

# Example Items

## Mathematics 7 Pre-AP

**Mathematics 7 Pre-AP 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](http://Assessment.dallasisd.org).

OR

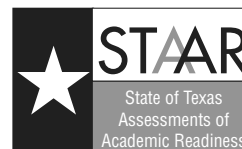
(2) To submit directly, click “Example Feedback” **after** you login to the [Assessment website](#).

First Semester

2018–2019

Code #: 1171

# STAAR GRADE 7 MATHEMATICS REFERENCE MATERIALS



## LINEAR EQUATIONS

Slope-intercept form

$$y = mx + b$$

Constant of proportionality

$$k = \frac{y}{x}$$

## CIRCUMFERENCE

Circle

$$C = 2\pi r$$

or

$$C = \pi d$$

## AREA

Triangle

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

Rectangle or parallelogram

$$A = bh$$

Trapezoid

$$A = \frac{1}{2}(b_1 + b_2)h$$

Circle

$$A = \pi r^2$$

## VOLUME

Prism

$$V = Bh$$

Pyramid

$$V = \frac{1}{3}Bh$$

## ADDITIONAL INFORMATION

Pi

$$\pi \approx 3.14$$

or

$$\pi \approx \frac{22}{7}$$

Distance

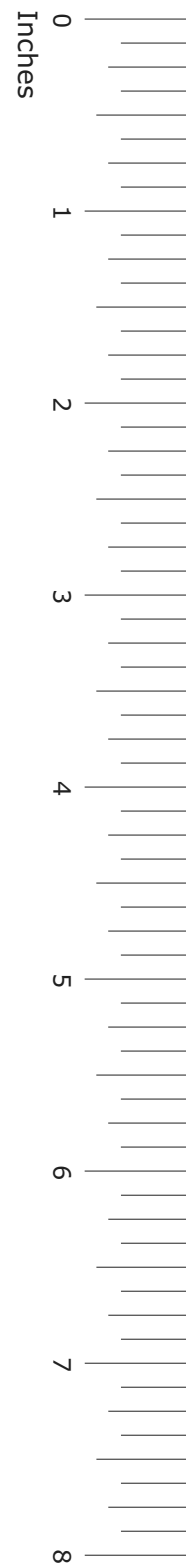
$$d = rt$$

Simple interest

$$I = Prt$$

Compound interest

$$A = P(1 + r)^t$$



# STAAR GRADE 7 MATHEMATICS REFERENCE MATERIALS

## LENGTH

### Customary

1 mile (mi) = 1,760 yards (yd)

1 yard (yd) = 3 feet (ft)

1 foot (ft) = 12 inches (in.)

### Metric

1 kilometer (km) = 1,000 meters (m)

1 meter (m) = 100 centimeters (cm)

1 centimeter (cm) = 10 millimeters (mm)

## VOLUME AND CAPACITY

### Customary

1 gallon (gal) = 4 quarts (qt)

1 quart (qt) = 2 pints (pt)

1 pint (pt) = 2 cups (c)

1 cup (c) = 8 fluid ounces (fl oz)

### Metric

1 liter (L) = 1,000 milliliters (mL)

## WEIGHT AND MASS

### Customary

1 ton (T) = 2,000 pounds (lb)

1 pound (lb) = 16 ounces (oz)

### Metric

1 kilogram (kg) = 1,000 grams (g)

1 gram (g) = 1,000 milligrams (mg)

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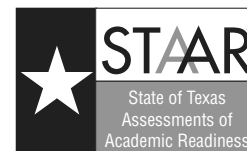
2

