

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.

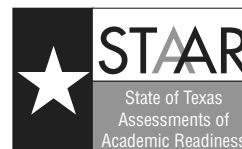
(1) Download the [Example Feedback Form](#) and email it. The form is located on the homepage of the [Assessment website](https://assessment.dallasisd.org): <https://assessment.dallasisd.org>.

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 #: 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

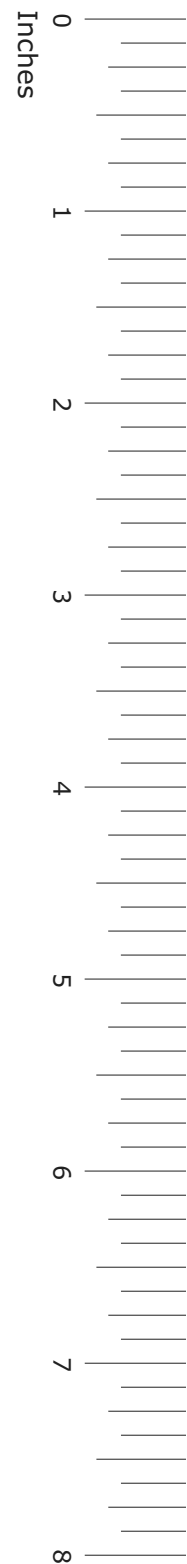
$$d = rt$$

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)

20

19

18

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16

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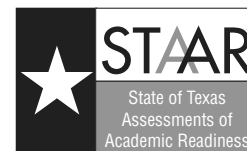
2

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

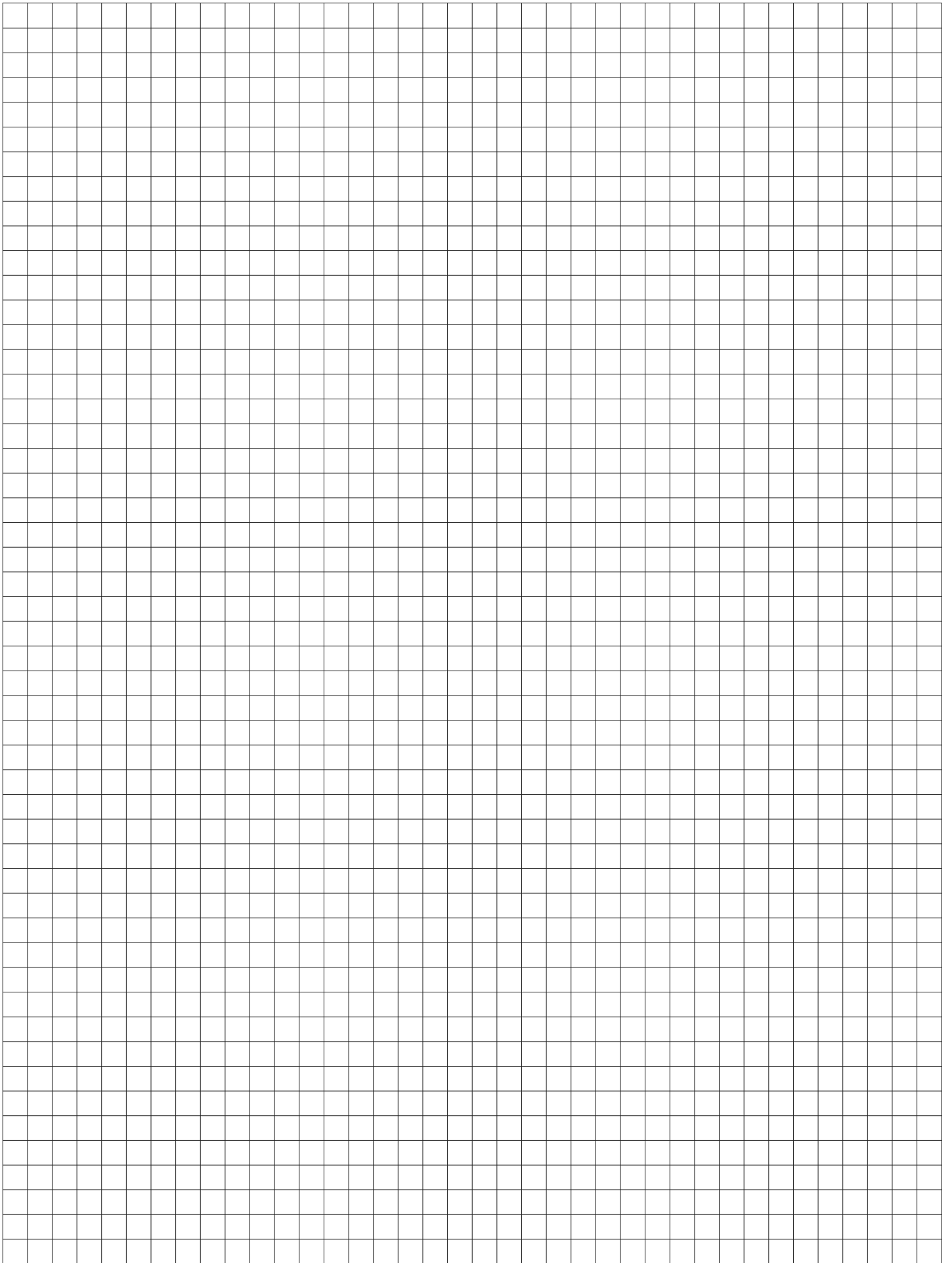
Sphere $V = \frac{4}{3}\pi r^3$

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 Which set of ordered pairs does **not** represent a function?

