modeling in 3 Acts

ACT 3 The Solution

Discuss the answer. The final video shows how long each line takes. Offer praise to the students whose conjectures are closest to the actual answer.

MAIN QUESTION ANSWER

The regular lane is about 3 minutes faster.

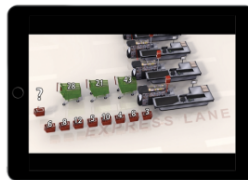
Do the "post-game" analysis. Ask students why the actual answer may differ from the mathematical answer. Our assumption that both cashiers work at the same rate and that it takes about 4 seconds to scan each item may have been inaccurate. Our assumption that the time to complete a transaction (minus scanning time) may have also been inaccurate. For example, someone may pay with a check, or a price check may occur. Cashiers also work at different speeds. We have to assume there are no unusual delays that cause one line to take much longer.

ONE POSSIBLE SOLUTION

A customer completes a transaction when all items are scanned, plus all other actions occur (unloading the cart, bagging items, paying for the items, etc.).

To model the situation, x is the number of items a customer has, and $f(x)$ is the total amount of time for the transaction.

The amount of time it takes to scan each item represents the slope. Assume that it takes about 4 seconds to scan each item.



SEQUEL

As students finish, ask them to propose a general rule for when they should choose the express lane. [Answers will vary. Look for a strategy that takes both scanning time and other time into account and could be used relatively quickly and without a calculator.]

End of Topic Assessments

Name _____

enVision Algebra 1

Fluency

8 Assessment Form A

1. The graph of $g(x) = -x^2 - 4x - 4$ is shown below. What is the axis of symmetry for the graph?

downward and is narrower than the graph of $f(x) = x^2$. Which of the following could be the graph of $f(x)$?

(A) -3 (B) -0.6 (C) -1 (D) -4

2. What is the average value of the function $f(x) = x^2 - 2x + 1$ over the interval $[-2, 2]$?

(A) -4 (B) -1 (C) 1 (D) 4

3. Which statements about the functions $f(x) = x^2 - 4x + 4$ and $g(x) = x^2 - 4x + 4$ are true? Select all that apply.

(A) g is wider than f . (B) f and g open in the same direction. (C) f and g have the same vertex. (D) f and g have the same axis of symmetry.

4. Over what interval is the function $f(x) = x^2 - 4x + 4$ increasing?

x	$y = -\frac{1}{2}x^2 + 2x - 2$	(x, y)
-4	-8	(-4, -8)
-2	-2	(-2, -2)
0	0	(0, 0)
2	-2	(2, -2)
4	-8	(4, -8)

5. What is the vertex of the function $f(x) = 2(x - 3)^2 + 1$?

10. The function $h(t) = -16t^2 + 24t$ models the height, in feet, of a kangaroo t seconds after it jumps. What is the maximum height of the jump?

(A) 9 ft (B) 18 ft (C) 27 ft (D) 36 ft

Part A

Nicky wants to surround a painting 5 inches by 11 inches with a frame that is w inches wide. Write a quadratic function A in standard form to represent the combined area of the picture and the frame.

$$A(w) = \square w^2 + \square w + \square$$

Part B

Suppose that the frame must be at least 1 inch and no more than 3 inches wide. What are the domain and the range of the function?

- (A) domain: $\{1 \leq w \leq 3\}$; range: $\{88 \leq A(w) \leq 160\}$
 (B) domain: $\{1 \leq w \leq 5\}$; range: $\{88 \leq A(w) \leq 240\}$
 (C) domain: $\{1 \leq w \leq 3\}$; range: $\{91 \leq A(w) \leq 187\}$
 (D) domain: $\{1 \leq w \leq 5\}$; range: $\{91 \leq A(w) \leq 315\}$

12. The change in the number of students at a high school in Naples was the same from 2007 to 2013 as it was from 2013 to 2019. The number of students is best modeled by a

- ☐ constant
☐ linear
☐ quadratic
☐ exponential

function.

Part A

The function $f(x) = -4x^2 + 18x + 16$ models the predicted sales of a hat after x price increases. Use the table showing actual and predicted sales to find the residuals for the model. Numbers may be used once, more than once, or not at all:

(-3) (-2) (1) (0)
 (-1) (2) (4)

x	Actual Sales (\$)	Predicted Sales (\$)	Residual
0	17	16	
1	29	30	
2	34	36	
3	33	34	
4	22	24	

Part B

Quadratic function g also models the data. The residuals for function g are 0.25, -0.2, 0, 1.7, and 1.

Function $\square g$
☐ f

is a better model for the data.