1

0

Centimeters

# STAAR GRADE 8 MATHEMATICS REFERENCE MATERIALS



## LINEAR EQUATIONS

Slope-intercept form  $y = mx + b$

Direct variation  $y = kx$

Slope of a line  $m = \frac{y_2 - y_1}{x_2 - x_1}$

## CIRCUMFERENCE

Circle  $C = 2\pi r$  or  $C = \pi d$

## AREA

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

Rectangle or parallelogram  $A = bh$

Trapezoid  $A = \frac{1}{2}(b_1 + b_2)h$

Circle  $A = \pi r^2$

## SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

## VOLUME

Prism or cylinder  $V = Bh$

Pyramid or cone  $V = \frac{1}{3}Bh$

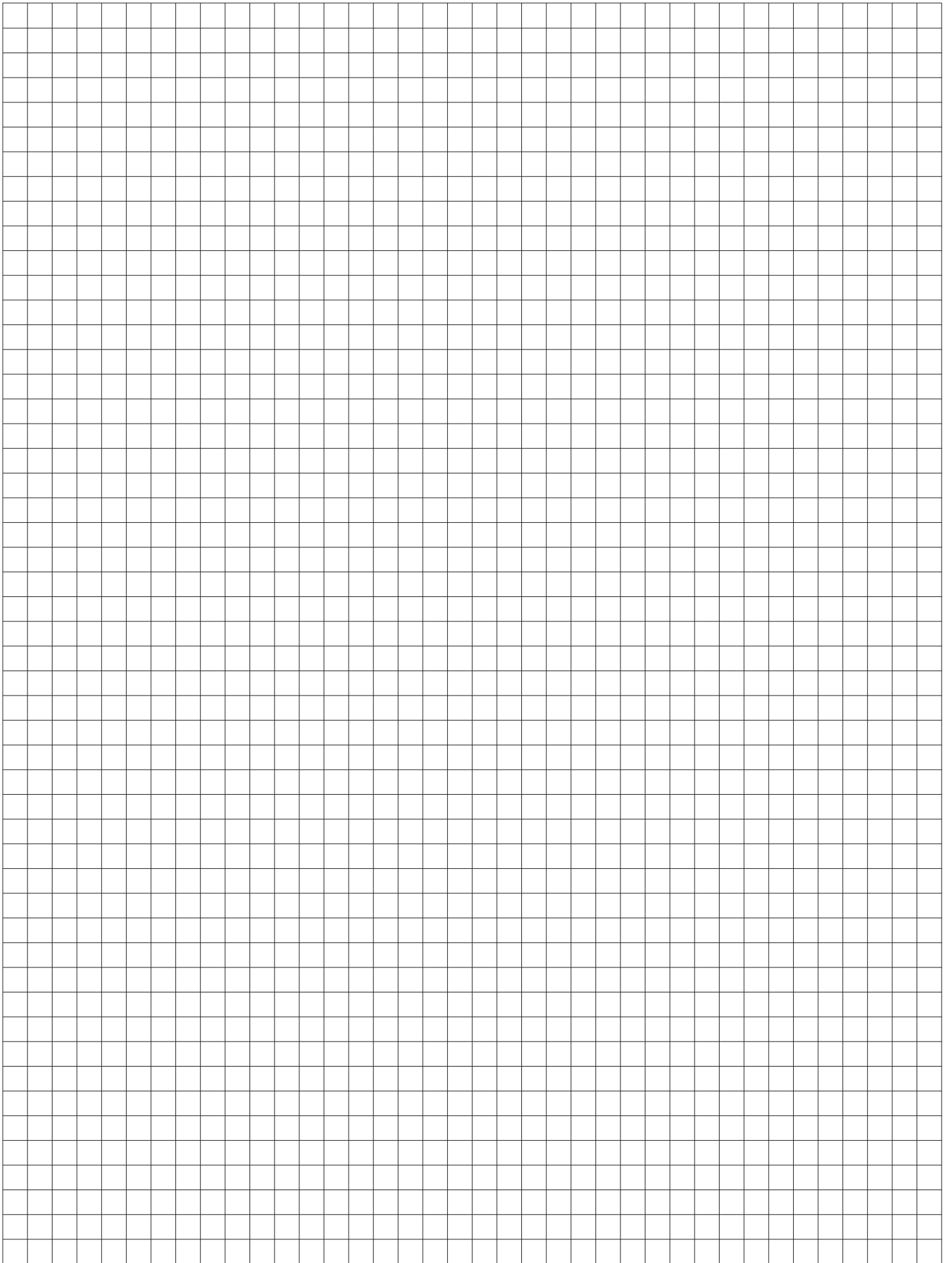
Sphere  $V = \frac{4}{3}\pi r^3$

## ADDITIONAL INFORMATION

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

Simple interest  $I = Prt$

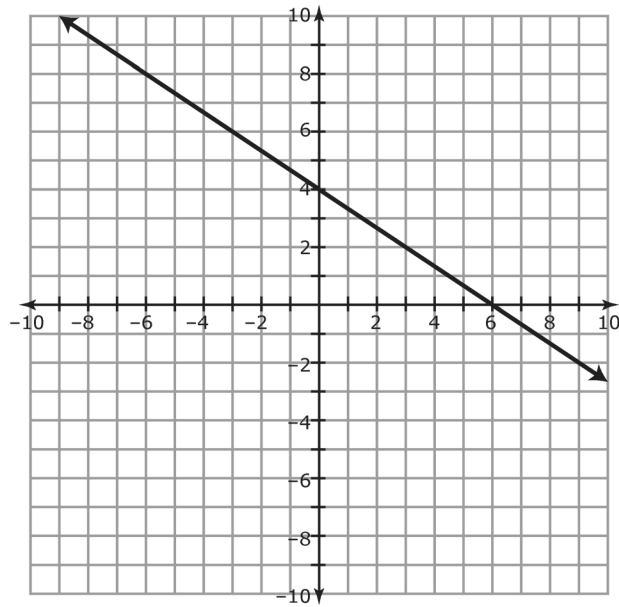
Compound interest  $A = P(1 + r)^t$



## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

1

The graph of a linear relationship is shown.



