

Example Items

Algebra I

Algebra I Example Items are a **representative set** of items for the ACP. Teachers may use this set of items along with the test blueprint as guides to prepare students for the ACP. On the last page, the correct answer, content SE and SE justification are listed for each item.

*The specific part of an SE that an Example Item measures is **NOT** necessarily the only part of the SE that is assessed on the ACP.* None of these Example Items will appear on the ACP.

Teachers may provide feedback regarding Example Items.

(1) Download the [Example Feedback Form](#) and email it. The form is located on the homepage of Assessment.dallasisd.org.

OR

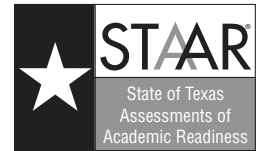
(2) To submit directly, click “Example Feedback” **after** you login to the [Assessment website](#).

First Semester

2018–2019

Code #: 1091

STAAR ALGEBRA I REFERENCE MATERIALS



FACTORING

Perfect square trinomials

$$a^2 + 2ab + b^2 = (a + b)^2$$
$$a^2 - 2ab + b^2 = (a - b)^2$$

Difference of squares

$$a^2 - b^2 = (a - b)(a + b)$$

PROPERTIES OF EXPONENTS

Product of powers

$$a^m a^n = a^{(m+n)}$$

Quotient of powers

$$\frac{a^m}{a^n} = a^{(m-n)}$$

Power of a power

$$(a^m)^n = a^{mn}$$

Rational exponent

$$a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

Negative exponent

$$a^{-n} = \frac{1}{a^n}$$

LINEAR EQUATIONS

Standard form

$$Ax + By = C$$

Slope-intercept form

$$y = mx + b$$

Point-slope form

$$y - y_1 = m(x - x_1)$$

Slope of a line

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

QUADRATIC EQUATIONS

Standard form

$$f(x) = ax^2 + bx + c$$

Vertex form

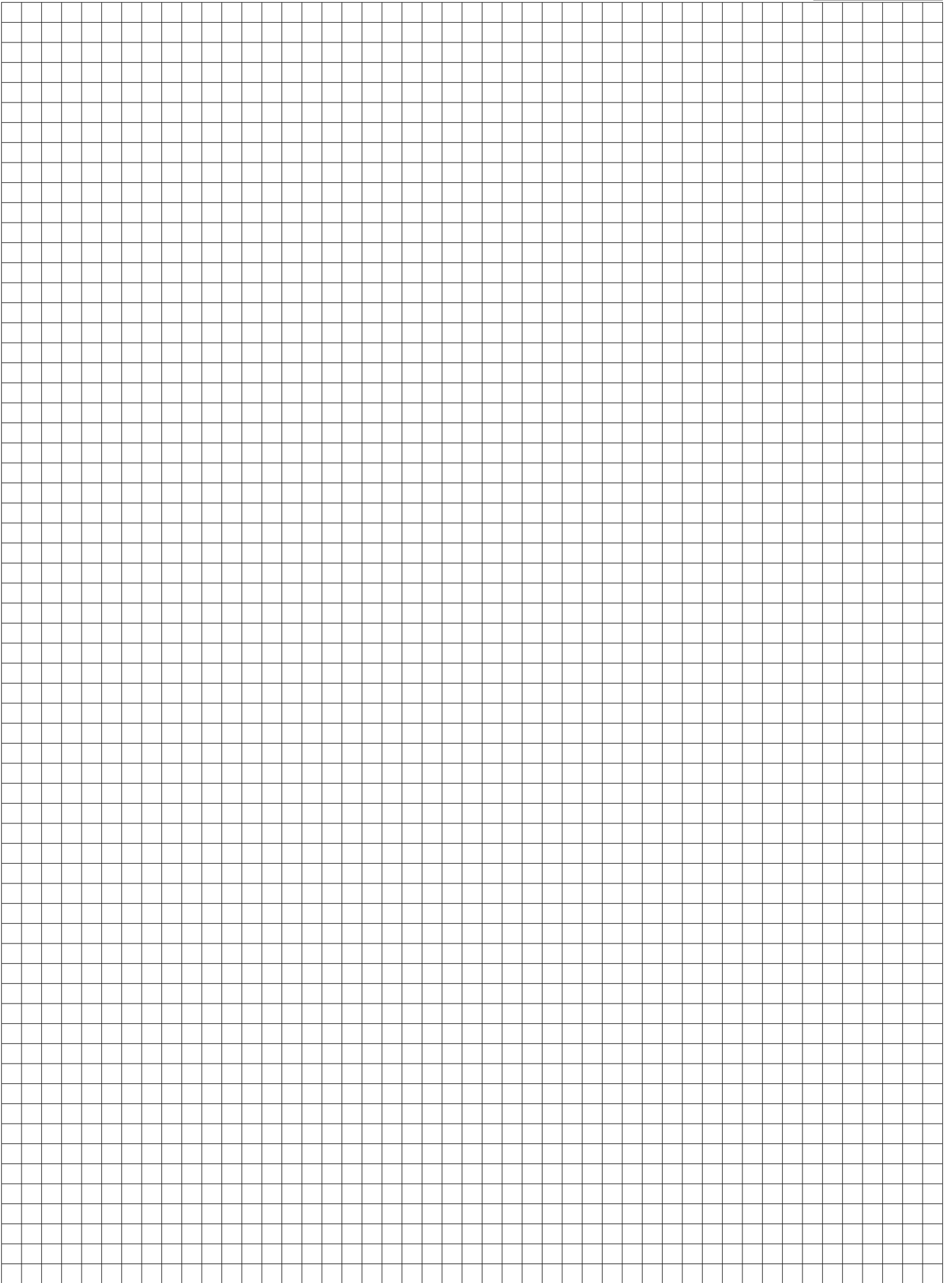
$$f(x) = a(x - h)^2 + k$$

Quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Axis of symmetry

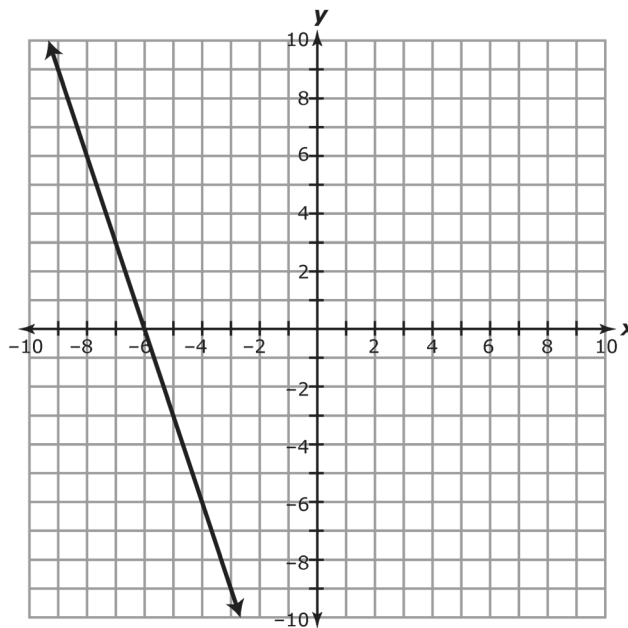
$$x = \frac{-b}{2a}$$



EXAMPLE ITEMS Algebra I, Sem 1

1

A function is graphed on the coordinate grid.



What is the y-intercept of this function?