14. Store A's profit is modeled by $f(x) = 3x^2$, and Store B's profit is modeled by $g(x) = 9x$. Over what interval is Store A's profit greater than Store B's?

- (A) $0 < x < 3$ (B) $x > 3$ (C) $0 < x < 2$ (D) $2 < x < 3$

15. Do the data suggest a linear, quadratic, or exponential model?

x	0	1	2	3	4
y	2.5	5	10	20	40

- (A) constant (B) linear (C) quadratic (D) exponential

Name _____

enVision Algebra 1

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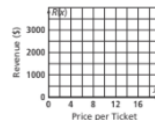
8 Performance Assessment Form A

A high school drama club event. Based on data from tickets sold can be modeled by the function $Q(x) = -40x + 640$, where x is the price of each ticket.

1. What are a reasonable range for function Q ?

2. The revenue R can be found by multiplying the number of tickets sold by the price per ticket. Write a function for the revenue R in terms of the price per ticket x . Justify your answer.

3. Graph the function R on the coordinate plane below. Explain the context of the graph.



4. The table on the right shows ticket prices and actual revenues from past events.

Part A

Plot the given data (price, actual revenue) on the graph below. Then use the model you wrote in Item 2 to fill in the predicted revenue column in the table. Finally, fill in the residual column.

Price	Actual Revenue (\$)	Predicted Revenue (\$)	Residual
4	2,012		
5	2,275		
6	2,352		
7	2,506		
8	2,616		
9	2,529		
10	2,330		
11	2,079		
12	1,824		

Part B

The drama club president tries a different model for the data, $P(x) = -41x^2 + 630x$, where P is the predicted revenue given a ticket price of x dollars. Compare that model and the model you found in Item 2 by graphing the residuals. Which model is a better fit for the data? Justify your answer.

Part C

Use a graphing calculator to find a quadratic regression model A for the actual revenue amounts shown in the table in Part A. Make a conjecture about the fit of your model.

Assessment Possibilities

Diagnostic Assessments

- Beginning-of-Year Assessment
- Topic Readiness Assessments

Formative Assessments

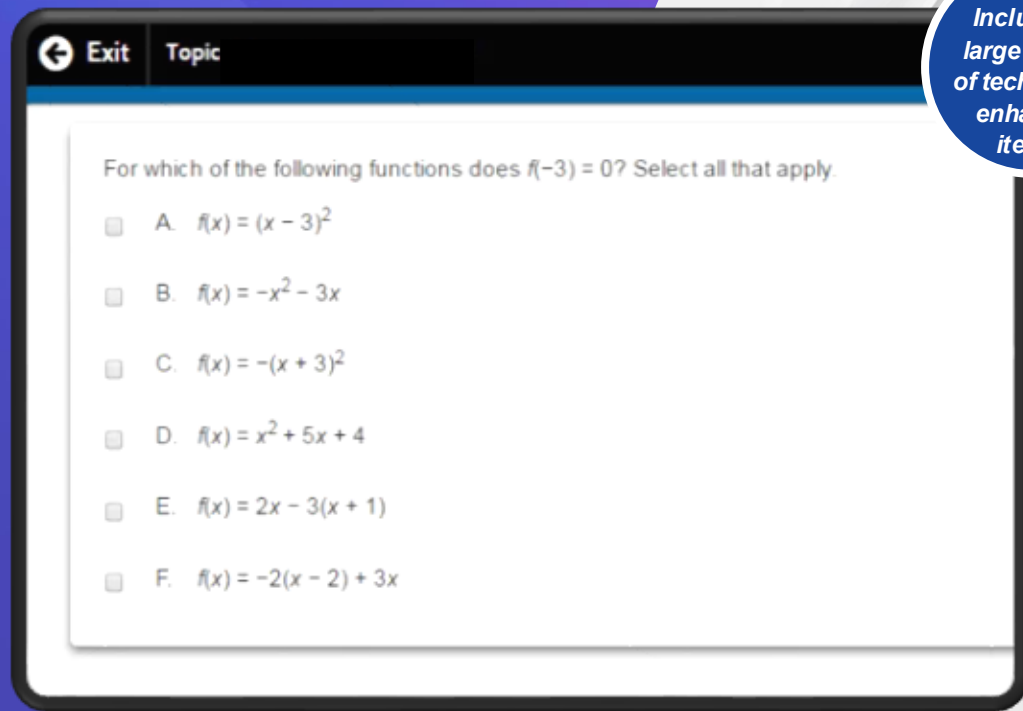
- Lesson Quizzes

Summative Assessments

- Topic Assessments
- Topic Performance Tasks
- Benchmark Assessments
- End-of-Course Assessment