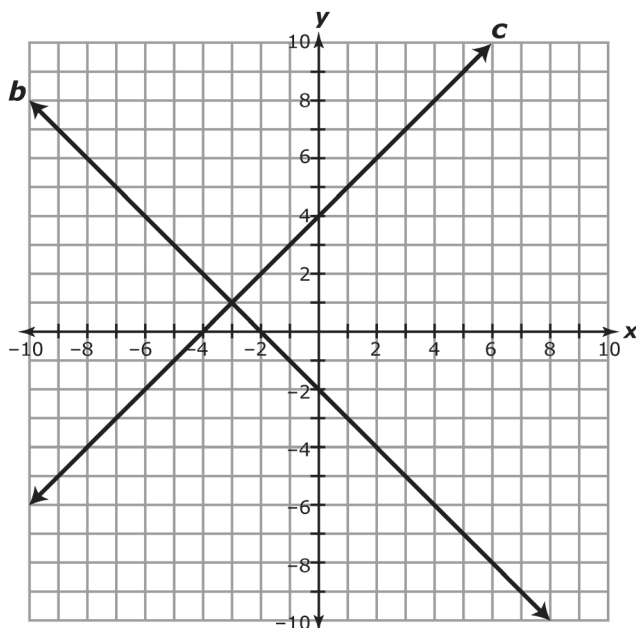
Which equation represents this linear relationship?

- A**  $y = \frac{3}{2}x + 4$
- B**  $y = \frac{2}{3}x + 4$
- C**  $y = -\frac{2}{3}x + 4$
- D**  $y = -\frac{3}{2}x + 4$

## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

2

Two linear equations are graphed on a coordinate plane as shown.



Which ordered pair represents the intersection of line **b** and line **c**?

- A (3, -1)
- B (1, -3)
- C (-1, 3)
- D (-3, 1)

3

For the first week at Music Arts Fair, free tickets to a football game are being given as prizes. André made a table to show the number of tickets that were given away to the winners.

Day, $x$	1	2	3	4	5	6	7
Number of Tickets, $y$	7	14	21	28	35	42	49

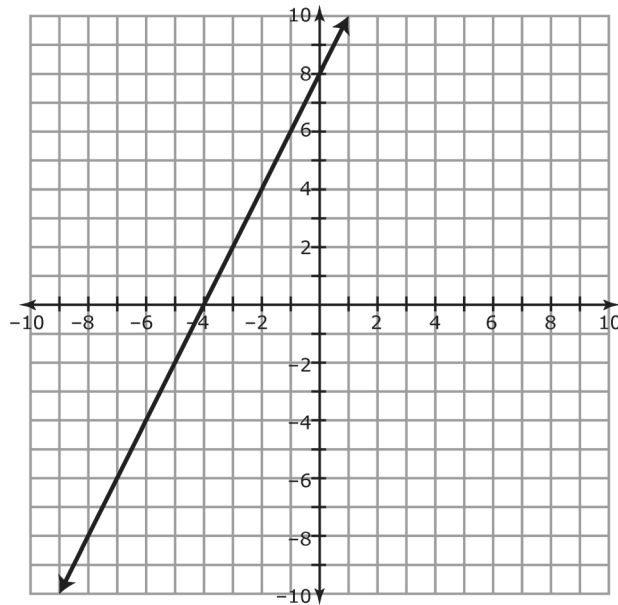
Which equation represents the relationship between the day,  $x$ , and the number of tickets given away,  $y$ ?

- A  $y = x + 6$
- B  $y = 7x$
- C  $y = 3x + 4$
- D  $y = \frac{1}{7}x$

# EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

4

The graph of a linear function is shown.



What is the  $y$ -intercept of the graph of this linear function?

