2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076566
CLE: generalize patterns using explicitly or recursively defined functions
DOK Level: 2

1.
If the first Now = –9, which equation represents this sequence?

$$-9, -4, 1, 6, 11, \ldots$$

A) $\text{Next} = \text{Now} - 5$

B) $\text{Next} = \text{Now} + 5$

C) $\text{Next} = 5 \cdot \text{Now} - 1$

D) $\text{Next} = 5 \cdot \text{Now} + 1$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076627
CLE: compare and order rational and irrational numbers, including finding their approximate locations on a number line
DOK Level: 1

2.
Which inequality statement is *true*?

A) $8 < \sqrt{78} < 9$

B) $38 < \sqrt{78} < 40$

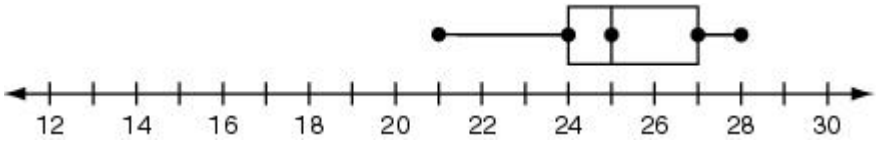
C) $77 < \sqrt{78} < 79$

D) $6,083 < \sqrt{78} < 6,085$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100075802
CLE: apply statistical measures of center to solve problems
DOK Level: 2

3.
Daniel made a box-and-whisker plot of the ages of his cousins.



What is the median age of his cousins?

A) 24

B) 25

C) 27

D) 28

Item Code: 100075779
CLE: describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts
DOK Level: 2

4.

Given $y = x^2$, how would the graph of $y = x^2 - 2$ differ?

A) It shifts 2 units up.

B) It shifts 2 units down.

C) It shifts 2 units left.

D) It shifts 2 units right.

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100075819
CLE: compare and order rational and irrational numbers, including finding their approximate locations on a number line
DOK Level: 1

5.
Given the following fractions:

$$\frac{3}{4}, \frac{18}{29}, \frac{24}{39}, \frac{3}{5}, \frac{12}{18}$$

Which group below has the fractions in order from *least* to *greatest*?

A) $\frac{3}{5}, \frac{24}{39}, \frac{18}{29}, \frac{12}{18}, \frac{3}{4}$

B) $\frac{3}{4}, \frac{3}{5}, \frac{18}{29}, \frac{24}{39}, \frac{12}{18}$

C) $\frac{3}{5}, \frac{12}{18}, \frac{24}{39}, \frac{3}{4}, \frac{18}{29}$

D) $\frac{3}{4}, \frac{3}{5}, \frac{12}{18}, \frac{18}{29}, \frac{24}{39}$

Item Code: 100076656
CLE: identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem
DOK Level: 2

6.
The automobile repair shop uses the following chart to determine labor costs for each job.

Automobile Repair Shop Costs

Hours	Labor Cost
1	$25
2	$40
3	$55
4	$70

Which function should the automobile repair shop use to determine the labor cost, *C*, for a job that takes *h* hours?

A) $C = 15h$

B) $C = 15h + 10$

C) $C = 25 + 15h$

D) $C = 25h + 15h$

2008 Algebra I SR Operational Form 1 (Released Form)

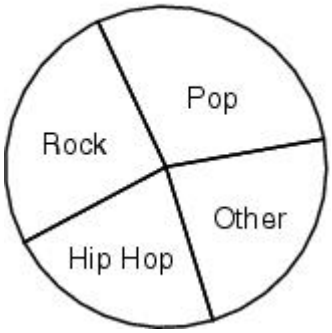
Item Code: 100076676
CLE: select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape
DOK Level: 2

7.
A survey was administered to 500 high school students to determine the type of music they prefer. The survey indicated that 22% prefer rock, 26% prefer hip hop, 29% prefer pop, and 23% selected "other." Which representation best illustrates the *number* of students preferring each type of music?