Progress Monitoring

- Beginning-of-Year
- Mid-Year
- End-of-Year



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Average Assessment Score: 68%

When Custom Range ▾

Start date

End date

03/01/2022



03/15/2022



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Due Date ↑	Assessment Title	Avg Score ▴ ▾	All Programs ▾ ▴
03/09/22	4-1: Lesson Quiz	✓ 82%	enVision Algebra 1
03/07/22	Topic 4: Readiness Assessment	✗ 53%	enVision Algebra 1

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Teacher Plan Resources

TOPIC 1

Solving Equations and Inequalities

MATH BACKGROUND COHERENCE

TOPIC 1

Solving Equations and Inequalities

TOPIC PLANNER

Lesson	Essential Understanding	Content Objective	Vocabulary	Standards
1-1 Operations on Real Numbers 1 DAY	The set of real numbers includes both rational and irrational numbers. The sum or product of two rational numbers is rational. The sum of a rational number and an irrational number is irrational; and the product of a nonzero rational number and an irrational number is irrational.	- Find the sum or product of two rational numbers and explain why the sum or product is rational. - Find the sum or product of a rational and an irrational number and explain when the sum or product is irrational.	element of a set, real numbers, set, subset	HSN.RN.B.3, HSN.Q.A.3 Mathematical Practices MP.1, MP.2, MP.3
1-2 Solving Linear Equations 2 DAYS	Linear equations can be used to solve mathematical and real-world problems. You can solve linear equations by using the properties of equality.	- Explain that each step in solving a linear equation follows from the equality in the previous step. - Create and solve linear equations with one variable using the properties of equality.	none	HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3, HSN.Q.A.1, HSA.CED.A.3 Mathematical Practices MP.1, MP.2, MP.7
1-3 Solving Equations with a Variable on Both Sides 2 DAYS	The properties of equality are used to solve equations that have variables on each side. If an equation is true for all values of x , then it has infinitely many solutions; if it is not true for any value of x , then it has no solutions.	- Use the properties of equality to solve linear equations with a variable on both sides. - Identify whether linear equations have one solution, infinitely many solutions, or no solution.	identity	HSA.CED.A.1, HSA.REI.A.1, HSA.REI.B.3, HSN.Q.A.2 Mathematical Practices MP.2, MP.3, MP.5
1-4 Literal Equations and Formulas 1 DAY	Literal equations are equations with two or more variables. They are solved by rewriting the equation to highlight the variable of interest.	- Rearrange formulas and equations to highlight a quantity of interest by isolating the variable using the same reasoning used to solve equations. - Use formulas and equations to solve problems.	formula, literal equation	HSA.CED.A.4, HSN.Q.A.1, HSA.CED.A.1 Mathematical Practices MP.1, MP.3, MP.4

The suggested pacing for each lesson is shown for a 45-minute class. In addition allow 1 day for the Topic Review and 1 day for the Topic Assessment.

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Activity

TOPIC PLANNER

Lesson	Essential Understanding	Content Objective	Vocabulary	Standards
1-5 Solving Inequalities in One Variable 1 DAY	The solution to an inequality in one variable is solved by using the properties of inequalities.	- Create and solve inequalities in one variable. - Interpret solutions to inequalities within the context. - Identify inequalities as true or false based on the number of solutions.	none	HSA.CED.A.1, HSA.CED.A.3, HSA.REI.B.3 Mathematical Practices MP.1, MP.3, MP.7
Mathematical Modeling in 3 Acts 1 DAY	Many real-world problem situations can be represented with a mathematical model, but that model might not represent the real-world situation exactly.	- Use mathematical modeling to represent a problem situation and to propose a solution. - Test and verify the appropriateness of their math models. - Explain why the results from a mathematical model might not align exactly with the problem situation.	none	HSA.CED.A.1, HSA.REI.B.3, HSA.REI.A.1 Mathematical Practices MP.4
1-6 Compound Inequalities 2 DAYS	A compound inequality is a combination of two or more inequalities used to describe multiple constraints.	- Create and solve compound inequalities. - Interpret the solution to a compound inequality within a modeling context.	compound inequality	HSA.CED.A.1, HSA.CED.A.3, HSA.REI.B.3 Mathematical Practices MP.4, MP.7, MP.8
1-7 Absolute Value Equations and Inequalities 2 DAYS	The solution to an absolute value equation either has two solutions, one positive and one negative, or if there is no value of x that makes the absolute value equation true, it has no solution. The solution to an absolute value inequality is a compound inequality that uses or and and .	- Solve absolute value equations and inequalities - Use absolute value equations and inequalities to solve problems.	none	HSA.CED.A.1 Mathematical Practices MP.1, MP.4, MP.7

solve and graph compound and absolute value inequalities.