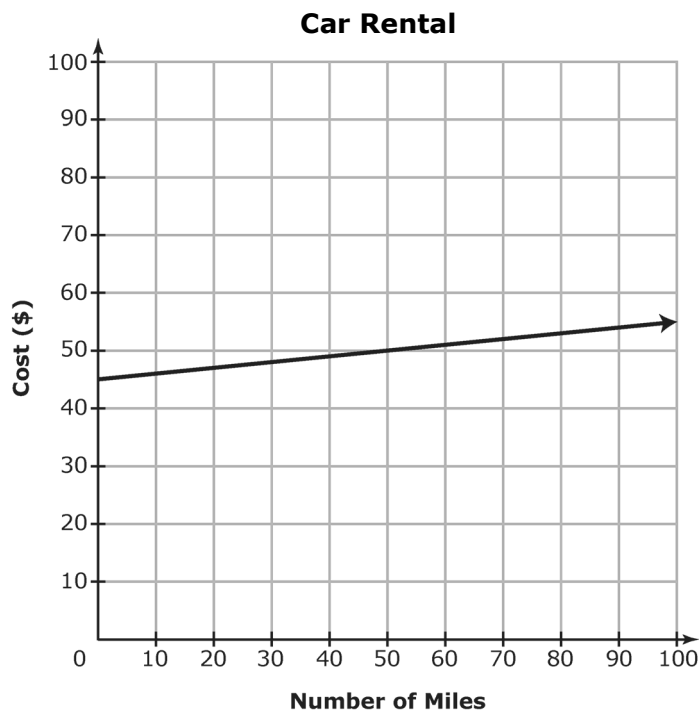
Record the answer and fill in the bubbles on the grid provided. Be sure to use the correct place value.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	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 Mathematic 7 Pre-AP, Sem 1

- 5 The graph shows the cost of renting a car for one day based on the number of miles driven.



Which equation best describes  $c$ , the cost of renting the car?

- A  $C = 45 - m$
- B  $C = 45 + m$
- C  $C = 45 - 0.10m$
- D  $C = 45 + 0.10m$

- 6 Steven received \$800 from his grandparents for his birthday. He will deposit the money into two different savings accounts.

- Steven deposits \$400 into Account I, which earns  $4\frac{1}{2}\%$  annual simple interest.
- He deposits \$400 into Account II, which earns 4% interest compounded annually.

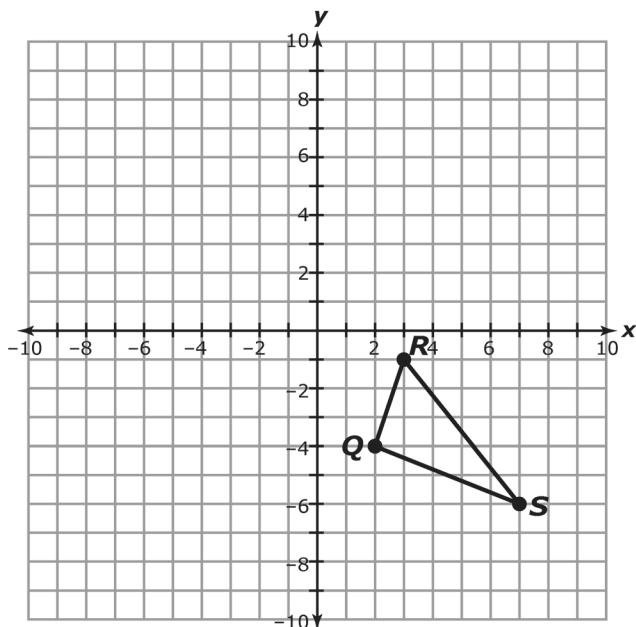
If no additional money will be deposited or withdrawn from either account, which amount is closest to the total balance of these two accounts at the end of 3 years?

- A \$904.50
- B \$903.36
- C \$903.95
- D \$900.00

## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

7

Triangle  $QRS$  is shown on the grid.



If triangle  $QRS$  is rotated  $90^\circ$  counterclockwise about the origin to create triangle  $Q'R'S'$ , which rule describes this transformation?

- A  $(x, y) \rightarrow (y, -x)$
- B  $(x, y) \rightarrow (-y, x)$
- C  $(x, y) \rightarrow (x, y)$
- D  $(x, y) \rightarrow (-x, -y)$

