Name:
 defeat the
$\qquad$

STAAR ALGEBRA I REFERENCE MATERIALS

GENERAL FORMULAS

| Slope of a line | $m=\frac{y_{2}-y_{1}}{x_{2}-x_{1}}$ |
| :--- | :--- |
| Pythagorean theorem | $a^{2}+b^{2}=c^{2}$ |
| Quadratic formula | $x=\frac{-b \pm \sqrt{b^{2}-4 a c}}{2 a}$ |

## FORMS OF LINEAR EQUATIONS

Slope-intercept form $\quad y=m x+b$

$$
y-y_{1}=m\left(x-x_{1}\right)
$$

$A x+B y=C$

## STAAR ALGEBRA I REFERENCE MATERIALS

| CIRCUMFERENCE |  |  |  |
| :---: | :---: | :---: | :---: |
| Circle | $C-2 r$ | or | $C-x d$ |
| AREA |  |  |  |
| Triangle |  |  | $A=\frac{1}{2} b h$ |
| Recuangle or parallelogram |  |  | $A-D h$ |
| Rhombus |  |  | $A=\frac{1}{2} d_{1} d_{2}$ |
| Trapezold |  |  | $A=\frac{1}{2}\left(D_{1}+D_{2}\right) n$ |
| Regular polygon |  |  | $A=\frac{1}{2} a P$ |
| Circle |  |  | $A=\pi r^{2}$ |
| SURFACE AREA |  |  |  |
|  | Lateral |  | Total |
| Prism | $S-P h$ |  | $5-P h+2 B$ |
| Pyramid | $5-\frac{1}{2} p l$ |  | $S-\frac{1}{2} P l+B$ |
| Cyllinder | $s-20 h$ |  | $S-2 \pi r h+2 \pi^{2}$ |
| Cone | $5-s l$ |  | $S=\pi r l+\pi r^{2}$ |
| Sphere |  |  | $S-4 \pi r^{2}$ |
| volume |  |  |  |
| Prism or cylinder |  |  | $V=B n$ |
| Pyramid or cone |  |  | $V-\frac{1}{3} B h$ |
| Sphere |  |  | $V=\frac{4}{3} \pi r^{3}$ |

eos simulation analysis

| Reporting <br> Category | Which unit(s) can I find this topic in? |
| :---: | :---: |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

1. What steps will you take in order to be successful on the EOC?
2. What topic(s) do you need to focus on?
3. What can you do outside of class to study for your EOC?
4. Remember you will also be taking your Biology EOC. Below, create a realistic study schedule for the next few weeks.

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  | 25 | 26 |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 |
| 4 | 5 | 6 BIOLOGY <br> STAAR | 7 | 8 <br> ALGEBRA <br> STRAAR |  |  |

## functions



Vertical Line Test:

1. Which relation is a function?

A $\{(-1,3),(-2,6),(0,0),(-2,-2)\}$
B $\{(-2,-2),(0,0),(1,1),(2,2)\}$
C $\{(4,0),(4,1),(4,2),(4,3)\}$
D $\{(7,4),(8,8),(10,8),(10,10)\}$
2. Which of the following graphs represents a relation that is not a function of $x$ ?

C

B

D


1. Which of the following does not represent a function?

A

| $x$ | -2 | 0 | 4 | 10 |
| :---: | :---: | :---: | :---: | :---: |
| $y$ | -1 | 3 | 11 | 23 |

B $y=x^{2}-3$

C $\{(6,-1),(6,0),(6,3),(6,5)\}$

D

2. If $f(x)=x^{2}+2 x+3$, what is the value of $f(x)$ when $x=6$ ?

A 27
B 42
C 51
D 60
3. What is the value of $\frac{6 x-3 y}{x y}$, when $x=6$ and $y=-4 ?$

A -2
B -1
C 2
D 3
4. If $(-4.5, y)$ is a solution to the equation
$2 x-5 y=10$, what is the value of $y$ ?
5. What is the domain of the function shown?

A $-2 \leq x \leq 6$
B $-5 \leq x \leq 3$
C $-2 \leq y \leq 6$
D $-5 \leq y \leq 3$

6. The table below shows a relationship between the total cost of purchasing books through a book club and the number of books purchased.