+	•	•	•	•	•	•	•	•
-	0	0	0	0	0	0	0	0
	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3
	4	4	4	4	4	4	4	4
	5	5	5	5	5	5	5	5
	6	6	6	6	6	6	6	6
	7	7	7	7	7	7	7	7
	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9

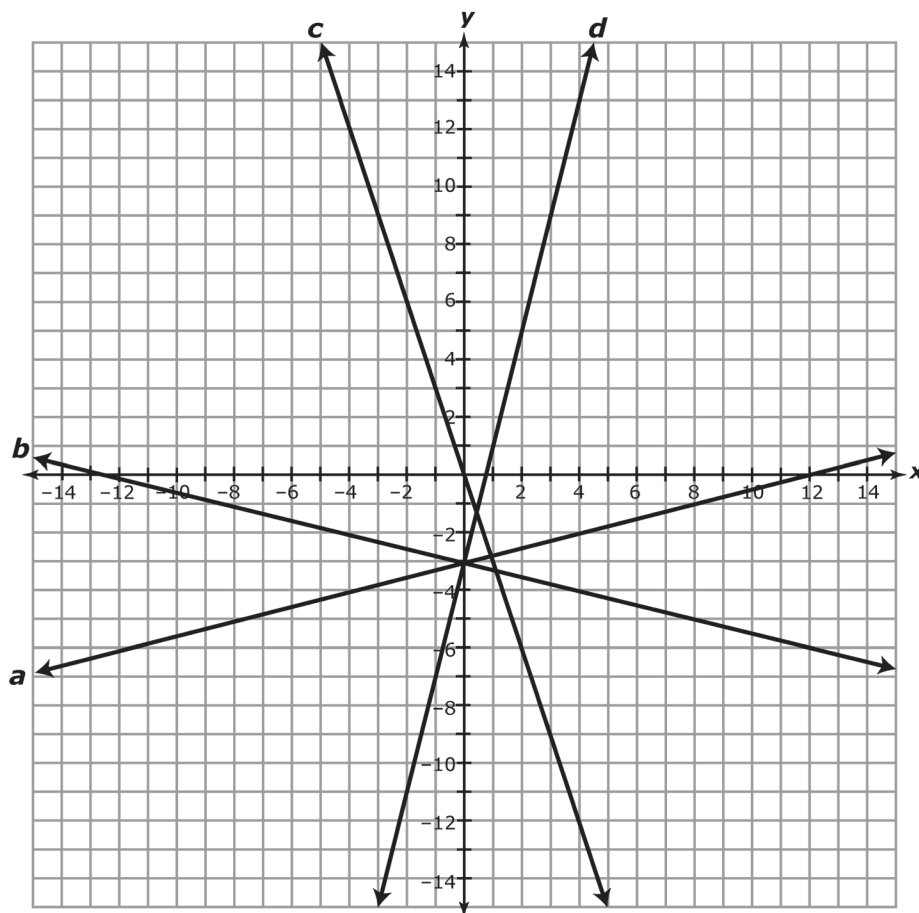
Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.

EXAMPLE ITEMS Algebra I, Sem 1

2 What is the equation of the line that passes through the point $(-4, 8)$ and has a slope of zero?

- A $x = -4$
- B $y = -4$
- C $x = 8$
- D $y = 8$

3 Lines **a**, **b**, **c**, and **d** are graphed on the same coordinate grid.



Which line represents a linear equation with a slope of $-\frac{1}{4}$ and a y-intercept of -3 ?

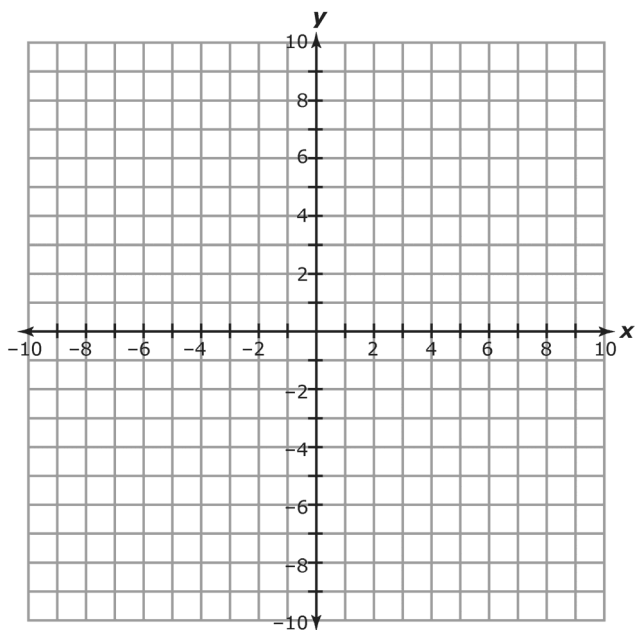
- A Line **a**
- B Line **b**
- C Line **c**
- D Line **d**