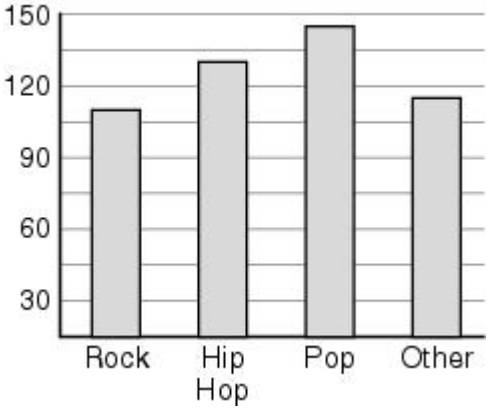
A) **Preferred Music**

Type	Percent of Students
Rock	22
Hip Hop	26
Pop	29
Other	23

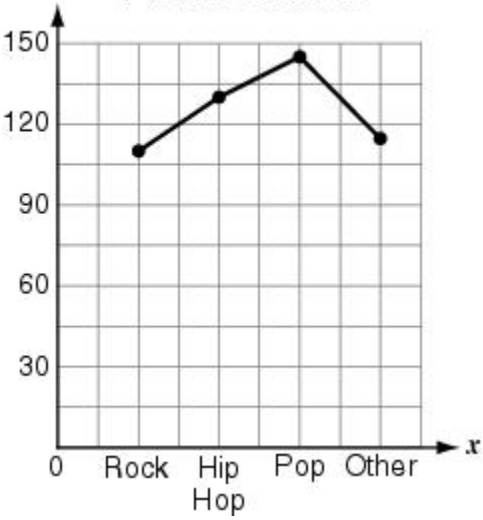
C) **Preferred Music**



B) **Preferred Music**



D) **Preferred Music**



2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076594
CLE: use real numbers and various models, drawing, etc. to solve problems
DOK Level: 2

8.
What is the value of the numerical expression below?

$$\sqrt{16} + \frac{24}{3} - 2^3$$

A) 4

B) 6

C) 8

D) 10

Item Code: 100076887
CLE: apply statistical measures of center to solve problems
DOK Level: 1

9.
Aaron listed the ages of all of his family members as shown below.

10, 10, 10, 10, 10, 12, 14, 14, 15, 16, 50, 50, 51, 53, 80

What is the mean age of his family members?

A) 10

B) 14

C) 27

D) 70

Item Code: 100075831
CLE: describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions
DOK Level: 2

10.
What is the product of the following expression?

$$2x(x^2 + x - 5)$$

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

B) $2x^3 + 2x - 10$

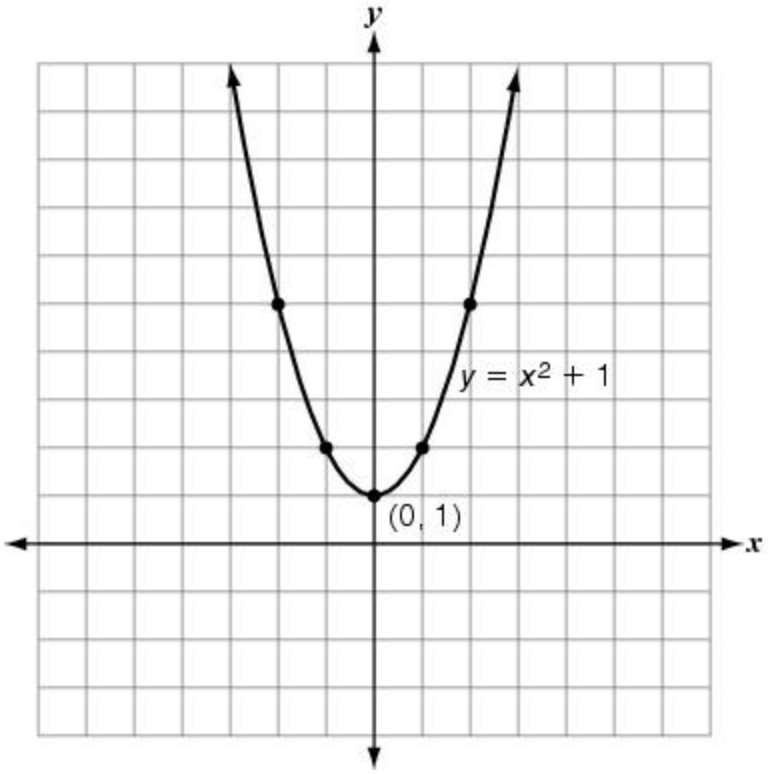
C) $2x^3 + 2x^2 - 5x$

D) $2x^3 + 2x^2 - 10x$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100075828
CLE: describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts
DOK Level: 2

11.
Beth and Jacob are graphing two equations on a coordinate grid. Beth has graphed the equation $y = x^2 + 1$.



If Jacob graphs $y = x^2 + 3$, where will his graph be in relation to the graph Beth made?

