Alg 1 U1 SBAC Practice Name _____ Date _____ Period ___

Part A: Expressions [A-SSE.2]

1. **Rewrite** the expressions by combining like terms and/or distributing. **Show** your work.

A) $3x-\frac{3}{4}+\frac{1}{2}x-5+\frac{4}{5}x$

B) $\frac{2}{3}(6x-5)+\frac{1}{4}x-3\frac{1}{2}$

Part B: Solving Equations [A-REI.3, A-REI.1]

2. For each equation, **determine** the value of *x* that makes the equation true. **Show** your work.

A) $2(4-x)=6x-3$

B) $3x-2(x+5)=x+6$

3. For each equation, **solve** for *x*. **Show** your work and **justify** each step.

A) $2x+A=3$

B) $30=-\frac{x}{J}$

4. Given the equation, **determine** the value of *H* when $x = \frac{1}{2}$. **Show** your work and **justify** each step.

$x + 3H = \frac{5}{2}$

5. Given the equation $a = m(x - y)$, **circle** all the equations that are a correct step in the process of solving for *y*.

A) $am = x - y$ B) $\frac{a}{m} = x - y$

C) $am - x = -y$ D) $a + y = mx$

6. **Solve** each inequality for *y*. **Graph** the solution set using a number line.

A) $3y - 12 < 21$ B) $2(5 - 3y) \geq 18$

Part C: Writing Equations [A-CED.1]

7. Angelica brings $32.50 to the movie theater. She buys 4 tickets and spends $7.50 on snacks. **Write** an equation to solve for the price of a ticket.

Part A: Functions [F-IF.2]

1. **Determine** if the set of points could be on the graph of a function or cannot be on the graph of a function.

A) Circle One:

Could be on the graph of a function.

Cannot be on the graph of a function.

x	*y*
-5	3
-3	3
0	3
3	3
5	3

B) Circle One:

Could be on the graph of a function.

Cannot be on the graph of a function.

x	*y*
-5	4
-3	6
0	8
3	10
5	12

C) Circle One:

Could be on the graph of a function.

Cannot be on the graph of a function.

x	*y*
1	4
1	6
1	8
1	10
1	12

2. For each function, **complete** the table of values.

A) $f(x) = 5x$

x	-1	0	1	2	
f(x)		0			25

B) $g(x) = -2x + 7$

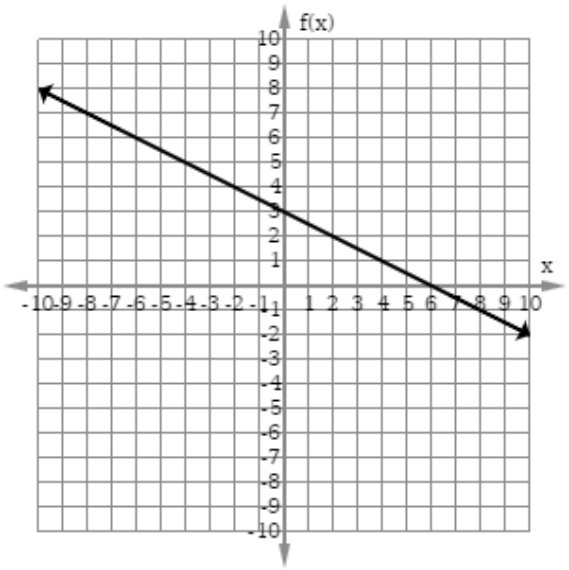
x	-1	0	1		
f(x)	9			1	-9

C) $h(x) = x^2 + 3x - 1$

x	-1	0	1	2	3
f(x)					

Part B: Graphs of Functions [F-IF.4]

3. **Circle** all of the ordered pairs that are solutions to the equation represented by the graph.