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Topic 6 Exponential and Logarithmic Functions

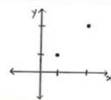
Rose Mary Zbiek, Ph.D.

Topic Level

Content overviews by authors

How can we derive the distance formula?

Deriving the Distance Formula



00:06 / 04:54

Lesson Level

Virtual Nerd Videos

Try It! 1. Use substitution to solve each system of equations.

a. $x = y + 6$

$x + y = 10$

b. $y = 2x - 1$

$2x + 3y = -7$

Try It! 2. On Saturday, the vacation resort offers a discount on water sports. To take a surfing lesson and go parasailing costs \$130. That day, 25 people take surfing lessons, and 30 people go parasailing. A total of \$3,650 is collected. What is the discounted price of each activity?

06:13

07:43

Exemplar Videos

Authors teaching lessons

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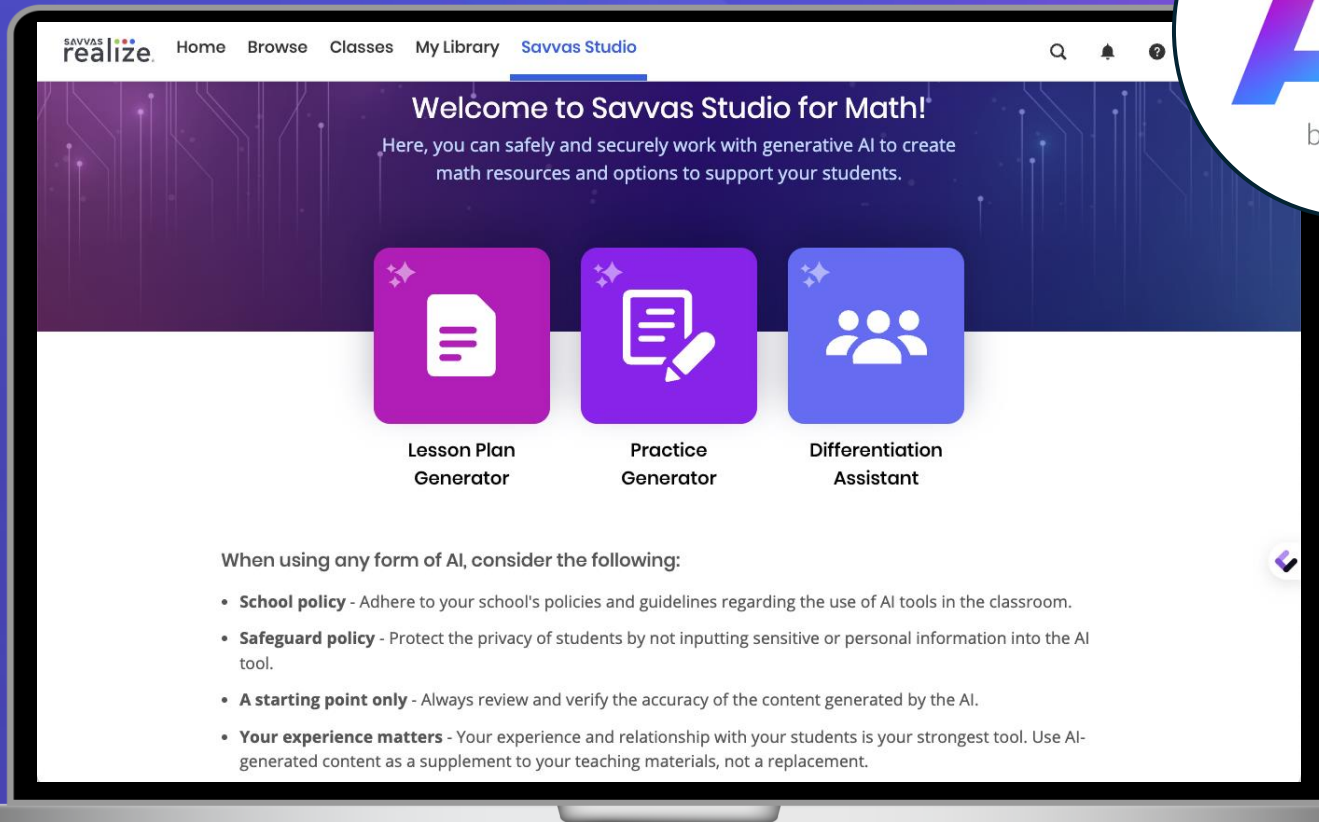


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- ☒ English Language Learners



EXAMPLE 4 Understand Vertical and Horizontal Translations

What information do the constants h and k provide about the graph of $g(x) = |x - h| + k$?

