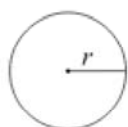
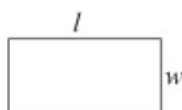


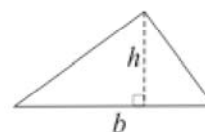
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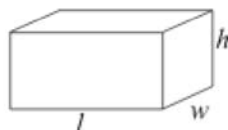
$$A = \pi r^2$$
$$C = 2\pi r$$



$$A = lw$$
$$P = 2l + 2w$$



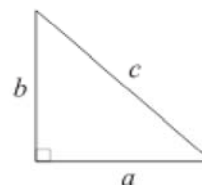
$$A = \frac{1}{2}bh$$



$$V = lwh$$



$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$

The number of degrees of arc in a circle is 360.

The measure in degrees of a straight angle is 180.

The sum of the measures in degrees of the angles of a triangle is 180.

Pretest

You may use a calculator for this test.

1. Which of the following statements about the sum of the expression $\frac{1}{7} + \frac{4\sqrt{3}}{5}$ is accurate?
- A The sum is rational because the expressions are both fractions.
 - B The sum is irrational because $\sqrt{3}$ is irrational and the sum of a rational number ($-\frac{1}{7}$) and an irrational number, $\frac{4\sqrt{3}}{5}$ is irrational.
 - C The sum is rational because the sum of a rational number and irrational number is rational.
 - D The sum is irrational because the sum of any square root and a fraction is irrational.

NRNS.3 DOK 1

2. A beginning skier's distance from the top of the hill in meters is modeled by the function $h(d) = -d^2 + 2d + 52$, where d represents how far the skier is from the top of the hill. How far will the skier be from the top of the hill when she reaches the bottom of the hill?

A1: F-IF. 8 DOK 2

3. $2x^2 + 16x - 4 = 4$

Nathan is completing the square to rewrite the equation. Which equation could be his result?

- A $(x + 4)^2 = 20$
- B $(x + 4)^2 = 16$
- C $(x + 4)^2 = 12$
- D $(x + 4)^2 = 8$

A1: REI:4 DOK 2

Pretest

4. Let x be any real number. Then the statement $x^2 \geq 0$ is true for

- A $x > 1$ only.
- B $x \leq$ only.
- C all real values of x .
- D $x > 0$ only.

A1. N.Q.2 DOK 1

5. Mark practices piano as many as 12 hours per week. When he has a concert coming up, his practice hours can be modeled by $P(w) = 12(.90)^{w-1}$ where w represents the number of weeks since he started practicing for his piano solo. What statement is true about the model $P(w)$?

- A $P(w)$ represents his total practice hours in a given week.
- B The number of hours he practices will increase by 90% each week.
- C The number of hours he practices will increase by 10% each week.
- D $P(w)$ represents the number of weeks left until his concert solo.

ASE.1 DOK 2

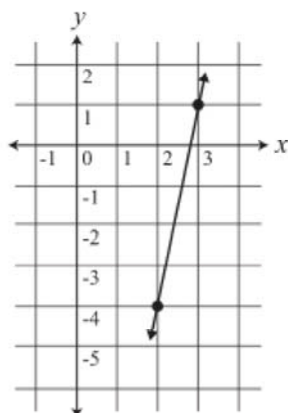
6. Sam works for the electric company installing electric wire on power poles. His crew can install 0.60 miles of wire per day, d , on average. Which equation models the total length, L , of wire Sam's crew can install over time if they have already installed 4.2 miles of wire?

- A $L = 0.6 d - 4.2$
- B $L = 4.2 - 0.6 d$
- C $L = 0.6 d + 4.2$
- D $d = 0.6 L + 4.2$

ACE.2 DOK 2

Pretest

7.



What is the domain of this function?

- A. All real numbers
- B $-4 < y < 1$
- C $2 \leq x \leq 3$
- D $-4 \leq y \leq 3$

AI.FIF.1 DOK 1

8. Use the steps in the table to answer the question.

Initial equation	$4(x + 5)^2 + 5x - x = 14x + 6x$
Step 1	$4(x + 5)^2 + 4x = 20x$
Step 2	$4(x + 5)^2 = 16x$
Step 3	$(x + 5)^2 = 4x$
Step 4	$x^2 + 10x + 25 = 4x$
Step 5	$x^2 + 6x + 25 = 0$

The table shows the first 5 steps to solve an equation. Which statement is an **incorrect** explanation of one step in the process?

