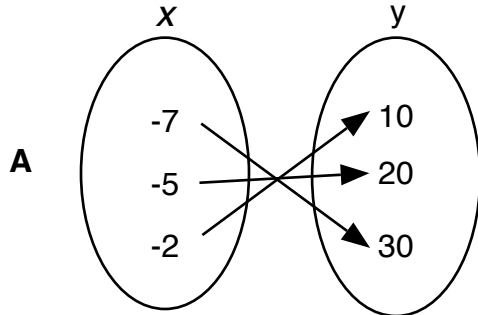


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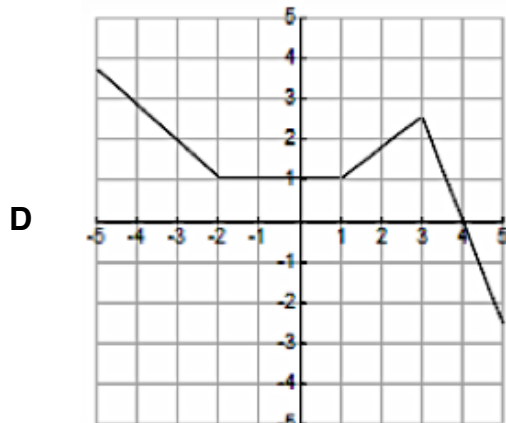
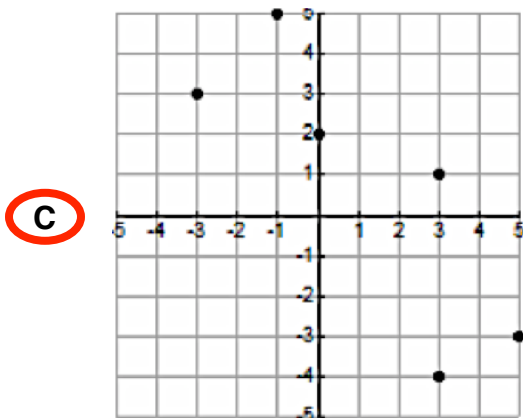
Unit 1: Intro to Functions

Which of the following relationships is **not** a function?



B

Ounces Purchased	Price Paid
2	\$1.45
5	\$3.30
7	\$4.50
12	\$7.95



Unit 2: Graphs of Linear Functions

The level of gas in a truck's tank depends on how many miles have been driven. The table shows the gas level during a trip.

miles driven	0	50	125	175	250
gallons of gas in tank	20	16	10	6	0

What is the rate of change for this situation?

-0.08 gallons per mile

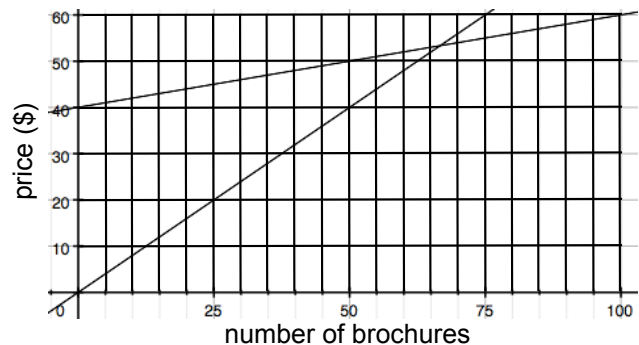
Unit 3: Equations of Linear Functions

A barrel contained 50 gallons of rainwater when a gardener attached a hose and started draining it at the rate of 3 gallons, per minute. Write an equation to represent the number of gallons, g , remaining in the barrel after m minutes.

**$g = -3m + 50$
or equivalent equation**

Unit 4: Systems of Linear Functions

The graph shows a comparison of the price of printing brochures at two office supply stores. For about how many brochures is the price approximately the same at both stores?



A 53

B 40

C 50

D 67

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Unit 5: Inequalities and Literal Equations

The formula for the area of a rhombus is $A = \frac{1}{2} d_1 d_2$, where d_1 and d_2 are the diagonals. Which equation could be used to solve for d_2 ?

A $d_2 = \frac{A}{2d_1}$

B $d_2 = \frac{2A}{d_1}$

C $d_2 = \frac{2d_1}{A}$

D $d_2 = 2A - d_1$

Unit 6: Statistical Relationships

Which value could not be a correlation coefficient?

A 0.66

B 1

C -0.99

D 1.15

Unit 7: Polynomials

Which expression can be factored as a sum and difference of the same two terms?

A $4a^2 - 12ab + 9b^2$

B $49a - 1$

C $81a^2 + 36b^2$

D $-16 + 25b^2$

Unit 8: Sequences

What is the 9th term of sequence described by the formula $f(n) = 384\left(\frac{1}{2}\right)^{n-1}$?

Record your answer and fill in the bubbles on the grid below.

	1	.	5				
+	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Unit 9: Radical and Exponential Expressions

The area of the parallelogram shown is $15x^7y^4$. What is the height?



$3x^4y$

$5x^3y^3$

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Unit 10: Quadratic Functions

Farmers in states where wheat is grown get different yields per acre. The average yield was correlated with the average summer temperature for a particular region. The data suggests a quadratic pattern.

Average Summer Temp (°C)	Yield (tons per acre)
10	5.3
13	13.1
15	13.6
16	14.3
20	14.8
22	12.7
24	10.4
25	8.4
26	6.4

- a. Use your graphing calculator to find the quadratic regression equation.

$$y = -0.144x^2 + 5.209x - 31.748$$

- b. Use the equation to determine what average summer temperature (to the nearest degree) would result in the highest yield. What is the highest yield?

18 degrees Celsius

15.3 tons per acre

- c. Farmers cannot make a profit on wheat unless their yield is at least 2 tons per acre. If the average summer temperature in a region is always above 28°C, would it be profitable to plant wheat there? Why or why not?

No, because the model equation predicts yields of less than 2 tons per acre for all temperatures above 27.6°C.

Unit 11: Exponential Functions

Ecologists have determined that they can use the function $f(x) = 1050(0.86)^x$ to estimate the number of a particular type of endangered fish in a lake x years after 2016. What is the meaning of the number 0.86 in the equation?

- A** The fish population will grow by 86% every year after 2016.
- B** Every year after 2016 there will be 86 fewer fish in the lake than the previous year.
- C** The fish population will decrease by 86% every year after 2016.
- D** Each year after 2016 the fish population will be 86% of the previous year's total.