EXAMPLE ITEMS Algebra I, Sem 1

4 Which expression is equivalent to $10x^2 - x - 2$?

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

5 A coordinate grid can be used to find the slope of a line.



What is the slope of the line that passes through the points $(-4, -4)$ and $(6, 4)$?

- A $-\frac{5}{4}$
- B $-\frac{4}{5}$
- C $\frac{4}{5}$
- D $\frac{5}{4}$

EXAMPLE ITEMS Algebra I, Sem 1

6 What is the slope of the line represented by the equation $2x + 4y = 5$?

A -2

B $-\frac{1}{2}$

C $\frac{1}{2}$

D 2

7 The Cowboys High School Band Boosters are selling candy bars and chips at the basketball tournament to raise money for their band competition. The candy bars sell for \$1.00 and the chips sell for \$.50. They have 575 items ready to sell and expect to make \$500 on the sale of all of the items. How many candy bars do they have ready to sell?

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.

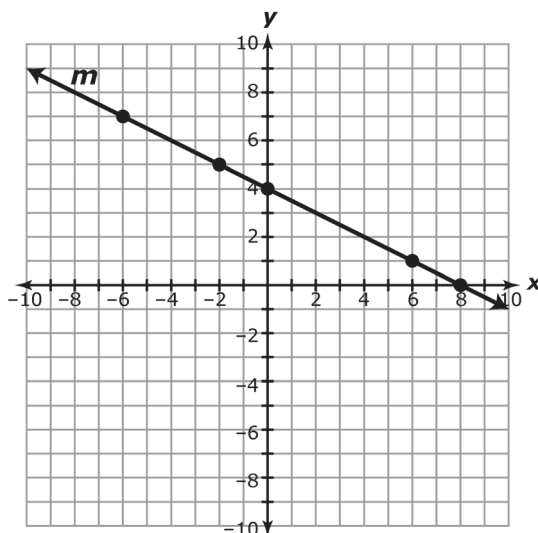
+	•	•	•	•	•	•	•	•
-	0	0	0	0	0	0	0	0
	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3
	4	4	4	4	4	4	4	4
	5	5	5	5	5	5	5	5
	6	6	6	6	6	6	6	6
	7	7	7	7	7	7	7	7
	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9

EXAMPLE ITEMS Algebra I, Sem 1

- 8 Nellie has \$24 to spend on friendship bracelets. Each bracelet costs \$4. The function $f(b) = 24 - 4b$ represents the amount of money Nellie has left, $f(b)$, after purchasing b bracelets. What is the range for this situation?

- A $0 \leq b \leq 6$
- B $0 \leq f(b) \leq 24$
- C $\{0, 1, 2, 3, 4, 5, 6\}$
- D $\{0, 4, 8, 12, 16, 20, 24\}$

- 9 Line m is shown on the coordinate grid.