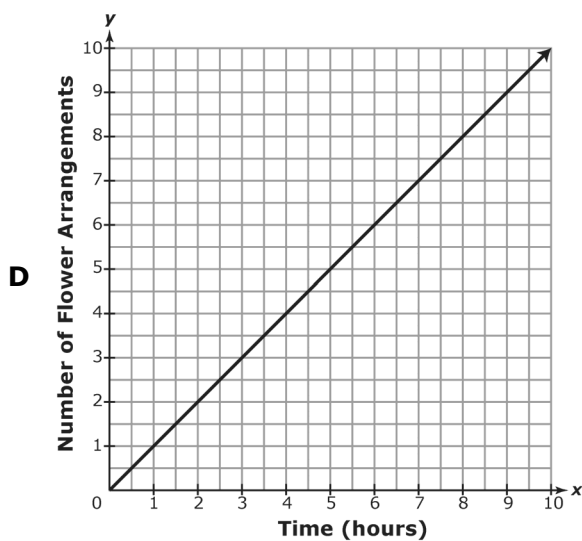
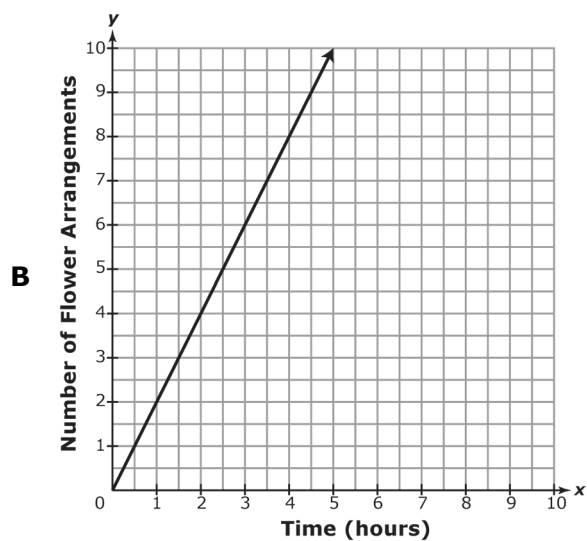
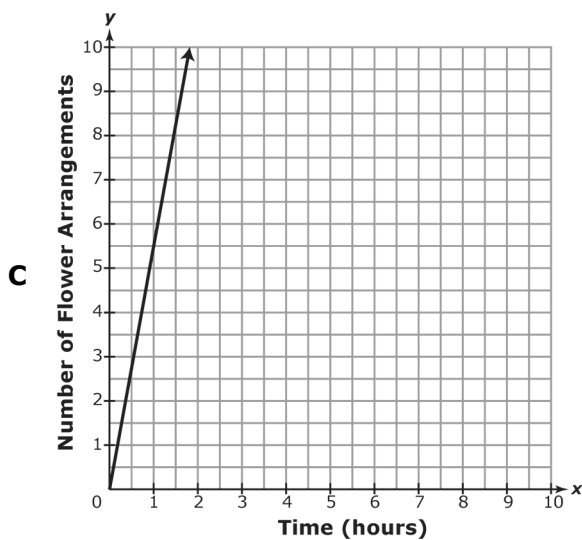
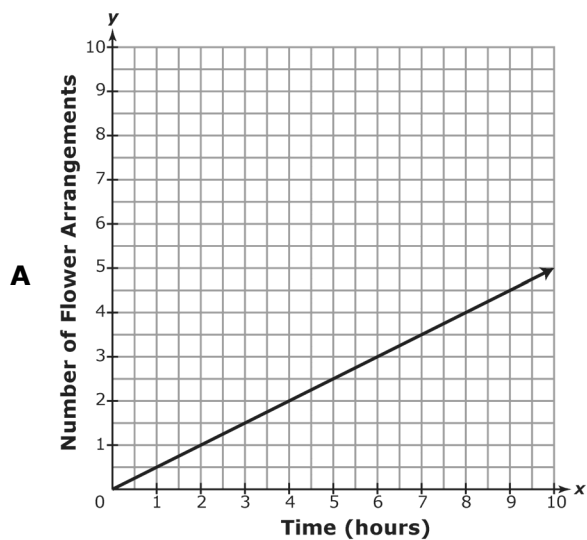
8

Which pair of linear equations has the point  $(-6, -4)$  as the solution?

- A  $y = x + 2$   
 $y = -\frac{1}{3}x - 6$
- B  $y = \frac{1}{3}x - 2$   
 $y = 4x - 6$
- C  $y = x - 10$   
 $y = 4 - 2x$
- D  $y = -x - 2$   
 $y = x + 2$

## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 9 Maggy makes 6 flower arrangements in 3 hours. Which graph has a slope that represents the number of flower arrangements Maggy makes per hour?



## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 10** The amount of money Krista earns varies directly with the number of hours she works. If she earns \$225 for working 18 hours, how much will Krista earn in 40 hours?

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

- 11** The table shows the rainfall in inches that fell in several Texas cities during the month of July 2008.

City	Rainfall (inches)
Dallas	$\frac{3}{4}$
Arlington	1.501
Ft. Worth	$\frac{5}{8}$
San Antonio	0.6151
Austin	$1\frac{1}{2}$

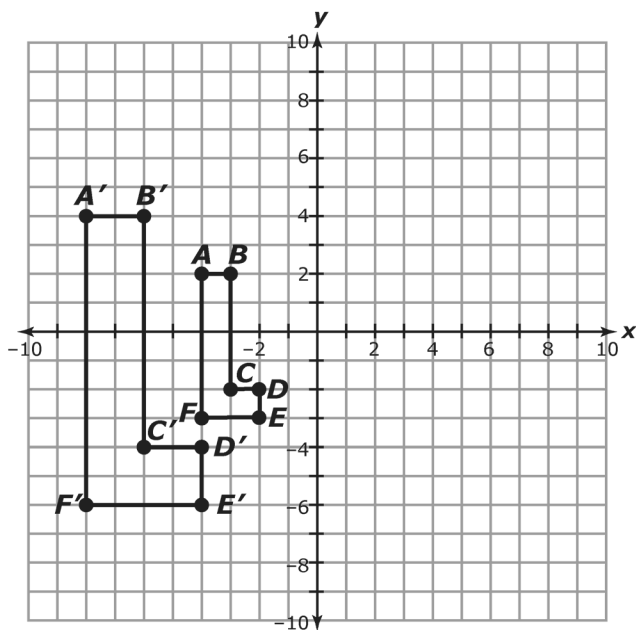
Which choice shows the cities in order from greatest amount of rainfall to least amount of rainfall?

