Lincoln-West School of

GLOBAL STUDIES

SPRING BREAK 2020
OST Warm Up
Algebra 1

$\sqrt{2x+1} + \sin x = 5$

$\sin x$

$\pi = 3.141592$

$e^{x^2} = e^{2x+3}$

$x + \cos y$

$x_{1/2} = \frac{-b \pm \sqrt{b}}{2a}$

$\Rightarrow x^2 = 2x + 3$

$A(1,2)$

$C_1 = \int C_1' dx = \int (-1) dx$

$y'' + 2y = \frac{1}{\sin^2 x}$

MATH OST INCENTIVES

Lincoln-West School of

GL**O**BAL STUDIES

LEVEL 5 - SKYZONE
Score a 2 or higher on your MATH OST

LEVEL 4 - MOVIE
EVERYONE in your TESTING GROUP shows REAL

work for at least 10 problems
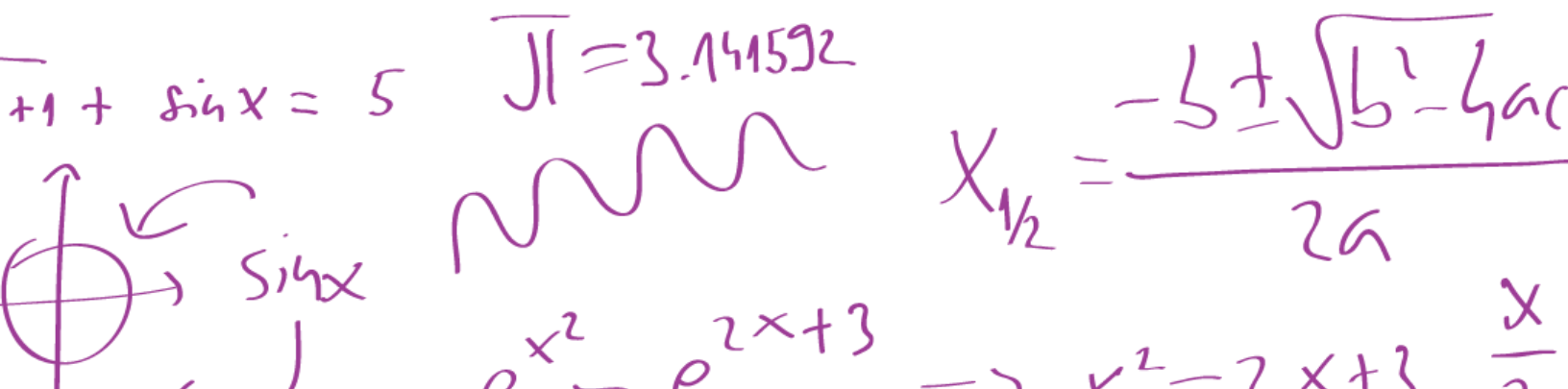
LEVEL 3 - CHIPS
EVERYONE in your TESTING GROUP writes

Y=MX+B on their scrap paper

LEVEL 2 - CANDY
Write Y=MX+B on your scrap paper

LEVEL 1 - MINT
Arrive to your testing room ON TIME

$+1 + sin x = 5$

$\pi = 3.141592$

$x_{1/2} = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$sin x$

Ohio State Test Reference Sheet High School

1 foot = 12 inches

1 yard = 3 feet

1 mile = 1,760 yards

1 mile = 5,280 feet

1 mile ≈ 1.609 kilometers

1 inch = 2.54 centimeters

1 kilometer ≈ 0.62 mile

1 meter ≈ 39.37 inches

1 pound = 16 ounces

1 pound ≈ 0.454 kilograms

1 kilogram ≈ 2.2 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints
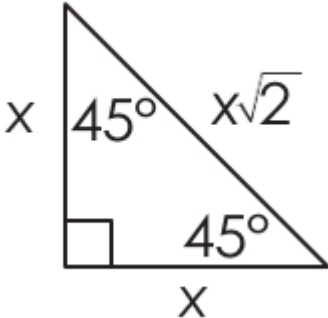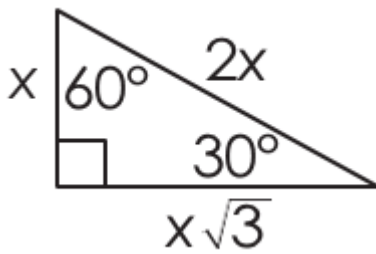
1 gallon = 4 quarts

1 gallon ≈ 3.785 liters

1 liter ≈ 0.264 gallons

1 liter = 1000 cubic centimeters

Trigonometry		
$\sin A = \dfrac{\text{opposite}}{\text{hypotenuse}}$		
$\cos A = \dfrac{\text{adjacent}}{\text{hypotenuse}}$		
$\tan A = \dfrac{\text{opposite}}{\text{adjacent}}$		