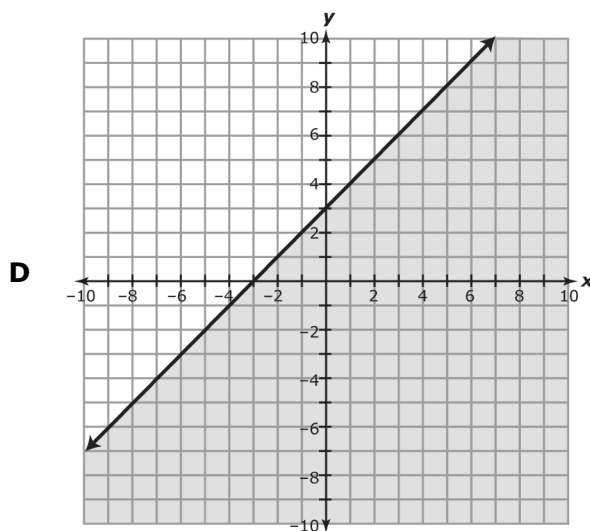
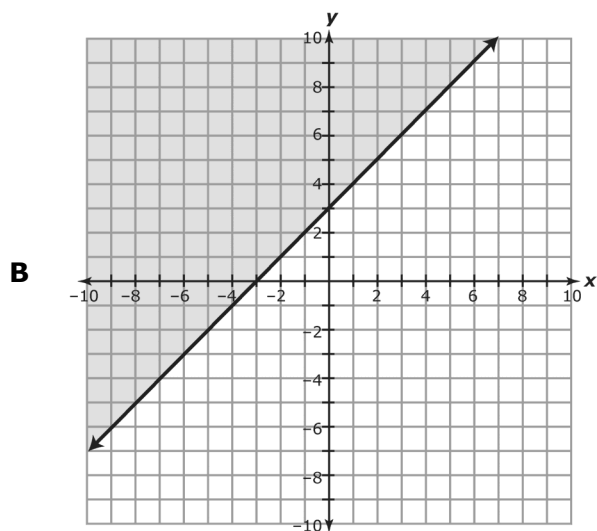
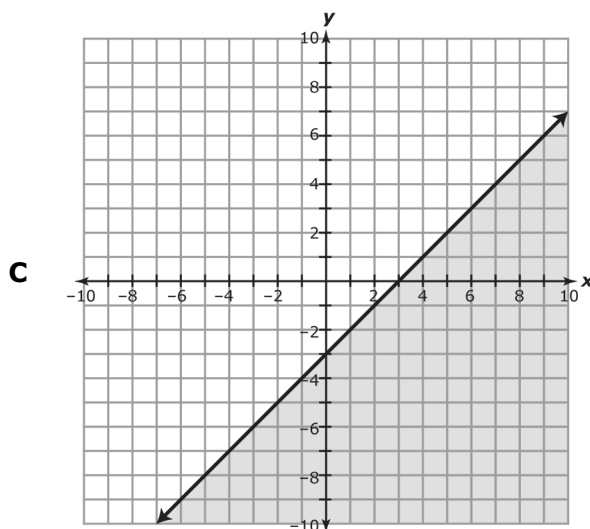
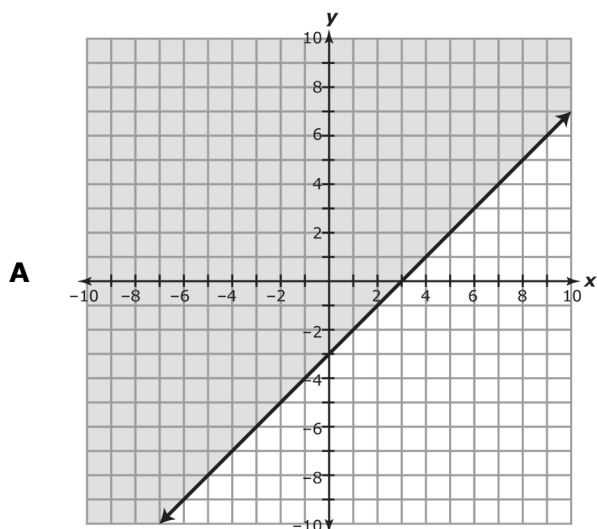


What is the equation of the line that contains point $(6, 4)$ and is parallel to line m ?

- A $y = -2x + 16$
- B $y = 2x - 8$
- C $y = -\frac{1}{2}x + 7$
- D $y = \frac{1}{2}x + 1$

EXAMPLE ITEMS Algebra I, Sem 1

- 10 Which graph represents the inequality $y - 3 \geq x$?