A) 2 units up

B) 3 units up

C) 2 units to the left

D) 3 units to the right

Item Code: 100075766
CLE: make conjectures about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data
DOK Level: 2

12.
A survey was taken asking participants their age and the number of minutes they exercise per week. The results of the survey are shown in the scatter plot below.

The data for people who are 30 to 39 years of age are not displayed. Based on the scatter plot, how many minutes would a 30- to 39-year-old person be expected to exercise?

A) 40–60 minutes

B) 60–80 minutes

C) 80–100 minutes

D) 100–120 minutes

Item Code: 100075759
CLE: use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities
DOK Level: 2

13.
Ben bought 8 notebooks for $24.50. Some of the notebooks were $2.50 each, and the others were $3.25 each. If *x* represents the number of least expensive notebooks, which equation can be used to find the number of least expensive notebooks purchased?

A) $\$5.75(8 - x) = \$24.50$

B) $\$2.50(x - 8) + \$3.25x = \$24.50$

C) $\$2.50x + \$3.25(8 - x) = \$24.50$

D) $\$2.50x + \$3.25(x - 8) = \$24.50$

Item Code: 100075793
CLE: use real numbers and various models, drawing, etc. to solve problems
DOK Level: 1

14.
The number 18 is 24% of which number?

A) 4.32

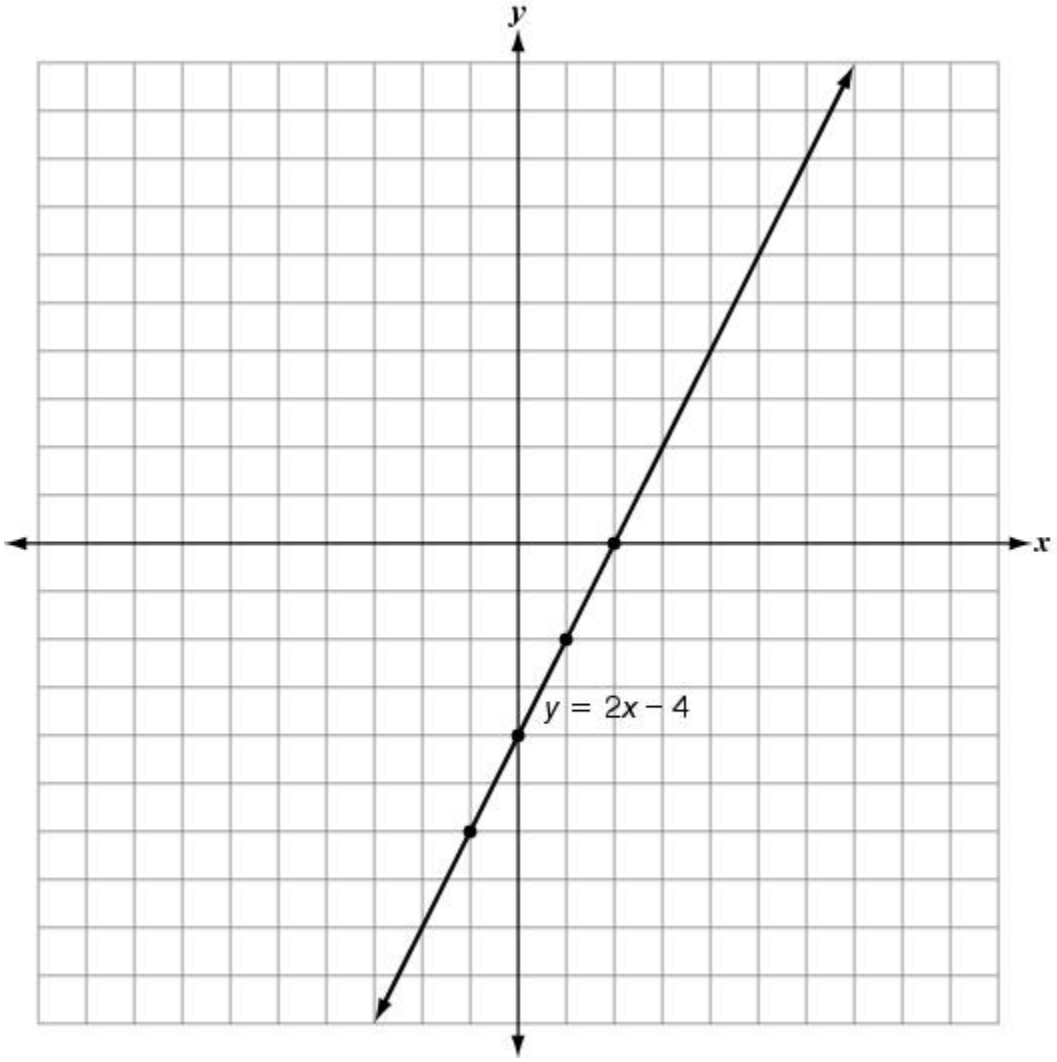
B) 75

C) $133\frac{1}{3}$

D) 432

Item Code: 100076659
CLE: analyze linear and quadratic functions by investigating rates of change, intercepts and zeros
DOK Level: 3

15.
The graph of $y = 2x - 4$ is shown below.



If the slope of the line is doubled, the new equation is $y = 4x - 4$. Which of these is a correct comparison of the two lines?

A) The *x*-intercept and *y*-intercept change.

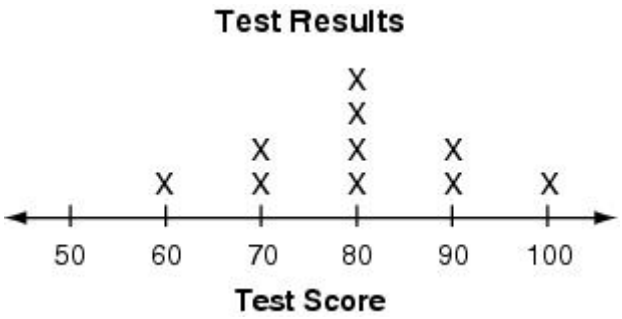
B) The *x*-intercept and *y*-intercept stay the same.

C) The *x*-intercept changes, and the *y*-intercept is the same.

D) The *x*-intercept is the same, and the *y*-intercept changes.

Item Code: 100076881