Total Cost in Terms of Books Purchased

| Books Purchased, $x$ | 0 | 1 | 2 |
| :---: | :---: | :---: | :---: |
| Cost, $y$ | $\$ 10$ | $\$ 25$ | $\$ 40$ |

What is the functions' independent variable?
A $\$ 10$
B $\$ 15$
C Cost of the club
D Number of books purchased
7. A swordfish travels through the water at a speed of 40 miles per hour. The relationship between the distance traveled, $d$, and the time traveled, $t$, is determined by the function $d=40 t$. Which of the following statements is true?

A The distance a swordfish travels is determined by the size of the swordfish.
B The amount of time a swordfish travels is determined by the size of the swordfish.
C The amount of time a swordfish travels is determined by the distance the swordfish travels.
D The distance a swordfish travels is determined by the amount of time the swordfish travels.
8. Which of the following represents the parent function $y-2 x=7$ ?
A $y=2 x$
B $y=x^{2}+7$
C $y=x$
D $y=\sqrt{x}$
9. If $f(x)=3 x-\frac{1}{2}$, what is the value of $f(-3)$ ?

A $-9 \frac{1}{2}$
B $2 \frac{1}{2}$
C $8 \frac{1}{2}$
D $9 \frac{1}{2}$

## WRiting equations

Standard Form: Ax $+B y=C$

Point - Slope: $y-y_{1}=m\left(x-x_{1}\right)$

Slope Intercept: $\mathrm{y}=\mathrm{mx}+\mathrm{b}$

## Parallel -

To write an equation given 2 points:

## Perpendicular -

1. Which of the following is not a correct description of the graph of the equation $2 x+y=-7$ ?
A. The graph of the equation contains the point $(-2,-3)$, and when the value of $x$ increases by 1 unit, the value of $y$ decreases by 2 units.
B. The graph of the equation contains the points $(-1,-5),(2,-11)$, and $(4,-15)$.
C. The graph of the equation is a line that passes through the point $(0,-7)$ with a slope of -2 .
D. The graph of the equation contains the points $(0,-7),(1,-9)$, and $(3,-1)$.
2. Which inequality best describes the graph shown below?
A. $y>-\frac{2}{3} x+5$
B. $y<-\frac{3}{2} x+5$
C. $y<-\frac{2}{3} x+5$
D. $y>-\frac{3}{2} x+5$


What is the equation in standand form of the line that passes through the point $(1,24)$ and has a slope of -0.6 ?

F $3 x+5 y=125$
G $3 x+5 y=77$
H $3 x+5 y=123$

J $3 x+5 y=115$


1. Which equation describes the line that passes through the point $(4,7)$ and is parallel to the line represented by the equation $-3 x+y=4$ ?

A $y=-3 x+19$
B $\quad y=3 x-5$
C $y=\frac{1}{3} x+5 \frac{2}{3}$
D $y=-\frac{1}{3} x+8 \frac{1}{3}$
2. Write a function in slope-intercept form that represents a line that contains the point $(2,12)$ and has a slope of -3 ?
3. Which inequality best represents the graph shown below?

A $\quad x+4 y \geq 8$

B $\quad 4 x+y \geq 2$
C $\quad 4 x+y \leq 2$

D $\quad x+4 y \leq 8$

4. Which function includes the data set
$\{(-2,7),(4,4),(6,3)\} ?$
A $\quad y=-\frac{1}{2} x+6$
B $\quad y=-2 x+3$
C $\quad y=\frac{1}{2} x+8$
D $\quad y=2 x-4$
5. What are the intercepts of the linear function shown below?

A $(-3,0)$ and $(9,0)$
B $(-3,0)$ and $(0,9)$
C $(0,-3)$ and $(0,9)$
D $(0,-3)$ and $(9,0)$

6. Which of the graphs below best represent the inequality $x+2 y \leq 4$ ?

A

B


C


D

7. The table below shows various values for $x$ and $y$. Which equation best describes the relationship between $x$ and $y$ ?

