

FROEBEL BILINGUAL SCHOOL  
A STEM SCHOOL

MATH SKILLS  
SHARPENERS

GOING TO ELEVENTH GRADE

MATH SUMMER WORKBOOK

A STEM School

**FROEBEL**  
BILINGUAL SCHOOL

Home of the Space Generation



# 2023 SUMMER MATHEMATIC SKILLS SHARPENER Going to Eleventh Grade

STUDENT'S NAME	DATE
TEACHER COMING FROM	SCORE
TEACHER GOING TO	
PARENT'S SIGNATURE	DATE RECEIVED

# SKILLS SHARPENER FOR STUDENTS GOING TO ELEVENTH GRADE MATH

## WEEK 1

### Day 1

Solve the following problems

a)  $-2 + (+3) =$  \_\_\_\_\_

b)  $-7 - (-3) =$  \_\_\_\_\_

c)  $14 - (-7) + (-2) =$  \_\_\_\_\_

Use the order of operations to solve the following problems.

a)  $18 - (-12 - 3) =$  \_\_\_\_\_

b)  $18 + (-7) \cdot (32 - 6) =$  \_\_\_\_\_

c)  $-3 + 2(-6 \div 3)2 =$  \_\_\_\_\_

### Day 2

Solve multi step equations.

a)  $-12 = 2 + 5v + 2v =$

b)  $75 = 3(-6n - 5) =$

c)  $-16 + 5n = -7(-6 + 8n) + 3 =$

d)  $-3(1 + 6r) = 14 - r =$

**Day 3** - Solving multi step equations.

a)  $-20 = 2 + 5v + 6v =$  \_\_\_\_\_

b)  $75 = 3(-6n - 5) =$  \_\_\_\_\_

c)  $-16 + 5n = -7(-6 + 8n) + 3 =$  \_\_\_\_\_

**Day 4** - Solve each equation. Show your work.

a)  $26 = 8 + v$

b)  $n + 16 = 9$

c)  $-6 = \frac{b}{18}$

**WEEK 2.**

**Day 1** - Evaluate each Algebraic expression

1.  $2x - 6$   $x = -2$

2.  $2x^4 - 4x^3$   $x = 1$

**Day 2** - graph the function and its parent function by using a table of values. Then describe the transformation.

$f(x) = x^2 - 1$  Use these numbers to construct your table of values (-2, 0, 2, 4)

2.  $(x) = x + 3$ . Use these numbers to construct your table of values ( $x = -2, -1, 0, 1, 2, 3$ )

**Day 3** - identify the function family to which the function

1.  $(x) = |x + 2| - 1$

2.  $d(x) = 3(x - 2)^2 + 1$

**Day 4** - Write a function  $g$  whose graph represents the indicated transformation of the graph of  $f$

1.  $f(x) = 2x$ ; translation 3 units down

2.  $I(x) = |x| - 3$ ; translation 3 units left

### WEEK 3

**Day 1** - find the slope formula to solve each exercise (2pts each)

1. (2,5), (8,1)

2. (3,6) and (6,9)

**Day 2** - write the equation that describes each line in slope-intercept form (3pts)

1. slope =3 y-intercept 4
2. Write an equation that passes through (-2,5) and (-4, -1)

**Day 3** - Write I Write an equation that passes through the given points and satisfies the given conditions.

1. (5,1) parallel to  $y = 3x - 1$
2. (0,3) perpendicular to  $y = \frac{2}{3}x + 3$

**Day 4** - *Solve each System by Substitution*

1. 
$$\begin{cases} y = 3x + 2 \\ x + 2y = 11 \end{cases}$$

2. 
$$\begin{aligned} 2x + y &= 5 \\ y &= x - 4 \end{aligned}$$

## WEEK 4

**Day 1** - Solve each system by elimination

$$1. \begin{cases} 2x + y = -5 \\ 2x - 5y = 13 \end{cases}$$

$$2. \quad x - 2y = -19$$

$$5x + 2y = 1$$

**Day 2** - Solve each three-variable system

$$x + y - 2z = 5$$

$$-x + 2y + z = 2$$

$$2x + 3y - z = 9$$

**Day 3** - describe the transformation of  $f(x) = x^2$  represented by  $g$ . Then graph each function.

$$1. \quad g(x) = x^2 - 3$$

$$2. \quad g(x) = (x + 2)^2$$

**Day 4** - Write a rule for  $g$  described by the transformations of the graph of  $f$ .

1.  $f(x) = x^2$ ; vertical stretch by a factor of 2 and a reflection in the x-axis, followed by a translation 2 units up
2. Let the graph of  $g$  be a vertical shrink by a factor of  $\frac{1}{2}$  followed by a translation 2 units up of the graph of  $f(x) = x^2$ .

