Algebra 1 Final Exam Review – 2016-2017 **Due on the Day of Final Exam**

Name:_____ **Date:**_____ **Block:**_____

1) Factor $8a^3 - 6a^2 - 4a + 3$ by grouping.

A $(2a^2 - 1)(4a - 3)$

B $(2a^2 + 1)(4a - 3)$

C $(-1)(2a^2 + 1)(4a - 3)$

D cannot be factored

2) Factor $x^2 - 13x - 30$.

A $(x - 3)(x - 10)$

B $(x + 1)(x - 30)$

C $(x + 2)(x - 15)$

D cannot be factored

3) Factor $9p^2 - 225$.

F $(3p + 15)^2$

G $(3p - 15)^2$

H $(3p + 15)(3p - 15)$

J cannot be factored

4) The area of a square is represented by $9z^2 - 12z + 4$. Which expression represents the perimeter of the square?

F $3z - 2$

G $3z + 2$

H $6z - 4$

J $12z - 8$

5) What is the complete factorization of $10x^3 - 35x^2 - 20x$?

F $(2x + 1)(x - 4)$

G $5x(2x^2 - 7x - 4)$

H $5x(2x + 1)(x - 4)$

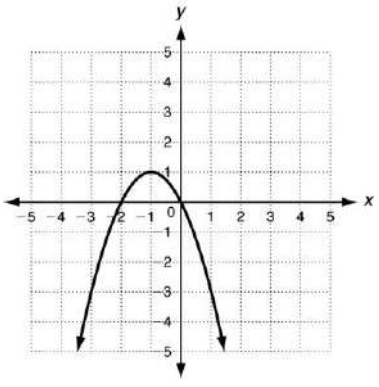
J $x(2x + 1)(5x - 20)$

6) Which function is quadratic?

A $3x - 2y = 5$

B $5x^2 + x = y - 4$

7) What are the zeros of the function graphed below?



F -1 and 0 H 0 and 1

G -2 and 0 J 0 and 2

8) Find the vertex of the graph of $y = 2x^2 - 12x + 5$.

Hint: Start with $x = \frac{-b}{2a}$

A $(-3, 59)$ C $(3, -13)$

B $(-3, 23)$ D $(3, 47)$

9) Compared to the graph of $f(x) = x^2$, the graph of $g(x) = x^2 - 5$ is _____.

F narrower
G translated up
H translated down
J wider

10) What are the solutions of $5 = x^2 + 4x$?

F 4 and –5
G –5 and 1
H –4 and 5
J 5 and –1

11) Solve $0 = 9x^2 - 36$ using square roots.

A –6 and 6
B –4 and 4
C –3 and 3
D –2 and 2

12) Solve $x^2 + 8x - 18 = 0$ by completing the square.

F $x = -2$ or $x = -6$
G $x = 4 + \sqrt{2}$ or $x = 4 - \sqrt{2}$
H $x = -4 + \sqrt{34}$ or $x = -4 - \sqrt{34}$

13) Solve the system by substitution.

$$\begin{cases} y = x^2 + 5x + 4 \\ y = 8x + 8 \end{cases}$$

F (–4, 0), (1, 16)
G (–1, 0), (–4, 0)
H (–1, 0), (4, 40)
J (1, 16), (4, 40)

14) Which is the 6th term of the geometric sequence 729, 81, 9,…?

Hint: Use the formula $a_n = a_1 r^{n-1}$

A $\frac{1}{729}$
B $\frac{1}{81}$
C $\frac{1}{9}$
D 1

15) The original value of a sculpture is $950, and the value increases by 15% each year. Find the value of the sculpture in 8 years. Use the formula $y = a(1+r)^x$.

A $1092.52
B $2090.00
C $2906.07
D $3013.56

16) A new play premiers on Saturday, October 1, and 420 people attend. Attendance then decreases by 30% each day. Find the attendance on Tuesday, October 4. Use the formula $y = a(1-r)^x$.

A 144
B 383
C 390
D 240

17) The ages of the U.S. Presidents that were inaugurated during the 1900's are given below.

Ages at Inauguration
42 51 56 55 51 54 51 60 62 43 55 56 61 52 69 64 46

Find the mean, median, and mode.

(Round answers to the nearest tenth.)

	mean	median	mode
F	54.6	55	51
G	54.6	62	51
H	55	54.6	no mode
J	55	55	no mode

18) A spinner is spun. Use the results to find the experimental probability of spinning green.

Outcome	Frequency
Red	7
Green	3
Blue	10

F $\frac{3}{20}$ H $\frac{7}{20}$

G $\frac{3}{10}$ J $\frac{7}{10}$

19) Find the theoretical probability of randomly choosing a vowel from the letters in CHAMPIONS.

A $\frac{1}{3}$ C $\frac{2}{3}$

B $\frac{1}{9}$ D $\frac{2}{9}$

20) A bag has 10 marbles, and 4 are black. Joseph picks 2 marbles without replacing the first. What is the probability that both are black?

A $\frac{3}{25}$ C $\frac{4}{25}$

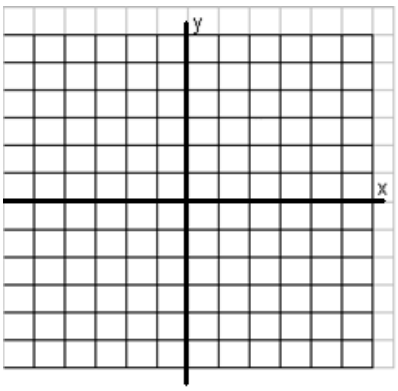
B $\frac{2}{15}$ D $\frac{8}{45}$

1) Factor $8a^2 - 10a - 7$.

2) Graph the quadratic function. Include five points, and label the axis of symmetry and vertex.

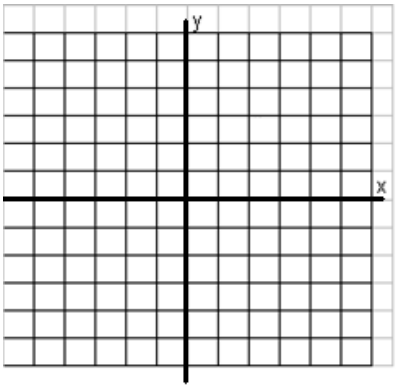
Hint: Start with $x = \frac{-b}{2a}$

$y = x^2 - 2x - 3$



3) Solve $-4x^2 = 5x - 9$ using the Quadratic Formula: $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

4) Graph $y = 3\left(\dfrac{1}{2}\right)^x$ using the x-values {-1, 0, 1}.



5) The ages of the U.S. Presidents that were inaugurated during the 1900's are given below.

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42 51 56 55 51 54 51 60 62 43 55 56 61 52 69 64 46

Construct a box and whisker plot using the five important values.