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 the Assessment website: https://assessment.dallasisd.org.

OR

(2) To submit directly, click "Example Feedback – online form" **after** you click the Example Items link under ACP Resources on the ACP tab on the Assessment website.

First Semester
2020–2021
Code #: 1091

STAAR ALGEBRA I REFERENCE MATERIALS

STAAR State of Texas Assessments of Academic Readiness

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 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.

2 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 $y = 45x$

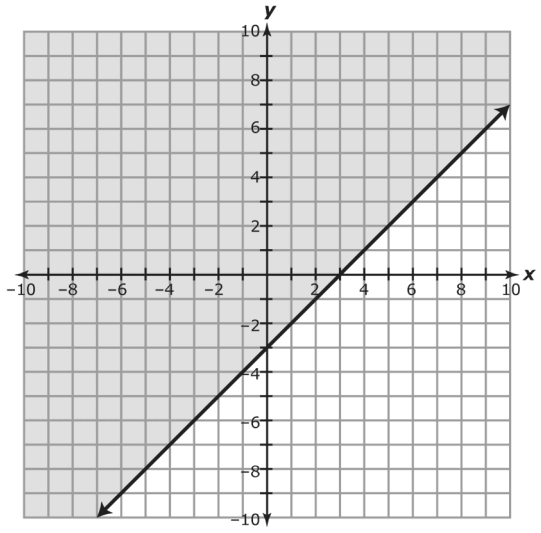
D $y = 105x$

Dallas ISD - Example Items

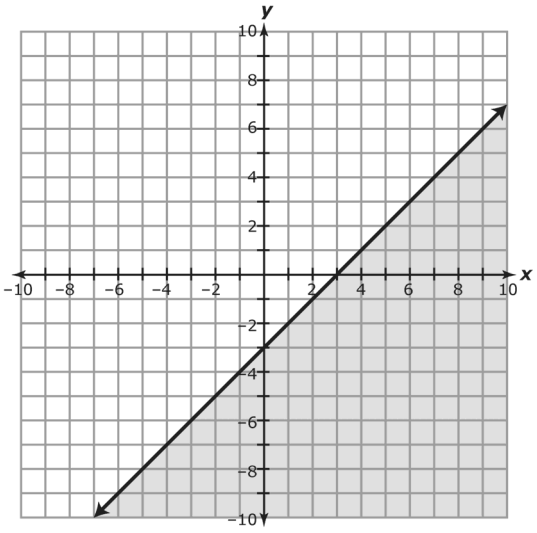
EXAMPLE ITEMS Algebra I, Sem 1

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