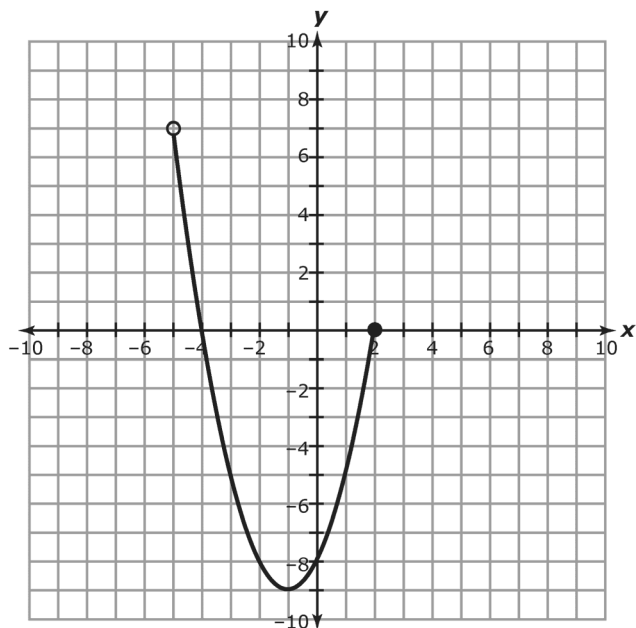


- 11 Jose bought a 20-pound bag of food for his dog. He fed his dog one-half of a pound of dog food each day. Which equation is used to determine, y , the amount of dog food that remains at the end of each day, x ?

- A** $y = 20 - 0.5x$
- B** $y = 20 + 0.5x$
- C** $y = 20x - 0.5$
- D** $y = 20x + 0.5$

EXAMPLE ITEMS Algebra I, Sem 1

- 12** A quadratic function is shown on the coordinate grid.



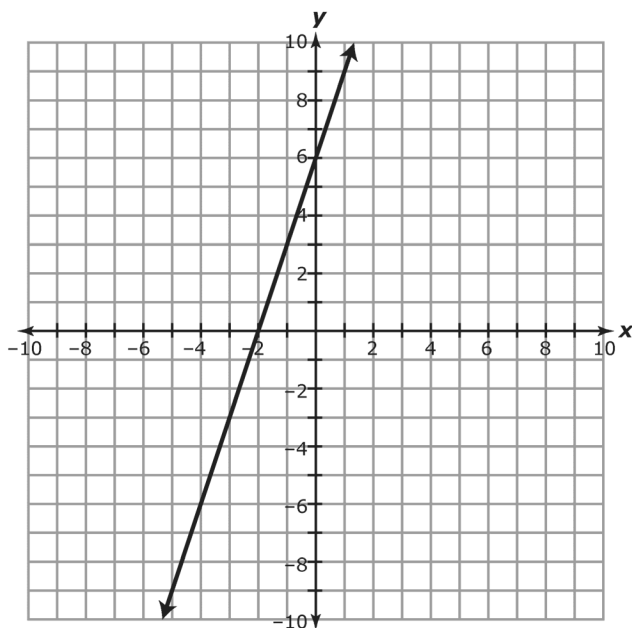
What is the domain of the function?

- A** $-9 < x \leq 7$
- B** $-5 < x \leq 2$
- C** $-5 \leq x < 2$
- D** $-9 \leq x < 7$
- 13** The value of r varies directly with s . If $r = -\frac{1}{2}$ when $s = 5$, which direct variation equation represents this relationship?
- A** $r = -10s$
- B** $r = 10s$
- C** $r = \frac{1}{10}s$
- D** $r = -\frac{1}{10}s$

EXAMPLE ITEMS Algebra I, Sem 1

14

A line is graphed on the coordinate grid as shown.



Which table shows the same rate of change as the line in the graph?

A

x	y
-9	2
-8	5
-7	8
-6	11
-5	14

C

x	y
-6	3
-3	4
0	5
3	6
6	7

B

x	y
-4	3
-2	-3
0	-9
2	-15
4	-21

D

x	y
2	3
5	6
8	9
11	12
14	15

15

What value of m makes the equation $\frac{5}{2}(4m - 8) - 2(6m - 7) = -10$ true?