CLE: select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape
DOK Level: 2

16.
The following line graph shows the test scores for 10 students on a unit exam.



Which shape *most accurately* describes these data?

A) The data are skewed to the left.

B) The data are skewed to the right.

C) a bimodal or "U"-shaped curve

D) a normal or "bell"-shaped curve

Item Code: 100076599
CLE: use real numbers and various models, drawing, etc. to solve problems
DOK Level: 3

17.
Mary would like to plant grass in her backyard. Her backyard is a rectangle that measures 10 yd by 8 yd. In the middle of her backyard is a circular swimming pool that has a diameter of 5 yd. What is the area to be planted with grass, to the nearest tenth of a square yard?

A) $1.5\ \text{yd}^2$

B) $19.6\ \text{yd}^2$

C) $60.4\ \text{yd}^2$

D) $80\ \text{yd}^2$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076883
CLE: compare and contrast various forms of representations of patterns
DOK Level: 2

18.
Which expression represents the output of the *n*th term?

Input	1	2	3	4	5	n
Output	1	3	5	7	9	

A) $n + 2$

B) $n + 11$

C) $2n + 1$

D) $2n - 1$

Item Code: 100075758
CLE: use and solve equivalent forms of equations (linear, absolute value, and quadratic)
DOK Level: 2

19.
What is the solution to the equation?

$$-12 = 6 + \frac{2}{3}y$$

A) -27

B) -24

C) -12

D) -9

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100075699
CLE: apply statistical measures of center to solve problems
DOK Level: 2

20.
What is the mode of the data set displayed below?

Stem	Leaf
1	0 0 3 4 4 4 4 4
2	2 2 4 9
3	1 1 2 3
4	6 7 8 8 8 8 8 9 9
5	0 0 1 2 5 7
19	8

Key
1 | 3 = 13

A) 14

B) 48

C) 4 and 8

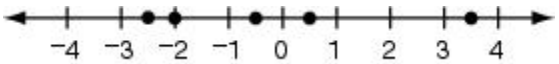
D) 14 and 48

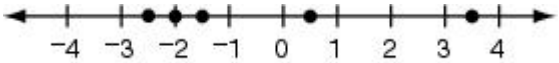
2008 Algebra I SR Operational Form 1 (Released Form)

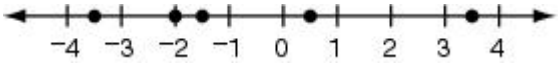
Item Code: 100075724
CLE: compare and order rational and irrational numbers, including finding their approximate locations on a number line
DOK Level: 1