A $\quad y=-3 x+5$

B $\quad y=-5 x-7$

C $\quad y=-x+17$

D $\quad y=3 x+41$

| $x$ | $y$ |
| :---: | :---: |
| -6 | 23 |
| -2 | 3 |
| 7 | -42 |
| 11 | -62 |

8. Which function includes the following set of ordered pairs $\{(1,3),(2,0),(3,-3)\}$ ?
A $y=-3 x$
C $y=-3 x+6$
B $y=\frac{-x}{3}$
D $\quad y=-\frac{x}{3}-4$

# meaning and changes of m:B 

Key words for SLOPE
Key words for $y$-intercept

| PROBlem | these are wrons because... | This is correct Because... |
| :---: | :---: | :---: |
| 1. |  |  |
|  |  |  |
|  |  |  |
| 2 |  |  |
|  |  |  |
|  |  |  |
| 3 |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| 4. |  |  |
|  |  |  |
|  |  |  |
| 5. |  |  |
|  |  |  |
|  |  |  |
| 6. |  |  |
|  | - |  |
|  |  |  |
|  |  |  |



1. The business manager at Affordable Plumbing calculates the total cost, $c$, to a customer by using the equation $c=62 h+38$, where $h$ is the number of hours of work performed. The business manager at Leak Free Plumbing calculates the total cost, $c$, to a customer by using the equation $c=58 h+45$, where $h$ is the number of hours of work performed. How does the graph of the equation used by Affordable Plumbing compare to the graph of the equation used by Leak Free Plumbing?

A The slope is the same, and the $y$-intercept is greater.
B The slope is greater, and the $y$-intercept is smaller.
C The slope is smaller, and the $y$-intercept is the same.
D The slope is greater, and the $y$-intercept is greater.
2. Mark and his friends are baking cookies for a bake sale. The graph below shows the total number of cookies they have compared to the number of hours they bake. How would the graph change if Mark and his friends were given 20 cookies when thev started hakind?


A The $y$-value of the $y$-intercept would increase.
$B$ The slope would increase.
C The $y$-value of the $y$-intercept would decrease.
D The slope would decrease.
3. Find the $x$ - and $y$-intercepts of $2 x+y=-5$.

An electrician charges a flat fee of $\$ 50$ plus an hourly rate to make a house call. The graph shows the total cost for a job based on the flat fee and the number of hours to complete the job.

4. If the electrician changed his flat fee to $\$ 60$, but kept his hourly rate the same, what would be the total charge for a job that took 3 hours?
5. If the electrician left his flat fee at $\$ 50$, but changed his hourly rate to $\$ 45$, what would be the total charge for a job that took 3 hours?
6. If the electrician changed his flat fee to $\$ 60$ and changed his hourly rate to $\$ 45$, what would be the total charge for a job that took 3 hours?
7. Which best describes the change in the graph of the function $f(x)=5 x+4 \frac{1}{4}$ if the $y$-intercept is changed to $7 \frac{1}{2}$, while the slope remains constant?

A The line shifts up $2 \frac{1}{2}$ units
$B$ The line shifts to the right $3 \frac{1}{4}$ units
C The line shifts up $3 \frac{1}{4}$ units
D The line shifts down $2 \frac{1}{2}$ units.

Types systems

|  |  |  |
| :--- | :--- | :--- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Problem 1: A truck is carrying 1500 pounds of cargo that occupies 138 cubic feet of space. A television weighs 50 pounds and occupies a space of 4 cubic feet. A microwave oven weighs 30 pounds and occupies a space of 3 cubic feet.

Problem 2: Mark has $\$ 4.95$ in quarters and dimes. He has 3 times as many dimes as quarters.

## Problem 3:

Inequality 1 :

Inequality 2 :

Give 3 solutions

Give 3 non solutions



1. Which ordered pair is the solution to the system of equations below?

$$
\begin{aligned}
& x+3 y=7 \\
& x+2 y=10
\end{aligned}
$$

A $\left(\frac{7}{2}, \frac{13}{4}\right)$
B $\left(\frac{7}{2},-3\right)$
C $(-2,3)$
D $(16,-3)$
2. Members of a senior class held a car wash to raise funds for their senior prom. They charged $\$ 3$ to wash a car and $\$ 5$ to wash a pick-up truck or a sport utility vehicle. If they earned a total of $\$ 275$ by washing a total of 75 vehicles, how many cars did they wash?