A) $(3,0)$

B) $(2,2)$

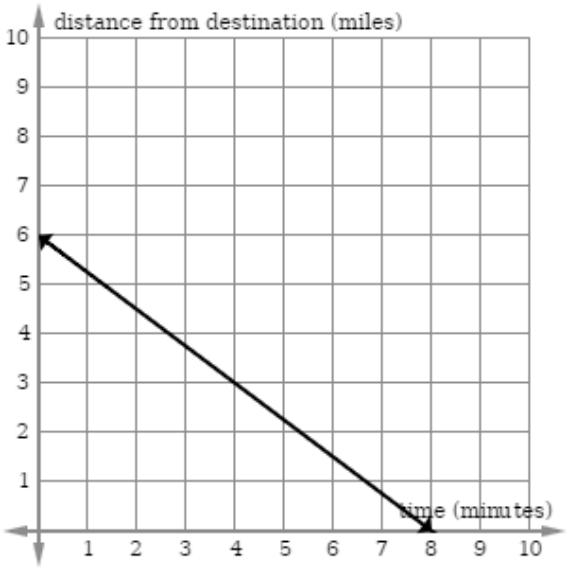
C) $(-6,6)$

D) $(6,0)$

E) $(1,4)$

F) $(3,6)$

4. The graph below shows distance from destination, modeled as a function of time.



Circle true or false for each statement below.

A) The total distance traveled was 8 miles.

True False

B) The total time traveled was 8 minutes.

True False

C) The destination was 6 miles away, initially.

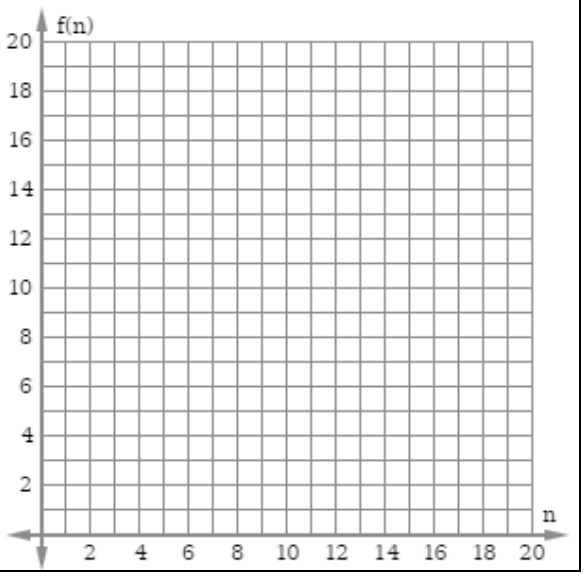
True False

Part C: Sequences [F-BF.2]

5. Consider the arithmetic function. **Complete** the table of values and **graph** the function.

$$f(n) = 3 + 2(n-1) \quad \text{for } n \geq 1$$

n	*f(n)*
1	
3	
5	
7	
9	



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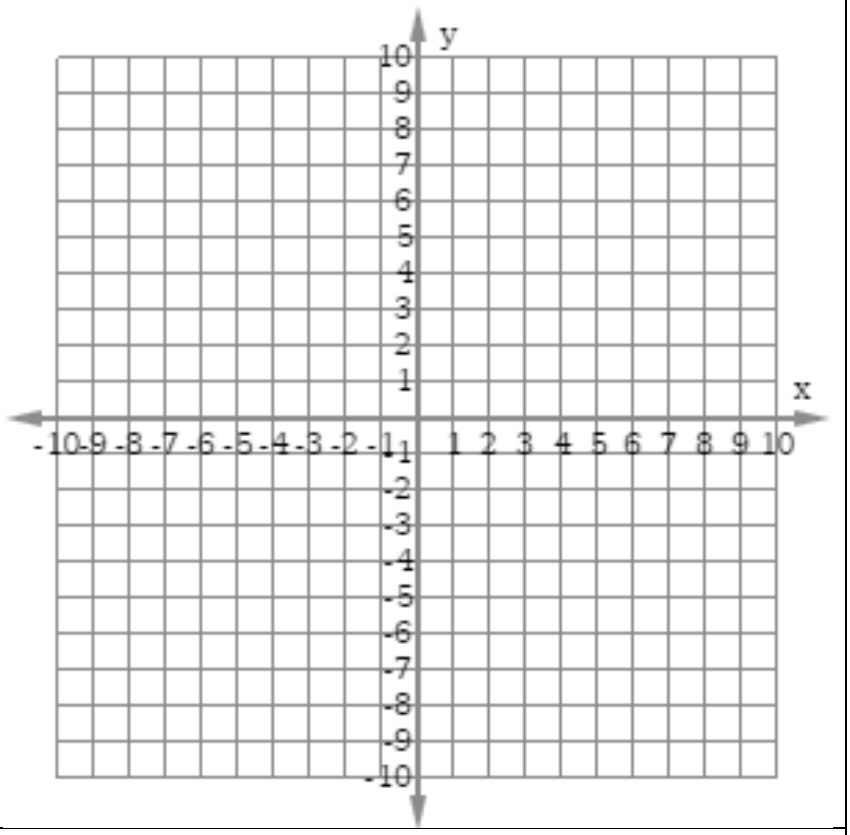
Part A: Graphing Systems [A-REI.12]