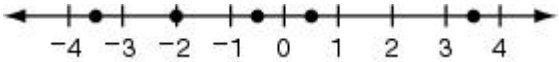
21.
Which number line below shows the set of numbers graphed correctly?

$$\left\{3.5\,,\ -\frac{7}{2}\,,\ \frac{1}{2}\,,\ -2\,,\ -1\frac{1}{2}\right\}$$

A) 

B) 

C) 

D) 

Item Code: 100076879
CLE: analyze linear and quadratic functions by investigating rates of change, intercepts and zeros
DOK Level: 2

22.
What is true about the slope and *y*-intercept of the two equations below?

$$4x + 3y = 12$$
$$-8x + 6y = 6$$

A) same slope, same *y*-intercept

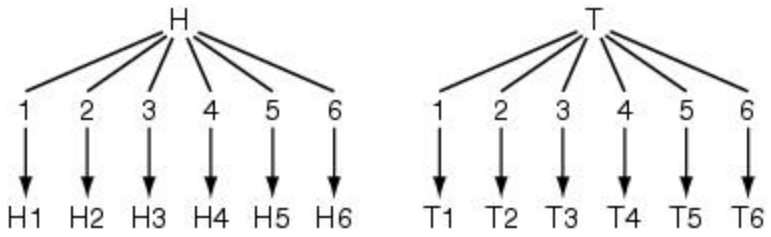
B) same slope, different *y*-intercept

C) different slope, same *y*-intercept

D) different slope, different *y*-intercept

Item Code: 100076629
CLE: formulate questions and collect data about a characteristic which include sample spaces and distributions
DOK Level: 3

23.
The diagram shows the outcomes of flipping a coin and rolling a die.



Which statement regarding the diagram is *false*?

A) The probability of obtaining "H6" is 2 out of 12.

B) There are 12 possible outcomes in the sample space.

C) The chance of flipping "heads" and rolling a "5" is 1 in 12.

D) Flipping "tails" and rolling a "2" represents about 8% of the possible outcomes of the sample space.

Item Code: 100075739
CLE: identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem
DOK Level: 2

24.
The population of a type of bacteria triples every minute. The chart below represents the population of bacteria after *t* minutes.

t	Bacteria Population
0	1
1	3
2	9
3	27
4	81
5	243

Which type of function represents the data?

A) linear

B) quadratic

C) exponential

D) absolute value

Item Code: 100076146
CLE: understand and compare the properties of linear and nonlinear functions
DOK Level: 2

25.
What are the slope, *m*, and the *y*-intercept, *b*, of a line that passes through the points $(-3, 1)$ and $(7, -5)$?

A) $m = -\frac{3}{5}$ and $b = -\frac{4}{5}$

B) $m = -\frac{5}{3}$ and $b = -4$

C) $m = -\frac{4}{5}$ and $b = -\frac{3}{5}$

D) $m = -\frac{3}{5}$ and $b = 4$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100075689
CLE: compare and order rational and irrational numbers, including finding their approximate locations on a number line
DOK Level: 1

26.
Given the following set of numbers:

$$-\sqrt{4}\,,\ -2\frac{2}{3}\,,\ -2.\overline{3}\,,\ -\frac{5}{2}\,,\ -2.7$$

Which set is in order from *least* to *greatest*?

A) $\left\{-2.7\,,-2.\overline{3}\,,\ -2\frac{2}{3}\,,\ -\frac{5}{2}\,,\ -\sqrt{4}\right\}$

B) $\left\{-2.7\,,\ -2\frac{2}{3}\,,\ -\frac{5}{2}\,,\ -2.\overline{3}\,,\ -\sqrt{4}\right\}$

C) $\left\{-\sqrt{4}\,,-\frac{5}{2}\,,\ -2\frac{2}{3}\,,\ -2.\overline{3}\,,\ -2.7\right\}$

D) $\left\{-\sqrt{4}\,,\ -2.\overline{3}\,,\ -\frac{5}{2}\,,\ -2\frac{2}{3}\,,\ -2.7\right\}$

Item Code: 100075845
CLE: describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions
DOK Level: 2