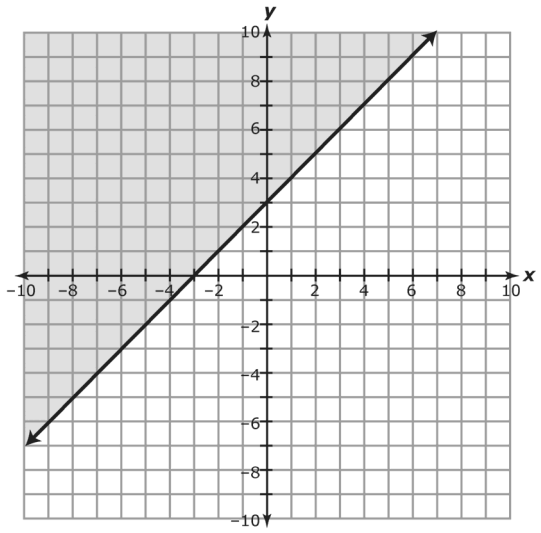
A



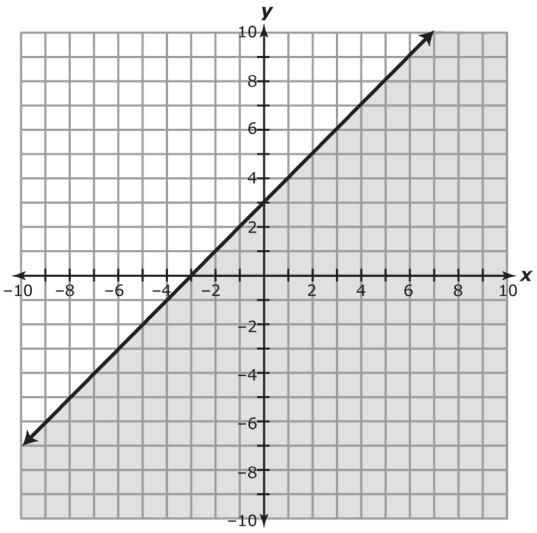
C



B



D



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

A $x = -4$

B $y = -4$

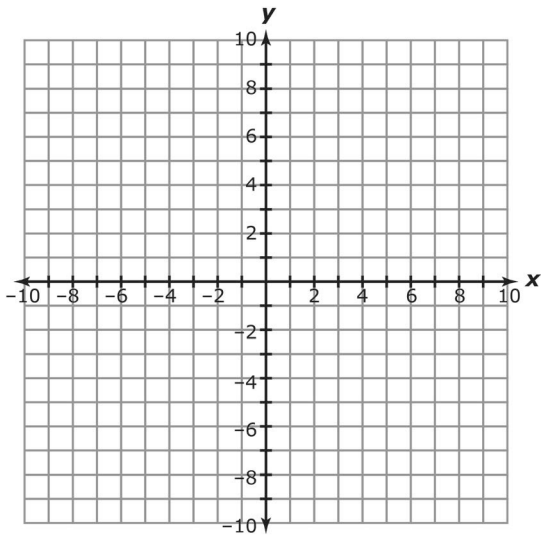
C $x = 8$

D $y = 8$

Dallas ISD - Example Items

EXAMPLE ITEMS Algebra I, Sem 1

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 $\frac{5}{4}$

6 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 $r = 10s$

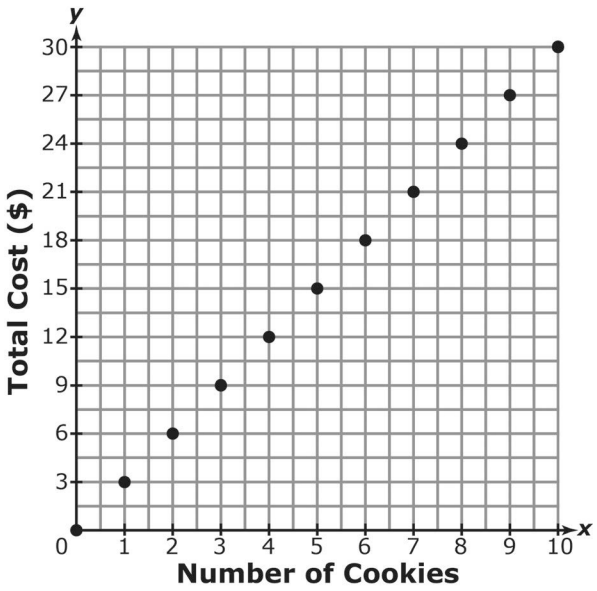
C $r = \frac{1}{10}s$

D $r = -\frac{1}{10}s$

Dallas ISD - Example Items

EXAMPLE ITEMS Algebra I, Sem 1

7 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}

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

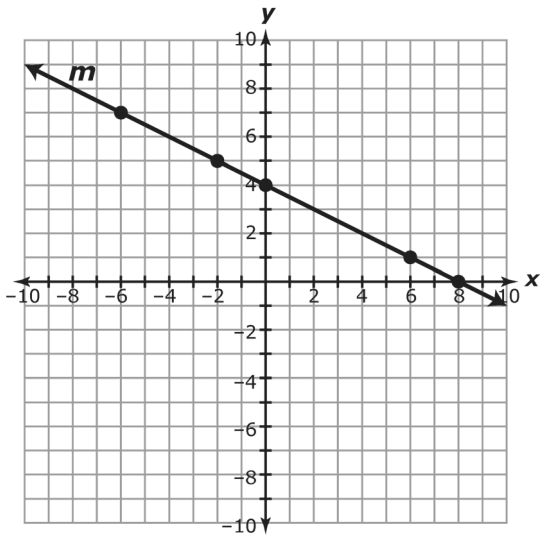
Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.