A -7

B -6

C 2

D 7

EXAMPLE ITEMS Algebra I, Sem 1

- 16 What value of g makes the equation $2g + 6 - 14g = -6(g - 5)$ true?

+	0	0	0	0	0	0	0
-	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.

- 17 Melody performed research for an engineering class in college. She took a sample of metal from a liquid nitrogen bath and placed it in a special oven. She then measured the temperature of the metal. The table shows the data Melody collected at different times.

Time (min.)	Temperature (°F)
4	-100
8	160
12	420

What is the rate of change in the temperature of Melody's metal sample?

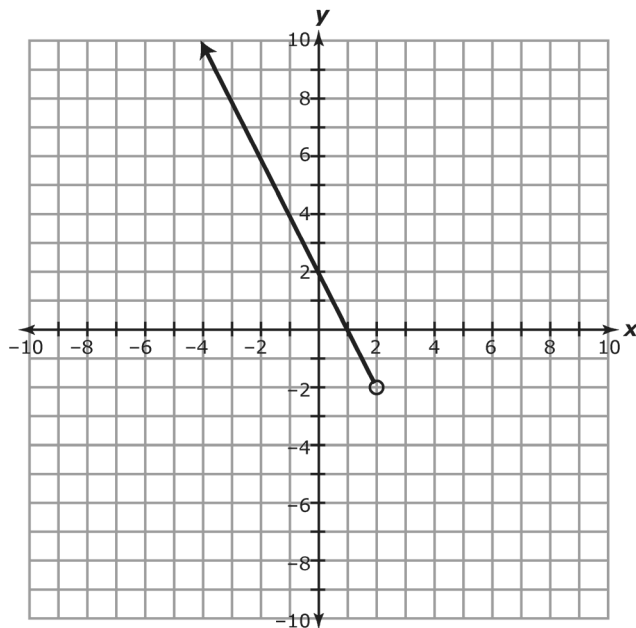
- A -25 °F/min.
B 40 °F/min.
C 65 °F/min.
D 260 °F/min.
- 18 Which expression is equivalent to $(216a^{12}b^6)^{\frac{1}{3}}$?

- A $6a^4b^2$
B $6a^9b^3$
C $72a^4b^2$
D $72a^9b^3$

EXAMPLE ITEMS Algebra I, Sem 1

19

The graph of a function is shown.



What is the domain of this function?

- A $\{x \mid x > -2\}$
- B $\{x \mid x < 2\}$
- C $\{y \mid y > -2\}$
- D $\{y \mid y < 2\}$

20

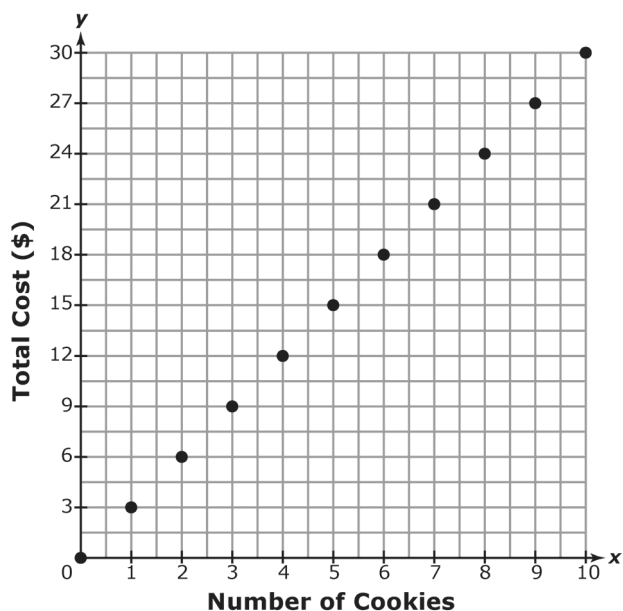
After graduation, Duke's grandfather spent \$158.81 taking the entire family out to eat at a buffet. Adults ate for \$8.99 and children ate for \$6.99. The number of adults was one more than twice the number of children. Which system of equations is used to find a , the number of adults, and c , the number of children in Duke's family?