27.
Which of these shows the following expression factored completely?

$$6x^2 + 15x - 36$$

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

B) $(6x + 9)(x - 4)$

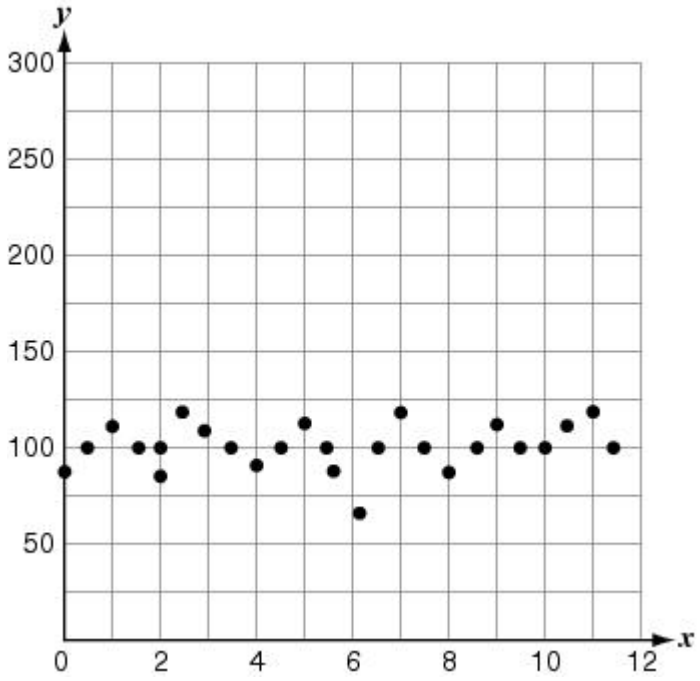
C) $3(2x - 3)(x + 4)$

D) $3(2x + 3)(x - 4)$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076885
CLE: given a scatterplot, determine an equation for a line of best fit
DOK Level: 2

28.
A scatterplot is shown on the graph below.



Which of these could be a line of best fit?

A) $y = x + 100$

B) $y = x - 100$

C) $x = 100$

D) $y = 100$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076660
CLE: identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem
DOK Level: 2

29.
What is the equation of the function represented by this table of values?

x	-2	-1	0	1	2
y	$\frac{3}{25}$	$\frac{3}{5}$	3	15	75

A) $y = 5x + 3$

B) $y = 12x + 3$

C) $y = 3 \cdot 5^x$

D) $y = 5 \cdot 3^x$

Item Code: 100075826
CLE: use and solve systems of linear equations or inequalities with 2 variables
DOK Level: 2

30.
The enrollment at High School R has been increasing by 20 students per year. Currently High School R has 200 students attending. High School T currently has 400 students, but its enrollment is decreasing in size by an average of 30 students per year. If the two schools continue their current enrollment trends over the next few years, how many years will it take the schools to have the same enrollment?

A) 4 years

B) 5 years

C) 10 years

D) 20 years

Item Code: 100075794
CLE: use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities
DOK Level: 2

31.
What is the solution to the following inequality?

$$\frac{1}{3}(6 - x) \geq -2$$

A) $x \geq 0$

B) $x \leq 0$

C) $x \geq 12$

D) $x \leq 12$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100076880
CLE: understand and compare the properties of linear and nonlinear functions
DOK Level: 2

32.
Which is a true statement about the data shown in the tables?

Table 1

x	y
1	4
2	5
3	6
9	12
10	13

Table 2

x	y
0	0
1	1
2	4
3	9
4	16

A) Both tables represent a linear relation.

B) Only Table 1 represents a linear relation.

C) Only Table 2 represents a linear relation.

D) Neither table represents a linear relation.

Item Code: 100075731
CLE: use real numbers and various models, drawing, etc. to solve problems
DOK Level: 3

33.
The length of a rectangle is 4 times its width. If the length of the rectangle is cut in half, the new perimeter is which percent of the original perimeter?

A) 25%

B) 50%

C) 60%

D) 100%

Item Code: 100075726
CLE: describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions
DOK Level: 2

34.
What is the simplified form of the expression?

$$\frac{4x^3y^3}{8x^5y^2}$$

A) $\frac{y}{2x^2}$

B) $\frac{2y}{x^2}$

C) $2x^2y$

D) $2x^8y^5$

2008 Algebra I SR Operational Form 1 (Released Form)

Item Code: 100075777
CLE: use and solve systems of linear equations or inequalities with 2 variables
DOK Level: 2

35.
What is the solution for the system of equations?

$$y = 2x - 3$$
$$4x - 3y = 31$$

A) $(-11, -25)$

B) $(-11, -19)$

C) $(11, 19)$

D) $(14, 25)$