⊕	⊙	⊙	⊙	⊙	⊙	⊙	⊙
⊖	0	0	0	0	0	0	0
	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

Dallas ISD - Example Items

EXAMPLE ITEMS Algebra I, Sem 1

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

10 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 $6.99a + 8.99c = 158.81$
$c = 2a + 1$

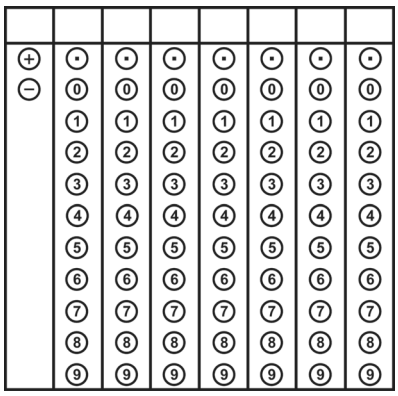
C $8.99a + 6.99c = 318.62$
$c = 2a + 1$

D $8.99a - 6.99c = 158.81$
$a = 2c + 1$

EXAMPLE ITEMS Algebra I, Sem 1

11 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.



12 What is the equation of the line that is perpendicular to $3x - 6y = 2$ and contains the point $(-2, -5)$?

A $y + 5 = -2(x + 2)$

B $y - 5 = -2(x - 2)$

C $y + 5 = \frac{1}{2}(x + 2)$

D $y + 5 = \frac{1}{2}(x - 2)$

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

A -2

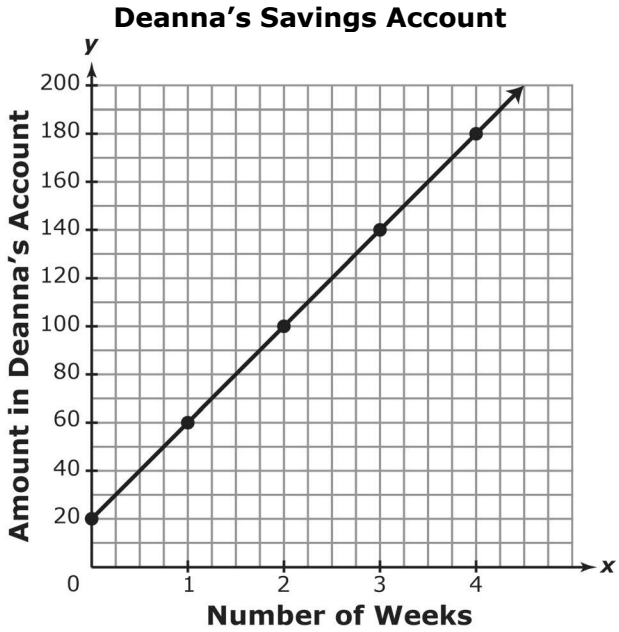
B $-\frac{1}{2}$

C $\frac{1}{2}$

D 2

EXAMPLE ITEMS Algebra I, Sem 1

14 Robert has $60 in his savings account and he deposits $30 each week. The graph shows the amount of money his sister Deanna has in her savings account.



Which system of equations is used to find x, the number of weeks it will take for them to have the same amount, y, in their savings accounts?