- A From step 4 apply the subtraction property of equality to $x^2 + 10x + 25$ and $4x$ to get $x^2 + 6x + 25 = 0$.
- B From step 3, apply the distributive property to $(x + 5)^2$ to get $x^2 + 10x + 25$ in step 4.
- C From step 2, apply the distributive property to $4(x + 5)^2$ and $16x$ to get $(x + 5)^2 = 4x$ in step 3.
- D From step 1, apply the subtraction property of equality to $4x$ and $20x$ to get $4(x + 5)^2 = 16x$ in step 2.

AI: A:REL.1 DOK 2

Pretest

9. Jeffrey trains for the high jump each week. He writes this function to model the relationship between the number of weeks, w , he trains and the height of the bar he can clear.

$$f(w) = 2w + 156$$

What does the slope of this function represent?

- A The number of inches high is the bar he can jump over when he begins training.
- B The number of weeks it takes Jeffery to improve his performance.
- C The number of weeks it takes Jeffery to increase the height of the bar he can jump over by 1 inch.
- D The number of inches Jeffery's height he can clear increases per week of training.

FLE.5 DOK 2

10. The formula for the volume of a right cone is $V = \frac{1}{3} \pi r^2 h$.
Solve for r .

- A $\frac{3V+h}{\pi}$
- B $3V\pi h$
- C $\frac{3V}{\pi h}$
- D $\sqrt{\frac{3V}{\pi h}}$

ACE.4 DOK 2

Pretest

11. Jittery Java sells bags of coffee by the pound. The table below shows the price of Jittery Java's coffee.

Coffee Price	
2 lb	\$6.50
3 lb	\$9.50
4 lb	\$12.50
5 lb	\$15.50
6 lb	\$18.50

How should the y -axis be labeled?

- A Pounds of Coffee C Bags of Coffee
 B Price in Dollars D Price in Cents

N-Q.1 DOK 1

12. Two customers go into a restaurant and ordered 2 giant hamburgers and 2 sweet teas. Their bill is \$17.20. Later 5 customers come in and order 3 giant hamburgers and 5 sweet teas. Their bill is \$29.05. Which system of equations best represents this situation?

- A $2x + 2y = 17.20$
 $3x + 5y = 29.05$
 B $x = y$
 $5x + 7y = 46.05$
 C $x + y = 12$
 $5x + 7y = 46.05$
 D $x + y = 12$
 $3x + 5y = 29.05$

A-AEI.6 DOK 2

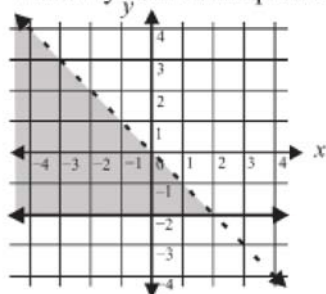
13. The admission fee at the fair is \$1.50 for children and \$4 for adults. On a certain day, 2,200 people enter the fair and \$5,050 was collected. How many children attended?

- A Children = 1200, Adults = 1000
 B Children = 1000, Adults = 1200
 C Children = 1450, Adults = 750
 D Children = 1500, Adults = 700

A-REI.5 DOK 2

Pretest

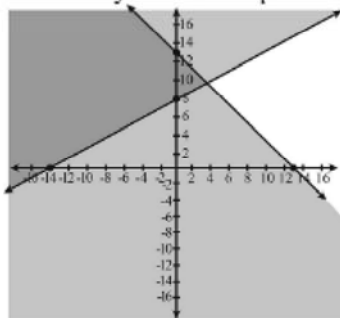
14. Which system of inequalities defines the shaded region below?



- A $y < -1, y \geq -2x$ C $y > -2x, y \leq -1$
 B $y < -x, y \geq -2$ D $y < -x, y \geq -2x$