- A** San Antonio, Ft. Worth, Dallas, Austin, Arlington
- B** Dallas, Arlington, Austin, San Antonio, Ft. Worth
- C** Arlington, Austin, Dallas, Ft. Worth, San Antonio
- D** Austin, Arlington, San Antonio, Ft. Worth, Dallas

## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

12

Hexagon  $ABCDEF$  is dilated with the origin as the center of dilation to create hexagon  $A'B'C'D'E'F'$ .

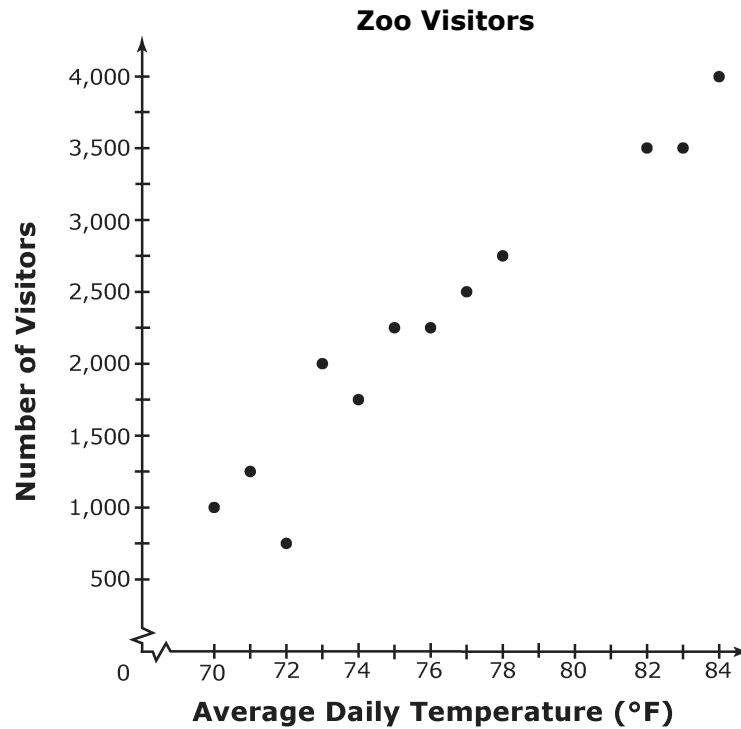


Which rule best represents the dilation applied to hexagon  $ABCDEF$  to create hexagon  $A'B'C'D'E'F'$ ?

- A**  $(x, y) \rightarrow (x + 4, y - 2)$
- B**  $(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$
- C**  $(x, y) \rightarrow (x - 4, y + 2)$
- D**  $(x, y) \rightarrow (2x, 2y)$

## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 13 The scatterplot shows the relationship between the average daily temperature and the number of visitors at the local zoo.



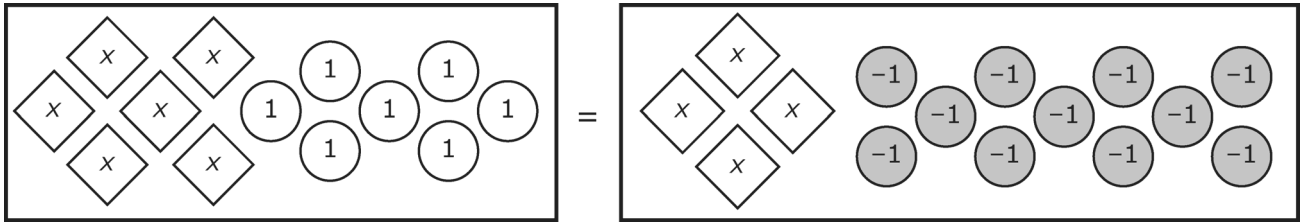
Based on the scatterplot, what is the best prediction of the number of visitors at the zoo if the average daily temperature is 80 °F?

- A 2,000
  - B 2,500
  - C 3,000
  - D 3,500
- 14 Which set of ordered pairs does **not** represent a function?
- A  $\{(0, 1), (0, 2), (-3, 6), (2, 7)\}$
  - B  $\{(-2, 2), (1, 2), (5, 4), (6, 2)\}$
  - C  $\{(0, 1), (1, 3), (3, 4), (2, 2)\}$
  - D  $\{(-1, 3), (6, 5), (3, 1), (2, 6)\}$

# EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

15

The model represents an equation.