Compare the graphs of
 $g(x) = |x - 4| - 2$ and
 $g(x) = |x + 5| + 1$ with the
graph of $f(x) = |x|$.

For $g(x) = |x - 4| - 2$, the vertex is at $(4, -2)$. Set the sliders to $h = -5$ and $k = 1$. For $g(x) = |x + 5| + 1$, the vertex is at $(-5, 1)$.

The value of h translates the graph horizontally and the value of k translates it vertically. The vertex of the graph $g(x) = |x - h| + k$ is at (h, k) .

Why Choose Envision?

Overview of ResourcesTopic / Lesson Support



WELCOME

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enVision® Algebra 1 was specifically designed to foster your student's success.

enVision® Algebra 1 was developed to help students see the math. And the program includes resources to help families see the math as well.

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OVERVIEW OF RESOURCES

enVision® Algebra 1 offers a variety of resources to help your student succeed.

[Learn More](#)

The image shows three tablets displaying the 'Knows With (GNC)' app interface for three different users: Kaitlin, Corneli, and Angelo. Each tablet shows a profile picture, a 'Knows With (GNC)' title, a 'How much time you spend on each' section with a bar chart, and a 'Recommendations' section with a list of items and their status.

Kaitlin

Knows With (GNC)

How much time you spend on each

Bar chart showing time spent on various items (e.g., 100%, 50%, 25%, 10%, 5%, 2%, 1%, 0%).

Recommendations

Item	Status
Item 1	Completed
Item 2	Completed
Item 3	Completed
Item 4	Completed
Item 5	Completed
Item 6	Completed
Item 7	Completed
Item 8	Completed
Item 9	Completed
Item 10	Completed

Corneli

Knows With (GNC)

How much time you spend on each

Bar chart showing time spent on various items (e.g., 100%, 50%, 25%, 10%, 5%, 2%, 1%, 0%).

Recommendations

Item	Status
Item 1	Completed
Item 2	Completed
Item 3	Completed
Item 4	Completed
Item 5	Completed
Item 6	Completed
Item 7	Completed
Item 8	Completed
Item 9	Completed
Item 10	Completed

Angelo

Knows With (GNC)

How much time you spend on each

Bar chart showing time spent on various items (e.g., 100%, 50%, 25%, 10%, 5%, 2%, 1%, 0%).

Recommendations

Item	Status
Item 1	Completed
Item 2	Completed
Item 3	Completed
Item 4	Completed
Item 5	Completed
Item 6	Completed
Item 7	Completed
Item 8	Completed
Item 9	Completed
Item 10	Completed

- **Diagnostic Assessments**
 - Beginning-of-Year Assessment
 - Topic Readiness Assessments
- **Formative Assessments**
 - Lesson Quizzes
- **Summative Assessments**
 - Topic Assessments
 - Topic Performance Tasks
- **Progress Monitoring**
 - Benchmark Tests
 - Mid-Year Assessment
 - End-of-Course Assessment

The screenshot shows a software interface with a dark header bar. On the left, there is a back arrow icon and a button labeled 'Exit'. In the center of the header, the text 'Topic 8:' is displayed. The main content area has a light gray background and contains the text: 'For which of the following functions does $f(-3) = 0$? Select all that apply'. Below this text is a list of six functions, each preceded by a radio button:

- ☐ A. $f(x) = (x - 3)^2$
- ☐ B. $f(x) = x^2 - 3x$
- ☐ C. $f(x) = -(x + 3)^2$
- ☐ D. $f(x) = x^2 + 5x + 4$
- ☐ E. $f(x) = 2x - 3(x + 1)$
- ☐ F. $f(x) = -2(x - 2) + 3x$

On the right side of the interface, there is a blue circular badge with white text that reads: 'Includes a large library of technology-enhanced items!'.

File Edit View Insert Format Layout Styles Window Help

File Edit View Insert Format Layout Styles Window Help

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MODEL & DISCUSS

A sporting goods company has three stores in three different towns. They want to build a distribution center so that the distance from each store to the distribution center is as close to equal as possible.



A. Points A, B, and C represent the locations of the three stores. Trace the points on a piece of paper. Locate a point D that appears to be the same distance from A, B, and C by sight only.

B. Communicate and Justify Measure the length from points A, B, and C to point D on your diagram. Are the lengths equal? If not, can you find a better location for point D? Explain.

C. What do you think is the quickest way to find the best point D in similar situations?



We look forward to
continuing our partnership!

THANK YOU!

Jayne Feuerbacher,
Savvas Representative

enVision® A|G|A

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Questions