ACE.1 DOK 2

15. Find the system of inequalities that models the shaded region.

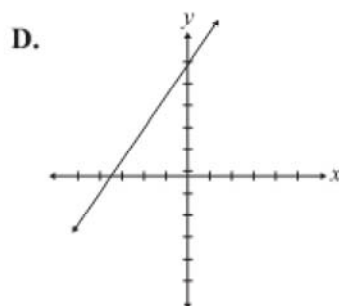
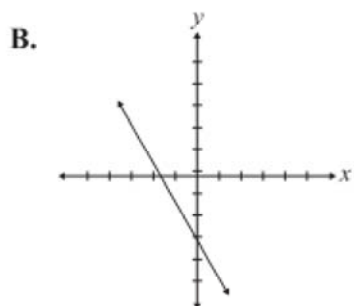
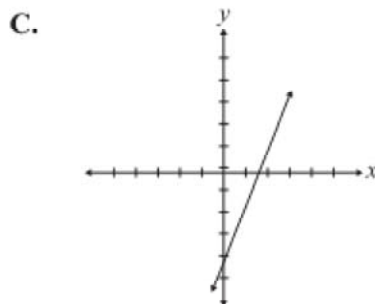
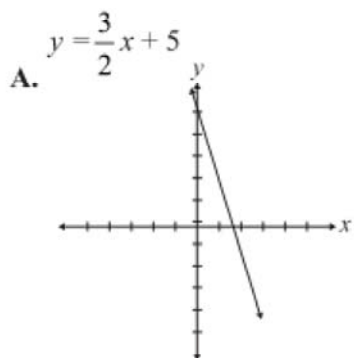


- A $x + y \leq 6, x \geq 0, y \geq 0$
 B $x + y \leq 13, -4x + 7y \geq 56$
 C $y \geq 0, 2x + 2y \leq 310$
 D $x + 6y \leq 9, 20x + 34y \geq 240$

A-REI.12 DOK 2

Pretest

16. Find the graph of the function:



F-IF.7a DOK 2

17. Given the following table of values, construct the function that represents the sequence.

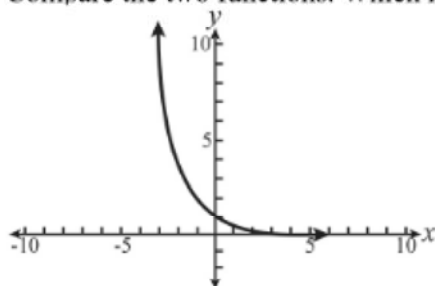
x	$f(x)$
0	0
1	4
2	8
3	12
4	16

- A $f(x) = 2x + 2$
- B $f(x) = 4x$
- C $f(x) = 2x^2$
- D $f(x) = 2^3x$

FLQE.1 DOK 2

Pretest

18. $f(x)=4x +0.6$ and $g(x)$ is graphed below.
Compare the two functions. Which has the steeper slope?



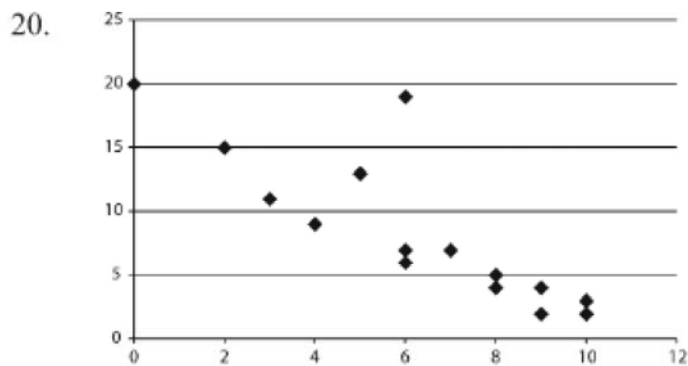
- A $f(x)$
B $g(x)$
C They have the same slope.
D Neither function has the slope property.

F-IF.9 DOK 2

19. True or false: All exponential functions eventually exceed all linear functions. Explain.
- A False; it depends on the functions.
B False; linear functions always exceed exponential functions.
C False; linear functions go to infinity, exponential functions do not.
D True; exponential functions grow at an increasing rate, which eventually exceeds the constant rate of any linear function.

FLQE.3 DOK 1

Pretest



Choose the function that most accurately fits the data in the graph above.

- A $y = 1.66x + 18.75$
 B $y = 16.6x - 1.85$
 C $y = -1.66x + 18.75$
 D $y = -1.66x - 18.75$

SPID.6 DOK 2

21. The average life span of American women that were born after January 1, 1971 can be modeled by the function $y = 0.3t + 69$, where $t = 0$ represents the year 1971. What does the slope represent in this context?
- A. The slope indicates that for every year, the average life span of American women increases by 69 years.
 B. The slope indicates that for every year, the average life span of American women decreases by 69 years.
 C. The slope indicates that for every year, the average life span of American women increases by 0.3 years.
 D. The slope indicates that for every year, the average life span of American women decreases by 0.3 years.