A 25
B 34
C 45
D 50
3. Manuel and Felicia are comparing how much money they have. Manuel states that he has \$250 and saves $\$ 150$ per week. Felicia states that she has \$1,650 and spends \$200 per week. Which system of equations can be used to determine $x$, the number of weeks, and $y$ the amount of money at the end of the week?
A $\quad \begin{aligned} y & =250 x+150 \\ y & =1650 x-200\end{aligned}$
B $\begin{aligned} & y=250+150 x \\ & y=1650-200 x\end{aligned}$
C $\begin{aligned} & y=250-150 x \\ & y=1650+200 x\end{aligned}$
D $\begin{aligned} & y=250-150 x \\ & y=1650-200 x\end{aligned}$
4. Given the two equations $2 x+3 y=12$ and $2 x-y=4$, what is the value of $x+y$ ?
A -5
B -1
C 1
D 5
5. To solve the linear system below, which substitution of unknowns is proper?

$$
\begin{aligned}
& 3 x-7 y=12 \\
& 5 x-y=-16
\end{aligned}
$$

A Substitute $5 x-16$ for $y$ in the first equation.
B Substitute $5 x+16$ for $y$ in the first equation.
C Substitute $5 x+12$ for $y$ in the first equation.
D Substitute $7 y-4$ for $x$ in the second equation.
6. The measure of angle $x$ is $15^{\circ}$ less than twice the measure of angle $y$.


Which system of equations will determine the measure of each angle?
$x+y=90$
A. $\begin{aligned} & x+y=90 \\ & x=y-15\end{aligned}$
C. $x=2 y-15$
B. $x+y=90$
$2 x=90$
B. $x=15-2 y$
$x=2 y-15$
D.
7. Which point is a solution of the system of linear inequalities?

$$
\begin{aligned}
& y<-2 x \\
& y>3 x+5
\end{aligned}
$$

A $(2,-1)$
B $(-4,1)$
C $(-1,4)$
D $(1,-2)$
8. At what point do the lines represented by the equations $2 x+y+1=0$ and $4 x+y-3=0$ intersect?

A $(2,5)$
B $(2,-5)$
C $(-1,1)$
D $(1,-1)$
9. Julie is planning to put a fence around a rectangular garden. The length of the garden is 3 feet more than 1.5 times its width. If Julie uses a total of 36 feet of fencing around the edge of the garden, what is the length of the garden?

A 6 ft
B $\quad 13.2 \mathrm{ft}$
C 12 ft
D 10.5 ft

## inteRpReting gRaphs

1. Four line segments are shown on the coordinate grid below. Which of the line segments has a slope of 0 ?

2. A graph of the relationship between the speed of a car in miles per hour and the car's approximate stopping distance in feet is shown below. What is the approximate stopping distance for a car traveling 70 miles per hour?
$\begin{array}{ll}\mathrm{J} & 350 \mathrm{ft} \\ \mathrm{K} & 250 \mathrm{ft} \\ \mathrm{L} & 325 \mathrm{ft} \\ \text { M } & 300 \mathrm{ft}\end{array}$

3. The graph shows the number of gallons of gas used by Maria's car as a function of the number of miles driven. About how many gallons of gas will Maria need for a 170-mile trip?

4. Hank wants to build a rectangular pigpen using 12 linear yards of fencing. The possible area in square yards, $A$, for this pigpen is described by the function $A=w(6-w)$, where $w$ represents the width in yards of the rectangular pen. The graph of this function is shown below.


Which statement best represents the information in this graph?

A The pigpen with the maximum area has a width of 6 yards.
B The pigpen with the maximum area has a width of 3 yards.
C The pigpen with the maximum area has a width of 9 yards.
D The pigpen with the maximum area has a width of 12 yards.
5. Jim recently opened a store. The graph below shows the store's weekly sales since it opened. What can be inferred from this graph?