- A $8.99a + 6.99c = 158.81$
 $a = 2c + 1$
- B $6.99a + 8.99c = 158.81$
 $c = 2a + 1$
- C $8.99a + 6.99c = 318.62$
 $c = 2a + 1$
- D $8.99a - 6.99c = 158.81$
 $a = 2c + 1$

EXAMPLE ITEMS Algebra I, Sem 1

21

The graph shows how much customers pay for cookies at a local bakery.



What is the range of the function for this situation?

- A $0 \leq x \leq 10$
- B $\{0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30\}$
- C $0 \leq y \leq 30$
- D $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

22 What is the equation of the line that is perpendicular to $y + 2 = \frac{3}{4}x - 8$ and contains the point $(-12, 1)$?

- A $y = \frac{3}{4}x - 8$
- B $y = -\frac{4}{3}x - 15$
- C $y = -\frac{3}{4}x - 8$
- D $y = \frac{4}{3}x + 17$

EXAMPLE ITEMS Algebra I, Sem 1

- 23** Andrew owns a plumbing company. The table shows the total amount charged based on the number of hours it takes to complete a job.

Number of Hours, x	Total Amount Charged, y
1	\$105
2	\$150
3	\$195
4	\$240

Which equation best represents this situation?

- A** $y = 45x + 60$
- B** $y = 60x + 45$
- C** $y = 45x$
- D** $y = 105x$
- 24** Albert and Mae watched a motorcycle club convoy whiz by their car during their Spring Break road trip. The club members were riding traditional two-wheeled motorcycles as well as three-wheeled tricycles. Albert counted 38 total cycles while Mae counted 89 total wheels. How many traditional motorcycles were in the convoy?
- A** 5
- B** 13
- C** 25
- D** 38

EXAMPLE ITEMS Algebra I Key, Sem 1

Item#	Key	SE	SE Justification
1	-18	A.3C	Identify key features of linear functions, including y -intercept, in mathematical problems.
2	D	A.2G	Graph linear functions on the coordinate plane and identify key features, y -intercept and slope, in mathematical problems.
3	B	A.3C	Graph linear functions on the coordinate plane and identify key features, y -intercept and slope, in mathematical problems.
4	A	A.10E	Factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, of degree two.
5	C	A.3A	Determine the slope of a line given two points on the line.
6	B	A.3A	Determine the slope of a line given an equation written in various forms, including $Ax + By = C$.
7	425	A.5C	Solve systems of two linear equations with two variables for real-world problems.
8	D	A.2A	Determine reasonable range values for real-world situations (discrete).
9	C	A.2E	Write the equation of a line that contains a given point and is parallel to a given line.
10	B	A.3D	Graph the solution set of linear inequalities in two variables on the coordinate plane.
11	A	A.2C	Write linear equations in two variables given a verbal description.
12	B	A.6A	Determine the domain of quadratic functions and represent the domain using inequalities.
13	D	A.2D	Write equations involving direct variation.
14	A	A.3B	Calculate the rate of change of a linear function represented tabularly, graphically, in context of mathematical problems.
15	C	A.5A	Solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.
16	-4	A.5A	Solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.
17	C	A.3B	Calculate the rate of change of a linear function represented tabularly in context of real-world problems.
18	A	A.11B	Simplify algebraic expressions using the laws of exponents, including integral and rational exponents.
19	B	A.2A	Determine the domain of a linear function in mathematical problems; represent domain using inequalities.
20	A	A.2I	Determine reasonable range values for real-world situations...discrete.
21	B	A.2A	Write systems of two linear equations given a verbal description.
22	B	A.2F	Write the equation of a line that contains a given point and is perpendicular to a given line.
23	A	A.2C	Write linear equations in two variables given a table of values.
24	C	A.5C	Solve systems of two linear equations with two variables for real-world problems.