SPID.7 DOK 2

22. What are the zeros of the function below?

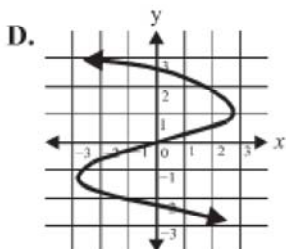
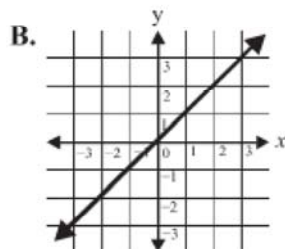
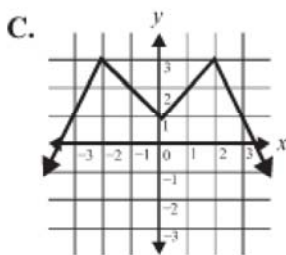
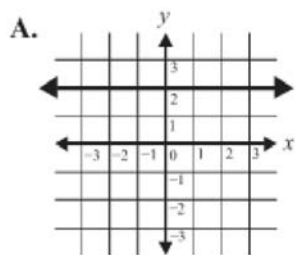
$$y = 11x^2 - 31x - 6$$

- A 3 and -2
 B 3 and $-\frac{2}{11}$
 C 3 and $-\frac{11}{2}$
 D -3 and $\frac{11}{2}$

F-IF.8 DOK 2

Pretest

23. Which of the following graphs is not a function?



F-IF.1 DOK 1

24. Which expression is equivalent to $(x^2 - 7x) + (x^2 - 2x)$

- A $x^2 - 9x$
- B $x^5 - 2x^4 - 7x^3 + 14x^2$
- C $x^2 + 9x$
- D $2x^2 - 9x$

AAPR.1 DOK 2

25. Solve by factoring:

$$y^2 - 4y - 12 = 0$$

- A. (2, 0) (-6, 0)
- B. (-2, 0) (6, 0)
- C. (3, 0) (-4, 0)
- D. (-3, 0) (4, 0)

ASE.3 DOK 2

Pretest

26. The function $f(x)$ is shown.

$$f(x) = x^3$$

Draw a line from each transformation of $f(x)$ on the left with a resulting expression(s) on the right.

$$2f(x)$$

$$f(x+2)$$

$$f(x)+2$$

$$x^3+2$$

$$2x^3$$

$$x^6 + 4x^3+4$$

$$x^3 + 6x^2 + 12x + 8$$

Work on separate paper.

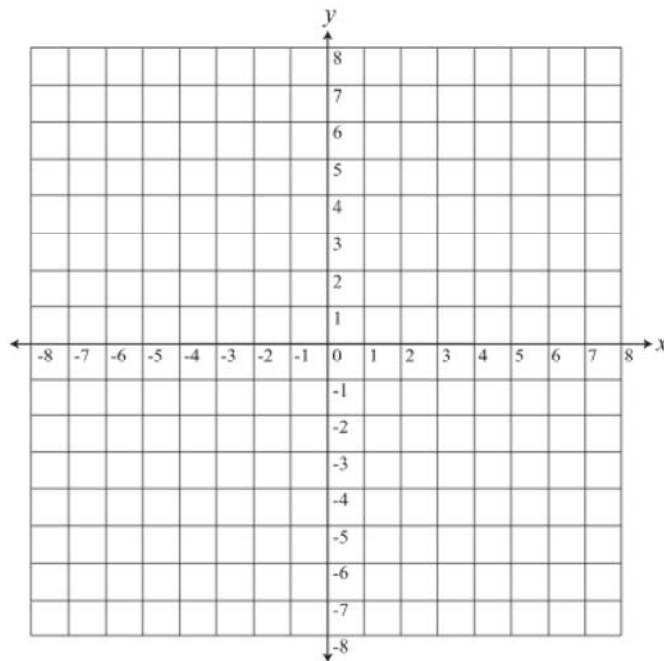
A1. FIF.2 DOK2

Page 11

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Pretest

27. Plot the x- and y-intercepts of the equation $y = x + 4$



Work on separate paper.