P The store's sales have been increasing since it opened.
Q The store's sales increased for the first 5 weeks after it opened, remained constant the next week, and then decreased the last week shown.
R The store's sales increased for the first 2 weeks after it opened, but then they began to decrease.
S The store's sales increased for the first 5 weeks after it opened, but then they decreased the next 2 weeks.

1. John is 2 miles away from his house. The graph below shows the time it takes John to walk home.


According to the graph, during what time interval is John walking the fastest?
2. The graph below represents the relationship between the term, in seconds, an arrow is shot upward and its height, in feet.


From the time it was shot, how long does it take for the arrow to return to the ground, and what is its maximum height?

A 5 seconds, 450 feet
B 10 seconds, 450 feet
C 10 seconds, 500 feet
D 450 seconds, 10 feet
3. The graph of $f(x)=-\frac{1}{2} x^{2}-3 x+8$ is shown below. Which of the following statements appears to be true?


A The vertex is at $(-3,12)$.
B The axis of symmetry is $x=-3$.
C The zeros of the related function are $-8,2$, and 8 .
D The $y$-intercept is $(8,0)$.
4. Ryan is writing a composition for homework. He decides to keep track of the number of sentences he writes compared to the time in minutes he works. The graph below shows the data he collected.


At what rate does Ryan write his composition?
A 0.5 sentence per minute
B 1 sentence per minute
C 1.5 sentences per minute
D 2 sentences per minute
5. Look at the function that is graphed below.


What are the zero(s) of the function?
6. The graph below shows the temperature in a town over the course of one day.


During what time period did the temperature increase at the greatest rate?
quadRatics


innportant vocafulary:
Quadratatic Parent Function -

Vertex -
Line (Axis) of Symmetry -
Concavity -
X-intercepts -
Roots -
Solutions -
Zeroes -
Standard Form -
Discriminant -
Compression -
Translation -
6. The graph shows the height of a cannonball in terms of the time after it was fired


Describe the domain of the function shown in the graph.

Describe the range of the function shown in the graph.
7. What are the $x$-intercepts of the the graph of the quadratic function $f(x)=5 x^{2}+4 x-1$ ?
A. $1 / 5$ and -1
B. $-1 / 5$ and 1
C. 0 and -1
D. $-2 / 5$ and $7 / 5$
8. The graph of $y=3 x^{2}-2$ is shown below.


If the coefficient of $x^{2}$ is changed from 3 to another positive number to create a new function, how will the graph of the new function compare with the graph of the original function?
A. The $x$-intercepts of the new graph will be the same as the $x$-intercepts of the original function.
B. The vertex of the new graph will be different from the vertex of the original graph.
C. The new graph will be wider or narrower than the original graph.
D. The new graph will open in the opposite direction as the original graph

## general test taking tips

## calculator shortcuts

## Tables and Hidden Tables

1. 

The table below shows the average tuition per semester at a community college over a 20 -year period.

| Year | Average <br> Tuition |
| :---: | :---: |
| 1980 | $\$ 385$ |
| 1985 | $\$ 510$ |
| 1990 | $\$ 605$ |
| 1995 | $\$ 730$ |
| 2000 | $\$ 825$ |

If the trend continues, what is the best estimate of the tuition at this community college in 2005?
A. $\$ 920$
B. $\$ 985$
C. $\$ 950$
D. $\$ 930$

## Plot Points

The graph of a quadratic function is shown below.


Which statement about this graph is not true?
A The graph has a $y$-intercept at $(0,8)$.
B The graph has a maximum point at ( $-1,9$ ).
C The graph has an $x$-intercept at $(2,0)$.
D The graph has the $y$-axis as a line of symmetry.