## WEEK 5

**Day 1** - graph the function. Label the vertex and axis of symmetry.

1.  $y = \frac{1}{2}x^2 + x - 3$ ;  $x = -2, -1, 0, 1, 2$

2.  $y = x^2 + 2x + 1$ ;  $x = -2, -1, 0, 1, 2$

**Day 2** - Tell whether the function has a minimum value or a maximum value. Then find the minimum or maximum value. Show all steps.

1.  $y = -3x^2 + 18x - 5$

2.  $y = 2x^2 + 8x + 7$



**Day 3** - Factor the expression. If the expression cannot be factored, say so.

1.  $y = x^2 + 2x + 1$

2.  $y = x^2 + 15x + 56$

**Day 4** -

A. solve the equation using square roots. Show all steps

1.  $3x^2 = 75$

2.  $2x^2 + 3 = 103$

B. Solve the equations by completing the square

1.  $x^2 + 2x - 6 = 0$

2.  $x^2 + 4x - 2 = 0$

## **WEEK 6**

**Day 1** - Solve the equation by factoring, show all steps

1.  $x^2 - 11x = -30$

2.  $x^2 + 6x = -5$

**Day 2 - Find the square root of the number show all steps**

1.  $\sqrt{-36}$

2.  $-3\sqrt{-49}$

**Day 3 - add or subtract each complex number**

1.  $(-7 - \frac{1}{2}i) - (5 + \frac{3}{2}i)$

2.  $(7 - 4i) + (-4 + 5i)$

**Day 4 - Find the product of each complex number. Show all steps**

1.  $(4 - i)(3 + 2i)$

2.  $(3 - 6i)(3 + 6i)$

## **WEEK 7**

**Day 1 - Solve the equation show all steps**

1.  $2x^2 + 6 = -34$

2.  $x^2 + 7 = -33$

**Day 2 - Find the zeros of the function.**

1.  $f(x) = 7x^2 + 70$

2.  $g(x) = 3x^2 + 48$ .

**Day 3 - Determine** What are the function is a polynomial function, if so, write in standard form determine the degree type and leading coefficient.

1.  $g(x) = \sqrt{3} - 12x + 3x^2$

2.  $y = 3x^{-2} + 3x + 5$

**Day 4 - evaluate the function for the given value of X show all steps**

1.  $y = 2x^4 - 3x^3 + 2x^2 - 3$   
 $x = 2$

2.  $f(x) = x^4 - x^3 + 2x^2 - x$   
 $x = -1$

.

## WEEK 8

**Day 1 - Graph the polynomial function Show all steps (7 pts each show all steps)**

1.  $r(x) = 2x^3 - 3x^2 + 2x + 1$   
 $x = -2, -1, 0, 1, 2$

**Day 2 - add or subtract each Polynomial**

1.  $(12x^5 - 3x^4 + 2x - 5) + (8x^5 + 2x^4 + 1)$

2.  $(5x^6 + 3x^5 - 2x^2 + 2) - (4x^6 - 2x^5 - 3x^2 + 1)$

**Day 3 - Multiply each Polynomial (4pts each)**

1.  $(s + 7)(s - 5)$

2.  $(2x + 3)^2$

**Day 4 -**

A. Divide using synthetic division show all steps (3 pts each)

1.  $-x^3 + 3x^2 + X \div X - 2$

B. Find the indicated real nth roots of a

1.  $n=3, a=27$

C. Evaluate each expression show all steps

1.  $64^{1/6}$

D. Evaluate each expression show all steps (3 pts each)

1.  $x^4=81$



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