A $y = 60x + 30$
$y = 20x + 40$

B $y = 60x + 30$
$y = 20 + 40x$

C $y = 60 + 30x$
$y = 20x + 40$

D $y = 60 + 30x$
$y = 20 + 40x$

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

A –7

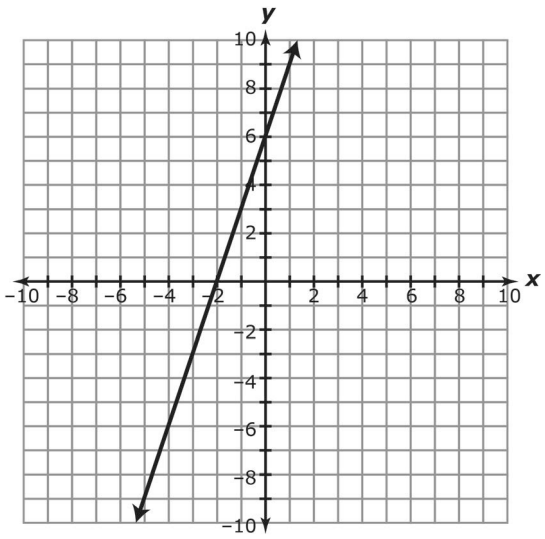
B –6

C 2

D 7

EXAMPLE ITEMS Algebra I, Sem 1

16 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

17 Which ordered pair represents a solution to the inequality $x + 3y < -12$?

A (−5, 3)

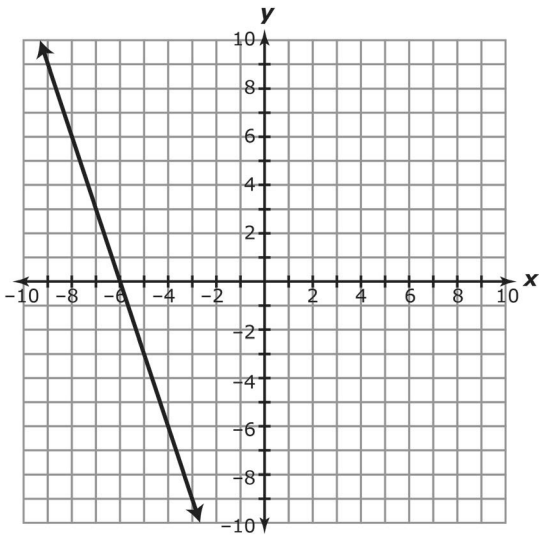
B (3, −5)

C (−9, 1)

D (−1, −9)

EXAMPLE ITEMS Algebra I, Sem 1

18 A function is graphed on the coordinate grid.



What is the *y*-intercept of this function?

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
	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