## Factoring or Simplifying

1. Factor $x^{2}-x-6$
A. $(x+3)(x-2)$
B. $(x+3)(x+2)$
C. $(x-3)(x+2)$
D. $(x+1)(x-6)$
2. Factor $2 x^{2}-5 x-12$
A. $(2 x-3)(x+4)$
B. $(2 x+4)(x-3)$
C. $(2 x+3)(x-4)$
D. $(x+3)(x-4)$
3. Simplify $3(x+4)-2(5 x-1)$
A. $13 x+10$
B. $-7 x+14$
C. $13 x+14$
D. $-7 x+10$

## Straight-Up Calculator

1. Given $\begin{aligned} & 2 x+3 y=12 \\ & 2 x-y=4\end{aligned}$, what is the value of $\mathrm{x}+\mathrm{y}$ ?
A. -5
B. -1
C. 1
D. 5
2.How can the graph of $y=x^{2}+6$ be obtained from the graph of $y=x^{2}-8$ ?
A. Move the graph of $y=x^{2}-8$ up 6.
B. Move the graph of $y=x^{2}-8$ down 8
C. Move the graph of $y=x^{2}-8$ down 14 .
D. Move the graph of $y=x^{2}-8$ up 14 .

2. The graph of the function $y=\frac{1}{2} x-3$ is shown below. If the line is translated 2 units down, which equation will best describe the new line?
A.

$$
y=\frac{1}{2} x-1
$$

B. $y=\frac{1}{2} x+1$
C. $y=x-5$
D. $y=\frac{1}{2} x-5$

2. The table shows a set of values for $x$ and $y$.

| $\boldsymbol{x}$ | 3 | 1 | -2 | -3 | -7 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\boldsymbol{y}$ | -4 | -6 | -9 | -10 | -14 |

Which equation best represents this set of data?

A $y=x-1$
B $\quad y=x-7$
C $y=2 x$
D $\quad y=-x-1$
E $\quad y=x-2$
3. Martin arranged some cans of soup in a triangular pattern on a table. The top row had 1 can, the second row had 2 cans, and the third row 3 can, and so on. The arrangement is shown below.


Which equation gives the total number of cans in the arrangement, $T$, when the cans are stacked $n$ rows high?

A $\quad T=\frac{n(n-1)}{2}$
B $\quad T=3 n$
C $T=\frac{2(n+1)}{n}$
D $\quad T=\frac{n(n+1)}{2}$
E $\quad T=2 n(n-1)$
4. Which inequality best describes the graph below?

A $\quad x-y \leq-5$
B $\quad x+y \geq 5$
C $x+y \leq 5$
D $\quad x-y \leq 5$
E $\quad x+y \geq-5$

5. The equations of 2 lines are given as

$$
2 x-y=2
$$

$$
3 x+4 y=25
$$

What are the coordinates of the point of intersection?
A $\left(5 \frac{1}{2}, 9\right)$
B $(4,3)$
C $(3,4)$
D (3, -4)
E (-1,-4)
6. What is the value of $x$ in the following equation?

$$
2 x-(4 x-6)=0
$$

A -8
B -4
C $\quad-3$
D 3
E 4
7. The chart shows the prices of a medium pizza with different number of toppings

| Medium Pizza |  |
| :---: | :---: |
| Number of <br> Toppings | Total <br> Price |
| 1 | $\$ 5.50$ |
| 2 | $\$ 7.00$ |
| 3 | $\$ 8.50$ |
| 4 | $\$ 10.00$ |

Which equation shows the relationship between the total price, $P$, and the number of toppings, $t$ ?

A $\quad P=4 t+1.50$
B $\quad P=1.50 t+4$
C $P=t(4+1.50)$
D $P=1.50(4+t)$
E $\quad P=4(t+1.50)$ STAAR Quick Reference Sheet Algebra I EOC
49 Multiple Choice and 5 Griddable http://www.tea.state.tx.us/student.assessment/staar/