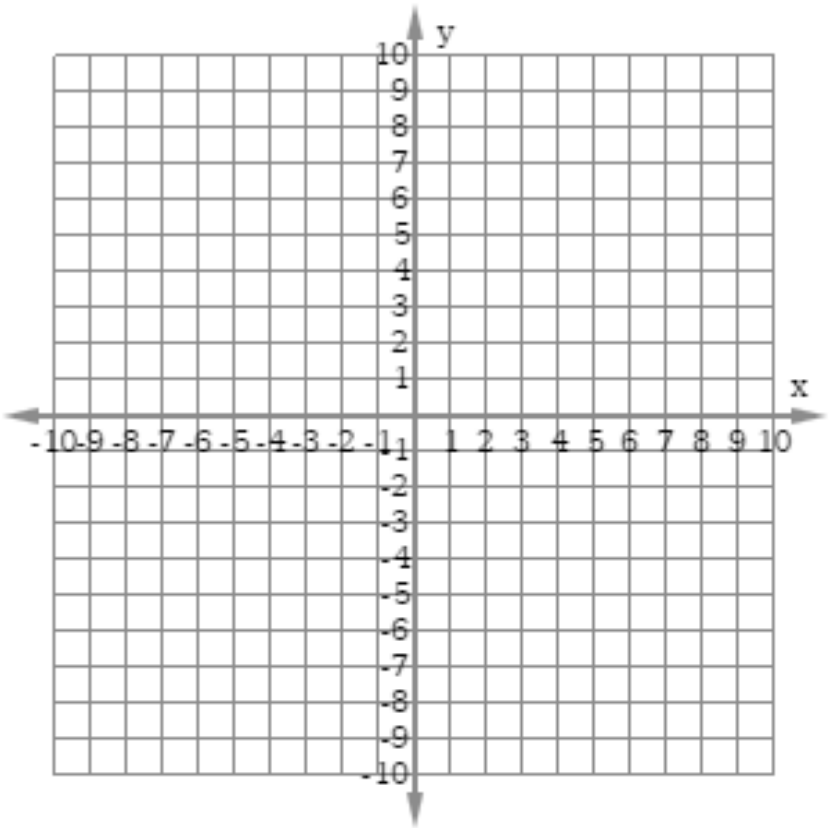
1. **Graph** the system of linear equations and **approximate** the solution.

$$\begin{cases} y = 2x - 8 \\ 4x + 2y = 12 \end{cases}$$



2. **Graph** the system of linear inequalities.

$$\begin{cases} y > \frac{1}{4}x + 2 \\ y \le -3x + 6 \end{cases}$$



Part B: Solving Systems [A-REI.6]

3. **Solve** the system of linear equations using substitution. **Show** your work.

$$\begin{cases} y = \frac{2}{3}x - 6 \\ x + 6y = -6 \end{cases}$$

4. **Solve** the system of linear equations using elimination. **Show** your work.

$$\begin{cases} 6x - 5y = -4 \\ 2x + 5y = 12 \end{cases}$$

5. Consider the system of linear equations. **Determine** values for a and b to satisfy the conditions.

$$\begin{cases} y = -2x + 5 \\ y = ax + b \end{cases}$$

The system of linear equations has no solutions: $a =$ _____ $b =$ _____

The system of linear equations has one solution: $a =$ _____ $b =$ _____

The system of linear equations has infinitely many solutions: $a =$ _____ $b =$ _____

Part C: Modeling with Systems [A-CED.2]

6. A gym offers two types of towel service:
   - Unlimited towels for $30 per month, or
   - A monthly fee of $5 plus $1 per towel

   Write and **solve** an equation that can be used to find the number of towels (t) used per month for the two options to cost the same amount. **Show** your work.