Key			
b = base	B = area of base	h = height	r = radius

Triangle	$A = \frac{1}{2} b h$		**General Prisms**	$V = B h$
Parallelogram	$A = b h$		**Cylinder**	$V = \pi r^2 h$
Circle	$C = 2 \pi r$ $A = \pi r^2$		**Sphere**	$V = \frac{4}{3} \pi r^3$
			Cone	$V = \frac{1}{3} \pi r^2 h$
			Pyramid	$V = \frac{1}{3} B h$

Distance Formula	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Quadratic Formula	$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Addition Rule	P (A or B) = P (A) + P (B) — P (A and B)

Which expression is equivalent to $(5^2)^4 \cdot 5^5$?
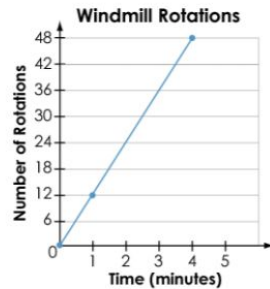
Ⓐ 5^{11}

Ⓑ 5^{13}

Ⓒ 5^{30}

Ⓓ 5^{40}

A system of equations is shown.

$$\begin{cases} x + y = 7 \\ 2x - y = -1 \end{cases}$$

What is the solution to the system of equations?

(⬚ , ⬚)

An energy company graphs the average number of rotations that a windmill makes each minute for 4 minutes.
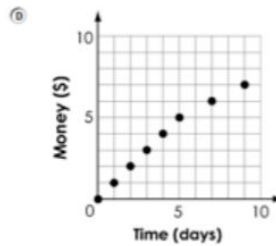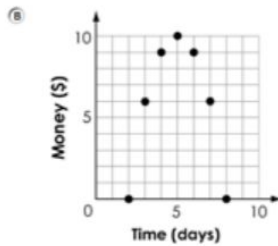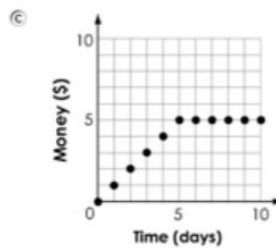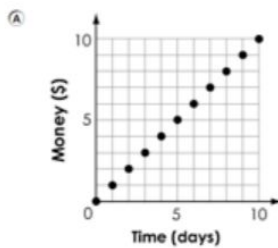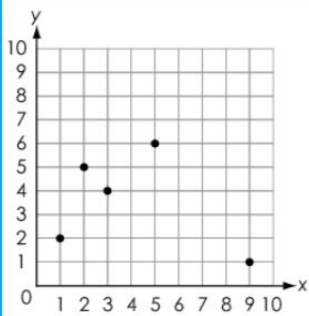
Windmill Rotations

Which statement describes what the point (1, 12) means in terms of rotations and minutes?

Ⓐ 1 rotation occurs every 12 minutes.

Ⓑ $\frac{1}{12}$ of a rotation occurs every minute.

Ⓒ The windmill rotates 12 times in 1 minute.

Ⓓ The windmill rotates 12 times in 12 minutes.

Diedra has a new coin bank. For the first five days, she deposits the same amount of money into the coin bank. After that, she does not deposit any more money into the bank.

Which graph could represent the amount of money in Diedra's bank?
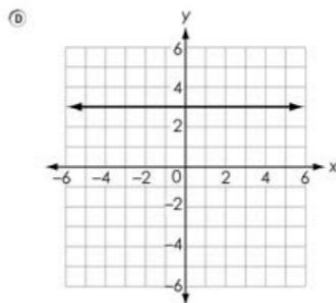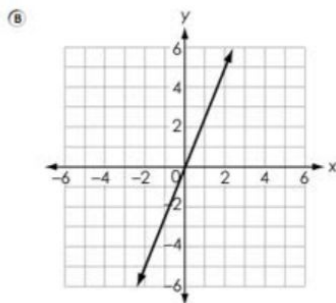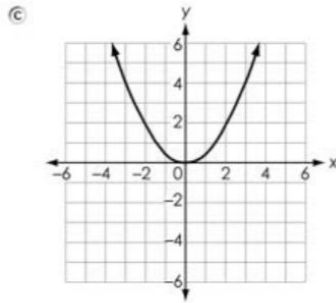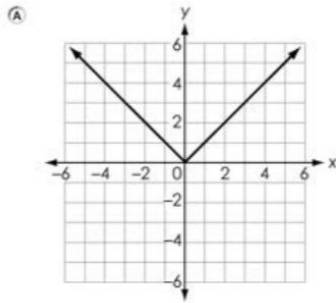
Ⓐ

Ⓒ

Ⓑ

Ⓓ

Some points of a function are plotted as shown.