19 The value of *y* varies directly with *x*. If $x = 8$ when $y = 32$, what is the value of *x* when $y = 112$?

A 4

B 14

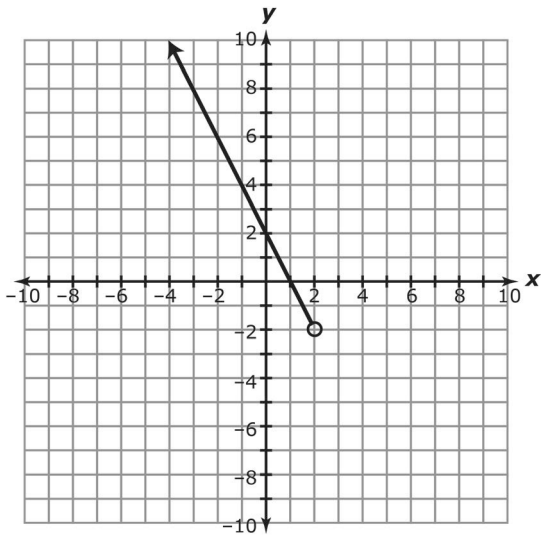
C 28

D 448

Dallas ISD - Example Items

EXAMPLE ITEMS Algebra I, Sem 1

20 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 $\{y \mid y < 2\}$

21 What is the equation of the line passes through the point (−6, 6) and is parallel to the line $y = \frac{2}{3}x - 1$?

A $y = \frac{2}{3}x + 10$

B $y = \frac{2}{3}x - 10$

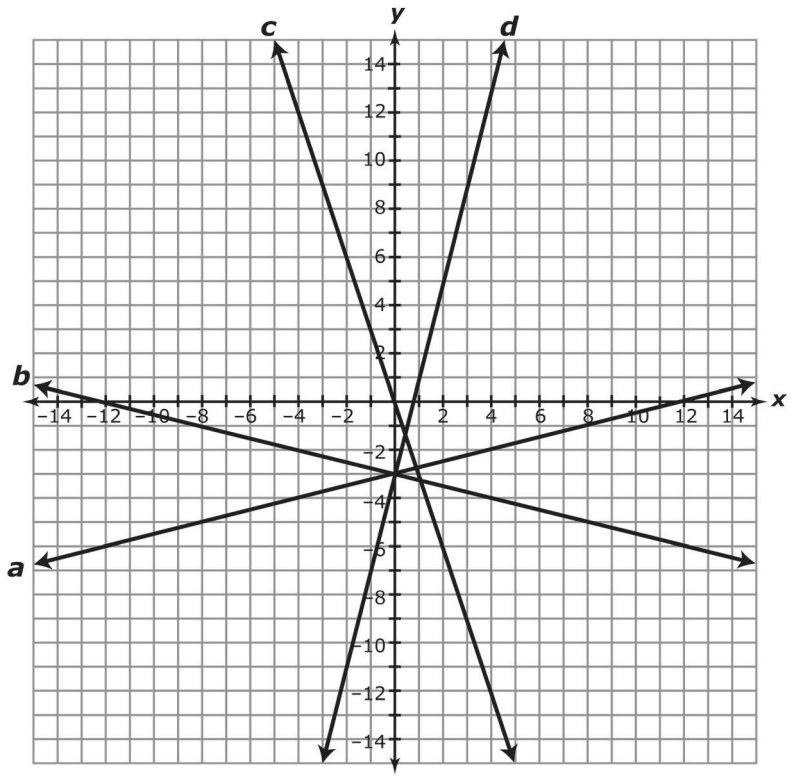
C $y = -\frac{3}{2}x - 3$

D $y = -\frac{3}{2}x + 3$

Dallas ISD - Example Items

EXAMPLE ITEMS Algebra I, Sem 1

22 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***

23 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

Dallas ISD - Example Items

24 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 $y = \frac{4}{3}x + 17$

25 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 $\{0, 4, 8, 12, 16, 20, 24\}$

26 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 Key, Sem 1

Item#	Key	SE	SE Justification
1	C	A.3B	Calculate the rate of change of a linear function represented tabularly in context of real-world problems.
2	A	A.2C	Write linear equations in two variables given a table of values.
3	B	A.3D	Graph the solution set of linear inequalities in two variables on the coordinate plane.
4	D	A.2G	Write an equation of a line that is parallel to the x- or y-axis and determine whether the slope of the line is zero or undefined.
5	C	A.3A	Determine the slope of a line given two points on the line.
6	D	A.2D	Write equations involving direct variation.
7	B	A.2A	Determine reasonable range values for real-world situations…discrete.
8	–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.
9	C	A.2E	Write the equation of a line that contains a given point and is parallel to a given line.
10	A	A.2I	Write systems of two linear equations given a verbal description.
11	425	A.5C	Solve systems of two linear equations with two variables for real-world problems.
12	A	A.2F	Write the equation of a line that contains a given point and is perpendicular to a given line.
13	B	A.3A	Determine the slope of a line given an equation written in various forms, including $Ax + By = C$.
14	D	A.2I	Write systems of two linear equations given a graph and a verbal description.
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	A	A.3B	Calculate the rate of change of a linear function represented tabularly, graphically, in context of mathematical problems.
17	D	A.3D	Graph the solution set of linear inequalities in two variables on the coordinate plane.
18	–18	A.3C	Identify key features of linear functions, including *y*-intercept, in mathematical problems.
19	C	A.2D	Solve equations involving direct variation.
20	B	A.2A	Determine the domain of a linear function in mathematical problems; represent domain using inequalities.
21	A	A.2E	Write the equation of a line that contains a given point and is parallel to a given line.
22	B	A.3C	Graph linear functions on the coordinate plane and identify key features, *y*-intercept and slope, in mathematical problems.

Item#	Key	SE	SE Justification
23	C	A.5C	Solve systems of two linear equations with two variables for real-world problems.
24	B	A.2F	Write the equation of a line that contains a given point and is perpendicular to a given line.
25	D	A.2A	Determine reasonable range values for real-world situations (discrete).
26	A	A.2C	Write linear equations in two variables given a verbal description.