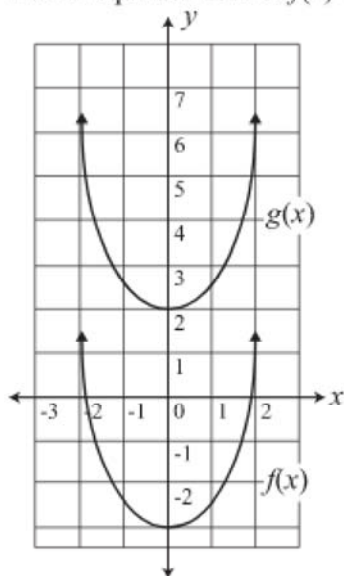
A1:ACE.2 DOK2

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Pretest

28. Which equation relates $f(x)$ with $g(x)$?



- A $g(x) = f(x + 5)$
- B $g(x) = f(x) - 5$
- C $g(x) = f(x) + 5$
- D $g(x) = f(x - 5)$

F-BF.3 DOK 1

29. What are the factors of $30x^2 + 9x - 12$?

- A $3(5x + 4)(2x - 1)$
- B $2(3x + 2)(5x - 3)$
- C $6(x - 2)(5x - 1)$
- D $3(5x - 4)(2x - 1)$

A.REI.4 DOK 2

Pretest

30. Simplify: $\sqrt[3]{40x^6y}$

A $8x^2\sqrt[3]{5y}$

B $\sqrt[3]{8x^6y} \times \sqrt[3]{5x^6y}$

C $2x^2\sqrt[3]{5y}$

D You cannot take the cube root of a variable.

N-RN.2 DOK 2

31. What is the first step that should be used in order to isolate the variable and maintain a balanced equation for the following?

$$7x + 9 = 23$$

A $\frac{7x + 9}{7} = \frac{23}{7}$

B $7x + 9 - 9 = 23 - 9$

C $7x + 9 + 9 = 23 - 9$

D $7x + 9 - 9 = 23 - 7$

A-REI.1 DOK 1

32. Which function has a maximum 5 and a line of symmetry at $x = -8$

A $f(x) = -2(x - 8)^2 + 5$

B $f(x) = 2(x - 8)^2 - 5$

C $f(x) = -2(x + 8)^2 + 5$

D $f(x) = 2(x + 8)^2 + 5$

AI: ACE.2 DOK 3

Pretest

36. The Wisconsin Cheese Factory sells cheese in large blocks to stores. The largest block can weigh as much as 25 pounds. The equation $y = 5.60x$ can be used to model the total price of a block of cheese and the weight of the block of cheese. Which statement is true?
- A The equation has 25 solutions.
 - B The equation has 5.60 solutions.
 - C The equation has no solutions.
 - D The equation has infinite solutions.

AREI.10 DOK 2

37. Solve for s : $16 + s = -12$

- A $s = -28$
- B $s = 4$
- C $s = 28$
- D $s = -4$

AREI.3 DOK 1

38. Which correlation coefficient indicates the stronger linear relationship between random variables for a fixed sample size?
- A $r = 0.8$
 - B $r = 0.5$
 - C $r = -0.2$
 - D $r = -0.9$

SPID.8

39. What are the zeros of $y = x^2 - 7x + 12$?
- A $x = -4, 3$
 - B $x = 4, 3$
 - C $x = -4, -3$
 - D $x = 4, -3$

F-IF.4 DOK 2

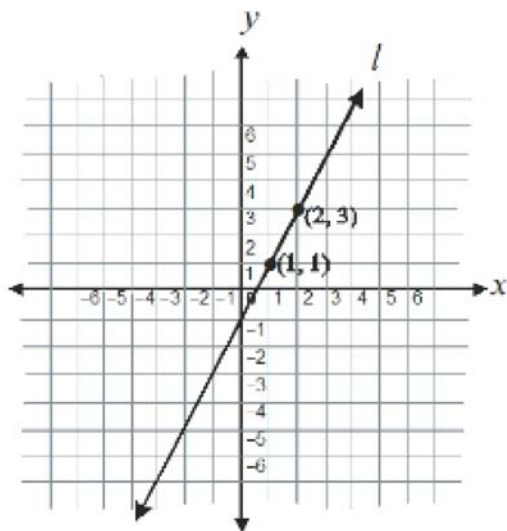
Pretest

40. Which equation represents the line passing through the points $(-7, -2)$ and $(2, 7)$?

- A $y = x - 4$
- B $y = x + 5$
- C $y = x - 9$
- D $y = x + 9$

ACE.2 DOK 2

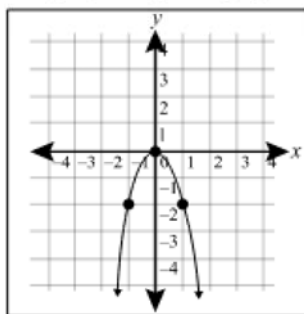
41. Which of the following is an equation of a line that is parallel to the line l in the graph?