| Reporting Category 1: Functional Relationships (8) |  |  |
| :---: | :---: | :---: |
| A.1A | SS | describe independent and dependent quantities in functional relationships |
| A.1B | SS | gather and record data and use data sets to determine functional relationships between quantities |
| A.1C | SS | describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations |
| A.1D | RS | represent relationships among quantities using [concrete] models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities |
| A.1E | RS | interpret and make decisions, predictions, and critical judgments from functional relationships |
| Reporting Category 2: Properties and Attributes of Functions (12) |  |  |
| A.2A | SS | identify and sketch the general forms of linear $(y=x)$ and quadratic $\left(y=x^{2}\right)$ parent functions |
| A.2B | RS | identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete |
| A.2C | SS | interpret situations in terms of given graphs or create situations that fit given graphs |
| A.2D | RS | collect and organize data, make and interpret scatterplots (including recognizing positive, negative, or no correlation for data approximating linear situations), and model, predict, and make decisions and critical judgments in problem situations |
| A.3A | SS | use symbols to represent unknowns and variables |
| A.3B | SS | look for patterns and represent generalizations algebraically |
| A.4A | RS | find specific function values, simplify polynomial expressions, transform and solve equations, and factor as necessary in problem situations |
| A.4B | SS | use the commutative, associative, and distributive properties to simplify algebraic expressions |
| A.4C | SS | connect equation notation with function notation, such as $y=x+1$ and $f(x)=x+1$ |


| Reporting Category 3: Linear Functions (15) |  |  |
| :---: | :---: | :---: |
| A.5A | SS | determine whether or not given situations can be represented by linear functions |
| A.5B | SS | determine the domain and range for linear functions in given situations |
| A.5C | RS | use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions |
| A.6A | SS | develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations |
| A.6B | RS | interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs |
| A.6C | RS | investigate, describe, and predict the effects of changes in $m$ and $b$ on the graph of $y=m x+b$ |
| A.6D | SS | graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and $y$-intercept |
| A.6E | SS | determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations |
| A.6F | RS | interpret and predict the effects of changing slope and $y$-intercept in applied situations |
| A.6G | SS | relate direct variation to linear functions and solve problems involving proportional change |
| Reporting Category 4: <br> Linear Equations and Inequalities (10) |  |  |
| A.7A | SS | analyze situations involving linear functions and formulate linear equations or inequalities to solve problems |
| A.7B | RS | investigate methods for solving linear equations and inequalities using [concrete] models, graphs, and the properties of equality, select a method, and solve the equations and inequalities |
| A.7C | SS | interpret and determine the reasonableness of solutions to linear equations and inequalities |
| A.8A | SS | analyze situations and formulate systems of linear equations in two unknowns to solve problems |
| A.8B | RS | solve systems of linear equations using [concrete] models, graphs, tables, and algebraic methods |
| A.8C | SS | interpret and determine the reasonableness of solutions to systems of linear equations |


| Reporting Category 5: <br> Quadratic and Other Nonlinear <br> Functions (9) |  |  |
| :---: | :---: | :---: |
| A.9A | SS | determine the domain and range for <br> quadratic functions in given situations |
| A.9B | SS | investigate, describe, and predict the <br> effects of changes in $a$ on the graph of $y=$ <br> $a x^{2}+c$ |
| A.9C | SS | investigate, describe, and predict the <br> effects of changes in con the graph of $y=$ <br> ax + a |
| A.9D | RS | analyze graphs of quadratic functions and <br> draw conclusions |
| A.10A | RSS | solve quadratic equations using [concrete] <br> models, tables, graphs, and algebraic <br> methods |


| A.10B | SS | make connections among the solutions <br> (roots) of quadratic equations, the zeros of <br> their related functions, and the horizontal <br> intercepts (x-intercepts) of the graph of the <br> function |
| :--- | :--- | :--- |
| A.11A | SS | use patterns to generate the laws of <br> exponents and apply them in problem- <br> solving situations |
| A.11B | SS | analyze data and represent situations <br> involving inverse variation using [concrete] <br> models, tables, graphs, or algebraic <br> methods <br> mata |
| A.11C | SS | analyze data and represent situations <br> involving exponential growsth and decay <br> using [concrete] models, tables, graphs, or <br> algebraic methods |


| Reporting Categories | Number of Standards |  | Number of Questions |  |
| :--- | :--- | :---: | :---: | :---: |
| Readiness Standards | Total Number of Standards | 13 | $60 \%-65 \%$ | $32-35$ |
| Supporting Standards | Total Number of Standards | 26 | $35 \%-40 \%$ | $19-22$ |