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Part A: Categorical Data [S-ID.5]

1. Krista conducted a survey on breakfast preference and gender.

	Cereal	Other
Female	22	36
Male	13	24

A) **Determine** the percent of surveyed students that are female.

B) Given a student is female, **determine** the probability they prefer cereal.

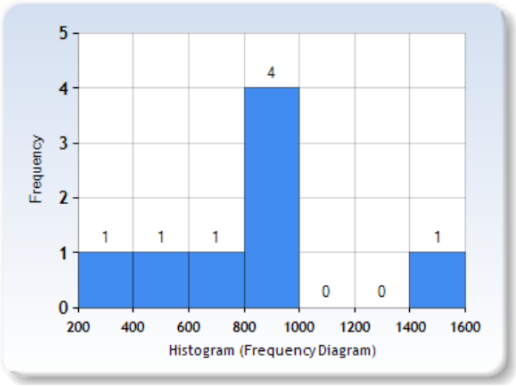
C) **Determine** if there is an association between gender and breakfast preference. **Justify** your response.

Part B: Data Distributions [S-ID.2]

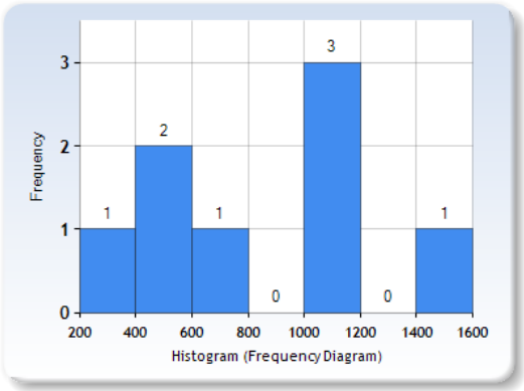
2. **Sketch** a line plot to represent the following set of data:
Age of Candidates: 27, 28, 29, 30, 31, 33, 33, 33, 34, 35

3. **Select** all the histogram that represents the following set of data:
550° F 802° F 904° F 965° F 950° F 1420° F 210° F 520° F

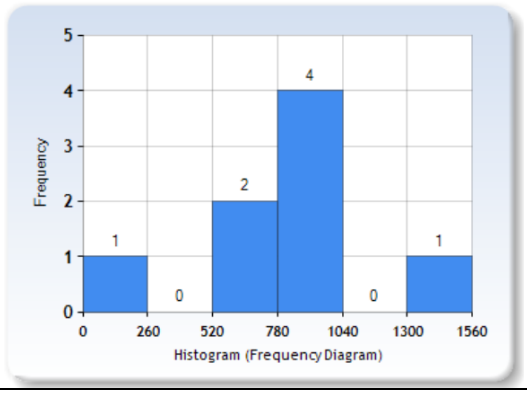
A)



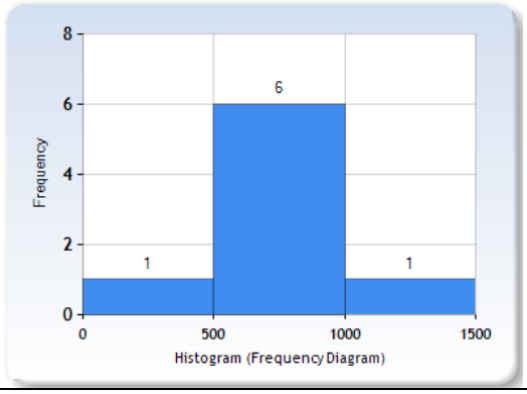
B)



C)



D)