- A $x - 2y = -4$
- B $x - 2y = 4$
- C $2x + y = 4$
- D $2x - y = 4$

Pretest

42. Which situation must have exponential growth?
- A A woman's weight goes down 3 pounds the first week and up 4 pounds the next week.
 - B The number of bacteria in a petri dish doubles each hour.
 - C The total cost of pencils given that each pencil costs 12 cents.
 - D A website charges \$1.49 for downloading a song and \$0.89 for each additional song.
- FLQE.1 DOK 1
43. Simplify: $3(2a + 4b - 3c) - 4(a - 2b + 5c)$
- A $10a + 20b + 29c$
 - B $2a - 20b - 29c$
 - C $10a - 20b + 29c$
 - D $2a + 20b - 29c$
- ASE.2 DOK 2
44. Fran wants to convert degrees Fahrenheit, f , to degrees Celcius, C , using the formula $C(f) = \frac{5}{9}(f - 32)$. From calculated 59°C , what would be her result?
- A 15°F
 - B 27°F
 - C 32.8°F
 - D 48.2°F
- ACE.4
45. Which quadratic equation is displayed by the graph below?



- A $y = x^2 - 1$
- B $y = -x^2 - 2$
- C $y = 2x^2 - 2$
- D $y = -2x^2$

A.REI.10 DOK 1

Pretest

46. What is the interval for which this function is decreasing?

x	y
0	3
2	-1
3	-3
4	-5

- A $(-\infty, 0)$
- B $(0, \infty)$
- C $(-\infty, 0)$
- D This function is never decreasing.

FIF.4 DOK 2

47. Michelle goes on a trip where she averages a speed of 60 miles per hour. To find the approximate distance she has travelled, she uses the function $d = 60t$ where t represents the time in hours she has spent on the road. What is the appropriate domain for her function?

- A $[0, \infty)$
- B $[5, \infty)$
- C $(-\infty, \infty)$
- D $[0, 60]$

FIF.5 DOK 2

48. Determine whether each expression is in simplest radical form. Place a checkmark in the correct boxes.

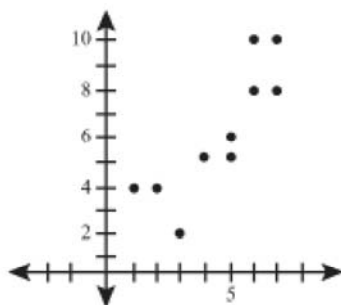
Expression	Yes	No
A. $\frac{x\sqrt{2}}{3}$		
B. $\frac{4x}{6}$		
C. $9\sqrt{9x^3}$		
D. $5\sqrt{8x}$		

Fill in the bubble if yes.

NRNS.1 DOK1

Pretest

49. What can be expected to occur as x increases?



- A y decreases
B y increases
C y remains equivalent to 1
D unable to tell
50. What happens to the y -intercept of a function when 3 is added to $f(x)$?
- A The y -intercept remains at the origin.
B The graph of the function moves 3 units to the right.
C The y -intercept moves up 3 units.
D The y -intercept does not exist.

S.ID.6 DOK 1

FBF.3 DOK 2

Pretest

Evaluation Chart

Directions: On the following chart, circle the question numbers that you answered incorrectly. Then, turn to the appropriate topics (listed by chapters), read the explanations, and complete the exercises. Review the other chapters as needed.

Note: Some questions might be listed under multiple chapters, especially if the standards for that particular question are covered in various units.

Chapter	Question Number
Chapter 1: Exponents	
Chapter 2: Roots	1, 30, 48
Chapter 3: Introduction to Algebra	5
Chapter 4: Solving Word Problems	4, 11, 34
Chapter 5: Polynomials	24, 43
Chapter 6: Equations and Inequalities	8, 10, 31, 37, 44
Chapter 7: Linear Equations and Inequalities	6, 16, 27, 32, 36, 40, 45
Chapter 8: Systems of Equations and Inequalities	7, 14, 15, 26
Chapter 9: Relations and Functions	12, 13, 23
Chapter 10: Factoring	10
Chapter 11: Quadratic Equations and Functions	2, 3, 22, 29, 39
Chapter 12: Exponential Functions	17, 35
Chapter 13: Graphing Functions	8, 16, 28, 33, 46, 41, 50
Chapter 14: Comparing Functions	9, 18, 19, 41, 42
Chapter 15: Data Analysis	44
Chapter 16: Using Algebra for Data Analysis	20, 21, 38, 48, 49