Select all of the points that could also be part of this function.

☐ (1, 3)

☐ (4, 4)

☐ (6, 0)

☐ (7, 2)

☐ (9, 7)

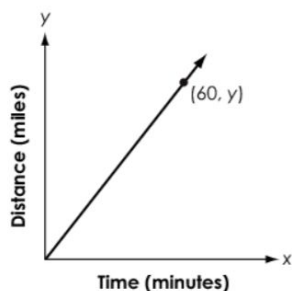Which graph shows a function that is increasing at a constant rate?

Ⓐ

Ⓒ

Ⓑ

Ⓓ

Create an expression equivalent to $2(3x - 1) - 3x + 4$ using the least number of terms.

1	2	3	x			
4	5	6	$+$	$-$	$\bullet$	$\div$
7	8	9	$<$	$\leq$	$=$	$\geq$
	0		$\square^{\square}$	$(\ )$	$\|\|$	π
.	-	$\frac{\square}{\square}$				

The graph shown models the relationship between the distance a car travels and time.

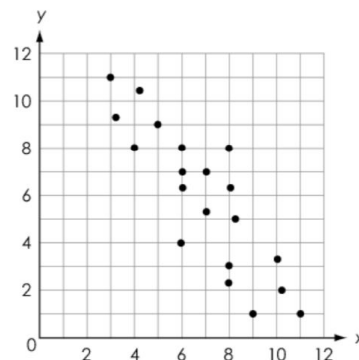**Distance (miles)** vs **Time (minutes)**, with point $(60, y)$ marked.

What does the point $(60, y)$ represent in this situation?

Ⓐ The car travels for y minutes.

Ⓑ The car travels y miles per hour.

Ⓒ The car travels 60 miles per hour.

Ⓓ The car travels 60 miles every y minutes.

Which graph represents a function that is decreasing at a nonconstant rate?

Ⓐ

Ⓒ

Ⓑ

Ⓓ

A scatterplot is shown.

Which statement about the scatterplot is true?

Ⓐ There is no association between x and y.

Ⓑ There is a positive, linear association between x and y.

Ⓒ There is a negative, linear association between x and y.

Ⓓ There is a nonlinear association between x and y.

Select all of the equations that represent a nonlinear function.

☐ $y = 3x^2 + 9x + 6$

☐ $y = 3x - 10$

☐ $y = 2x + 9 + x$

☐ $y = x(3x + 10)$

☐ $y = \frac{x}{3} + 10$

Which table represents a nonlinear function?

Ⓐ

x	y
−1	3
1	5
4	8
10	14

Ⓒ

x	y
2	−3
5	−9
7	−13
11	−21

Ⓑ

x	y
0	0
4	12
6	18
9	27

Ⓓ

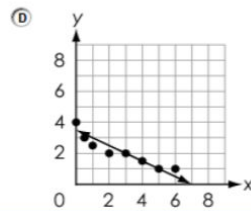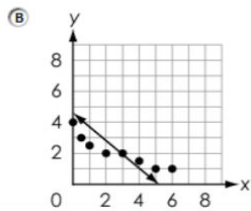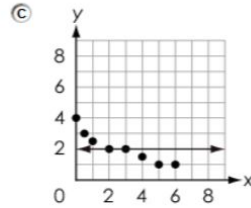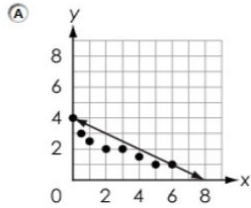| x	y
2	5
4	17
8	65
10	101

A scatterplot of some data is shown.

Which model **best** represents the data?

Ⓐ

Ⓑ

Ⓒ

Ⓓ

An expression is given.

$$\frac{(3^2)^3 \cdot 3^6}{3^4}$$

Select all of the expressions that are equivalent to the given expression.

☐ 3^3

☐ 3^7

☐ 3^8

☐ $\dfrac{3^{12}}{3^4}$

☐ $\dfrac{3^{11}}{3^4}$

Darren and his friend save money for a vacation. Darren starts with $120 in savings. Each week, Darren adds $40 to his savings.

Darren's friend also begins with $120 in savings but saves at a faster rate than Darren.

Create an equation that could represent the amount of money, y, in dollars, that Darren's friend saves for vacation after x weeks.

Which table represents a linear function?

Ⓐ

x	y
1	1
2	3
3	1
4	3

Ⓒ

x	y
9	−8
8	−4
7	−2
6	−1

Ⓑ

x	y
−2	1
−1	2
0	3
1	4

Ⓓ

x	y
2	1
3	2
4	4
5	5

Which graph shows a zero rate of change?

Ⓐ Distance Traveled

Ⓒ Distance Traveled

Ⓑ Distance Traveled

Ⓓ Distance Traveled