What value of  $x$  makes the equation true?

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

16

Norman receives a weekly salary plus commission for each computer he sells. The function  $f(x) = 75.50x + 250$  is used to determine Norman's salary for selling  $x$  computers. Which table shows this relationship?

**A**

Number of Computers Sold	Total Salary (\$)
6	433.00
12	906.00
18	1,359.00
22	1,661.00

**C**

Number of Computers Sold	Total Salary (\$)
5	627.50
15	1,382.50
18	1,609.00
24	2,062.00

**B**

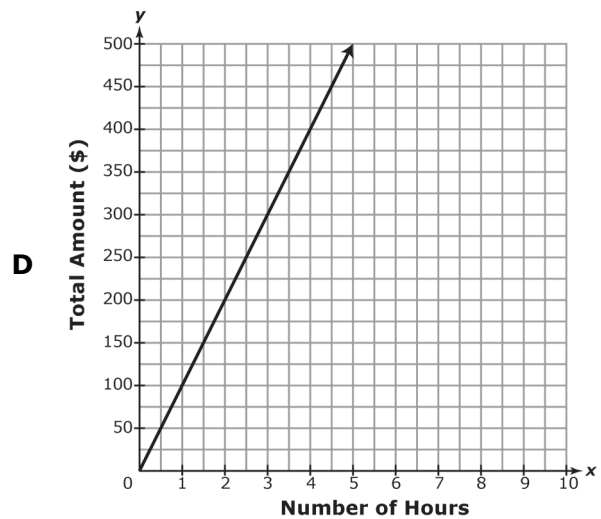
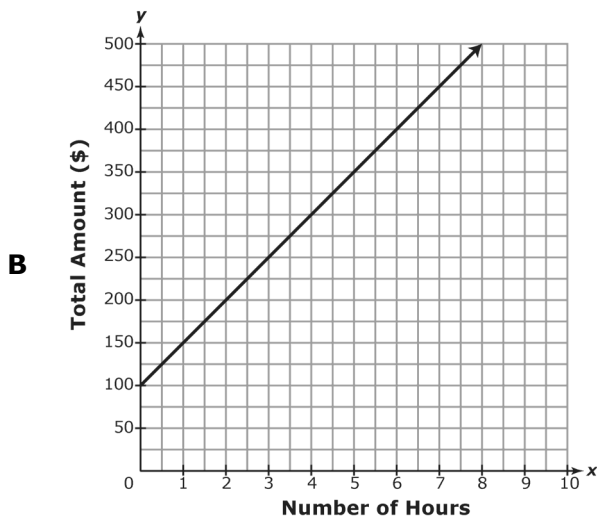
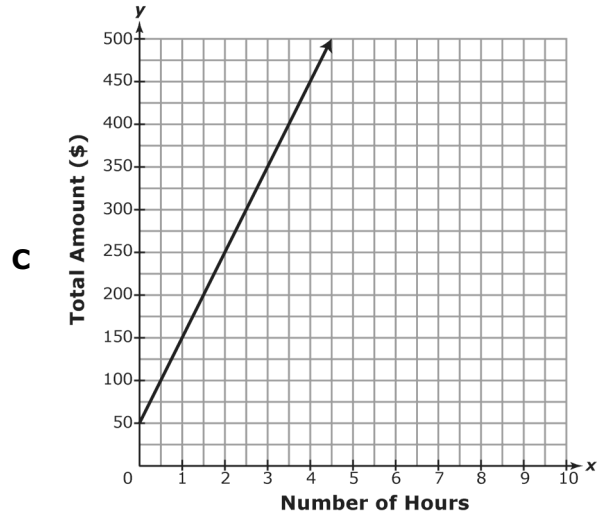
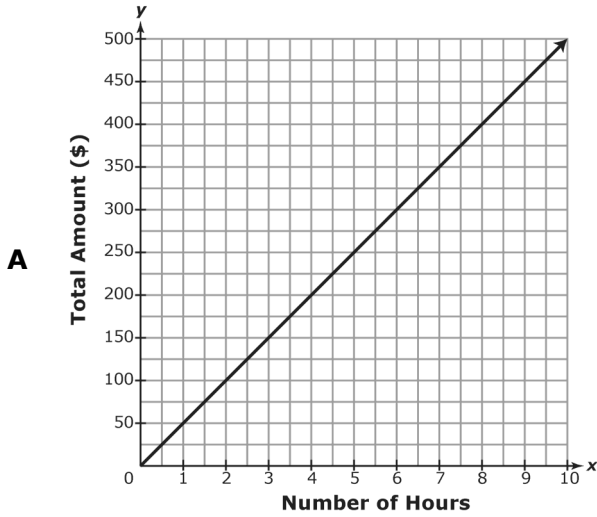
Number of Computers Sold	Total Salary (\$)
3	226.50
9	679.50
13	981.50
17	1,283.50

**D**

Number of Computers Sold	Total Salary (\$)
2	401.50
11	1,080.00
14	1,307.50
21	1,835.00

# EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

**17** Delaney hires a plumber to install a new water heater. The plumber charges \$50 per hour plus a service fee of \$100. Which graph represents the relationship between  $x$ , the number of hours the plumber works, and  $y$ , the total amount Delaney pays the plumber?





## EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 18** The equation  $y = \frac{-5}{8}x + 22$  is used to represent the rate at which water drains from a container over time, where  $x$  represents the amount of time, in minutes, spent draining and  $y$  represents the amount of water, in liters, remaining in the container. Which table best represents the relationship between  $x$  and  $y$  in this situation?

**A**

Time, $x$ (minutes)	Water Remaining, $y$ (liters)
0	22
8	17
16	12
30	5

**C**

Time, $x$ (minutes)	Water Remaining, $y$ (liters)
8	17
20	9.5
24	7
32	2

**B**

Time, $x$ (minutes)	Water Remaining, $y$ (liters)
0	22
12	29.5
24	37
36	44.5

**D**

Time, $x$ (minutes)	Water Remaining, $y$ (liters)
8	17
16	12
24	7
32	5

- 19** Which situation best represents the equation  $10.25h + 6.50 = 11.50h + 4$ ?

- A** Ricardo is growing two different species of bamboo plant. Species A has a starting height of 10.25 inches and grows at a rate of 6.50 inches per week. Species B has a starting height of 11.50 inches and grows at a rate of 4 inches per week. How many weeks,  $h$ , do the plants need to grow in order to have the same height?
- B** Esmeralda must choose between two job offers. Job offer A pays a flat amount of \$6.50 plus an additional \$10.25 per hour. Job offer B pays a flat amount of \$4.00 plus an additional \$11.50 per hour. How many hours,  $h$ , does Esmeralda need to work in order to earn the same amount of money in either job?
- C** Two containers are being filled with water. The water level in container A begins at a height of 10.25 feet and rises at a rate of 6.50 feet per hour. The water level in container B begins at a height of 11.50 feet and rises at a rate of 4 feet per hour. What is  $h$ , the height at which the water levels will be the same?
- D** Two students are having a bicycle race. Student A began with 6.50 miles of distance already travelled, and is moving at a rate of 11.50 miles per hour. Student B began with 4 miles of distance already travelled, and is moving at a rate of 10.25 miles per hour. How many hours,  $h$ , will each student need in order to travel the same total distance?

**EXAMPLE ITEMS Mathematics 7 Pre-AP Key, Sem 1**

<b>Item#</b>	<b>Key</b>	<b>SE</b>	<b>SE Justification</b>
<b>1</b>	C	8.5I	Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.
<b>2</b>	D	8.9	The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. The student is expected to identify and verify the values of $x$ and $y$ that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations.
<b>3</b>	B	8.5A	Represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$ .
<b>4</b>	8	8.4C	Use data from a table or graph to determine the rate of change or slope and $y$ -intercept in mathematical and realworld problems.
<b>5</b>	D	8.5I	Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.
<b>6</b>	C	8.12D	Calculate simple and compound interest earnings.
<b>7</b>	B	8.10C	Explain the effect of rotations limited to $90^\circ$ as applied to two-dimensional shapes on a coordinate plane using an algebraic representation.
<b>8</b>	A	8.9	The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. The student is expected to identify and verify the values of $x$ and $y$ that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations.
<b>9</b>	B	8.4B	Graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship.
<b>10</b>	500	8.5E	Solve problems involving direct variation.
<b>11</b>	C	8.2D	Order a set of real numbers arising from mathematical and real-world contexts.
<b>12</b>	D	8.3C	Use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation.
<b>13</b>	C	8.5D	Use a trend line that approximates the linear relationship between bivariate sets of data to make predictions.
<b>14</b>	A	8.5G	Identify functions using sets of ordered pairs, tables, mappings, and graphs.
<b>15</b>	-9	8.8C	Solve one-variable equations with variables on both sides of the equal sign that represent mathematical problems.
<b>16</b>	C	8.5B	Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$ , where $b$ does not equal 0.
<b>17</b>	B	8.5B	Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$ , where $b$ does not equal 0.
<b>18</b>	C	7.7A	Represent linear relationships using tables.
<b>19</b>	B	8.8B	Write a corresponding real-world problem when given a one-variable equation with variables on both sides of the equal sign using rational number coefficients and constants.