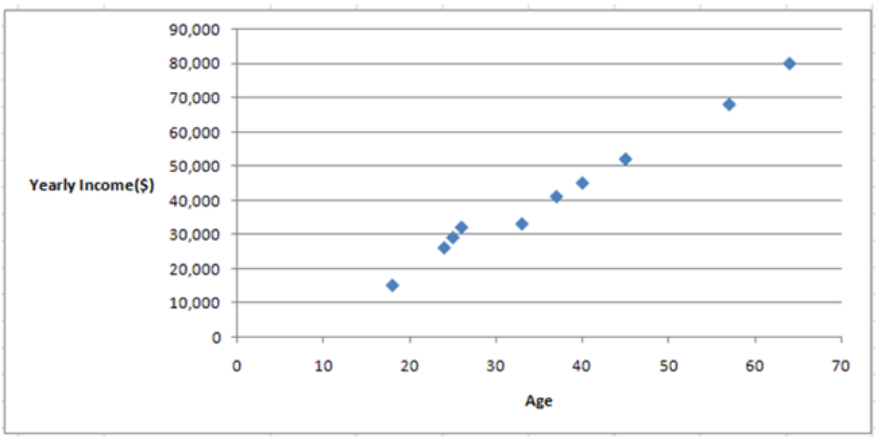


4. An arcade has prizes that range in cost from 1 ticket to 100 ticket. A new prize is added that costs 150 tickets. **Select** whether the value of each statistic for the cost of prizes increases, decreases, or cannot be determined.

A) Mean	Increases	Decreases	Cannot be Determined
B) Median	Increases	Decreases	Cannot be Determined
C) Standard Deviation	Increases	Decreases	Cannot be Determined

Part C: Scatter Plots [S-ID.6]

5. As part of a study for his Economics course, Michael surveyed ten random adults and plotted their age versus income in Excel.



A) **Approximate** the line of best fit on the graph and with a function.

B) **Describe** the distribution of the data.

C) **Predict**, using the line of best fit, the yearly income of an individual with age 50.

6. The data below show the height, in inches, and the weight, in pounds, of ten male students in Mr. Alexander's PE class.

Height (inches)	50	54	56	57	59	60	61	61	62	64
Weight (pounds)	135	152	147	148	165	175	172	189	187	192

According to the linear model that best fits the data, **determine** the predicted weight of a person with a height of 62 inches.

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Part A: Working with Exponents and Radicals [N-RN.A.1]

1. **Complete** the table below using the completed rows as a reference.

Expression A			**Expression B**			**Observations**
Exponent Form	Expanded Form	Value	Exponent Form	Expanded Form	Value	
3^4			$3^2 3^2$			
3^3	$3 \bullet 3 \bullet 3$	27	$3^2 3^1$	$(3 \bullet 3)(3)$	27	I noticed that the expressions are equivalent by the product rule and have the same value.
3^2			$3^2 3^0$			
3^1			$3^2 3^{-1}$			
3^0			$3^2 3^{-2}$			
3^{-1}			$3^2 3^{-3}$			
3^{-2}	$\frac{1}{3 \bullet 3}$	$\frac{1}{9}$	$3^2 3^{-4}$	$(3 \bullet 3)\left(\frac{1}{3 \bullet 3 \bullet 3 \bullet 3}\right)$	$\frac{1}{9}$	I noticed that 2 minus 4 is -2 which is the power of the first expression.
3^{-3}			$3^2 3^{-5}$			

2. **Write** an equivalent expression.

A) $7^{\frac{2}{3}}$ B) $\sqrt{20}$ C) $\sqrt[3]{2^4}$

3. **Rewrite** each expression in the form $a^m b^n$.

A) $\left(a^3 b^5 b^2\right)^2$ B) $\left(a^3 a^{-5} b^7\right)^4$ C) $\frac{\left(ab^2\right)^2}{a^3 b}$

4. **Determine** if each statement is true for all values of x. If not, provide a counter example.

A) $4^x = 2^{2x}$ B) $8^{2x} = 16^x$ C) $2^{3x} = 3^{2x}$

Part B: Working with Polynomials [A-APR.A.1]

5. **Rewrite** each expression, using as few terms as possible.

A) $(5x^2+4x+2)-(2x+3)$

B) $(3x^2+4x-2)+(2x^2-5x+13)$

C) $(x^2+3x)-(2x^2-5x+1)$

D) $(x^2+2x+1)-2(3x-1)$

6. **Multiply** to write an equivalent expression using two methods.

A) $-2x(3x-1)$

Method 1	Method 2

B) $(a-12)^2$

Method 1	Method 2

C) $(3x-2)(4x+1)$

Method 1	Method 2