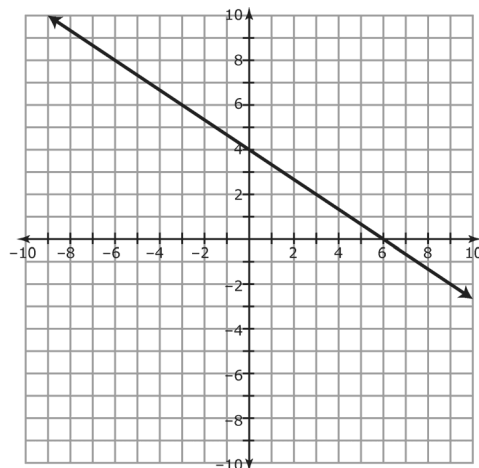
A $\{(0, 1), (0, 2), (-3, 6), (2, 7)\}$

B $\{(-2, 2), (1, 2), (5, 4), (6, 2)\}$

C $\{(0, 1), (1, 3), (3, 4), (2, 2)\}$

D $\{(-1, 3), (6, 5), (3, 1), (2, 6)\}$

2 The graph of a linear relationship is shown.



Which equation represents this linear relationship?

A $y = \frac{3}{2}x + 4$

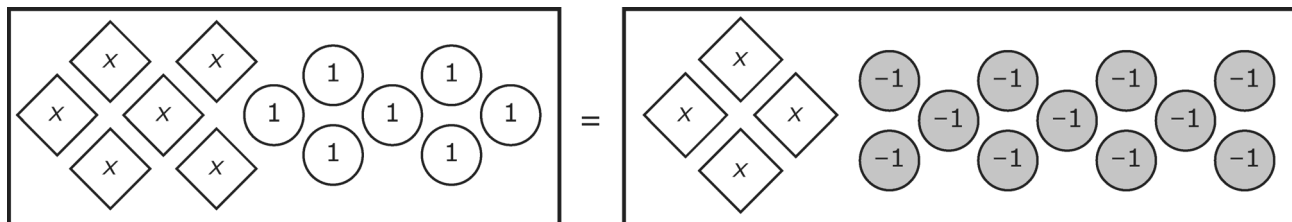
B $y = \frac{2}{3}x + 4$

C $y = -\frac{2}{3}x + 4$

D $y = -\frac{3}{2}x + 4$

EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 3 The model represents an equation.



What value of x makes the equation 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
-	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

- 4 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

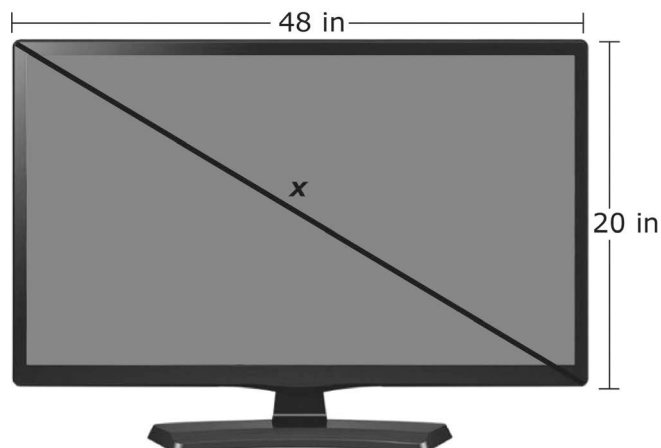
Which equation represents the relationship between the day, x , and the number of tickets given away, y ?

- 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

5

Xavier's new television and its dimensions are shown.

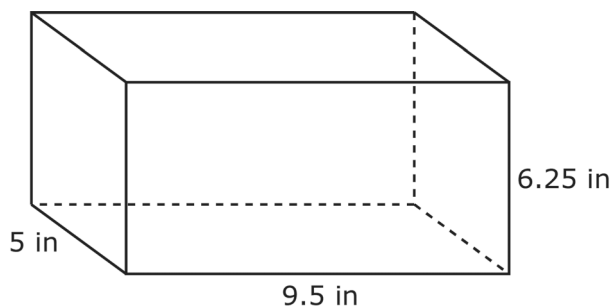


Based on the diagram, which measurement is closest to the length of the diagonal of Xavier's television in inches?

- A 12 inches
- B 44 inches
- C 52 inches
- D 68 inches

6

Carla is painting a jewelry box shaped like a rectangular prism. The dimensions of the jewelry box are shown in the diagram.

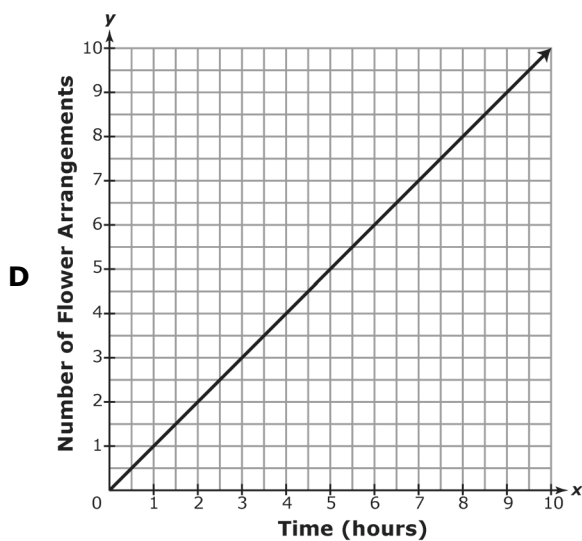
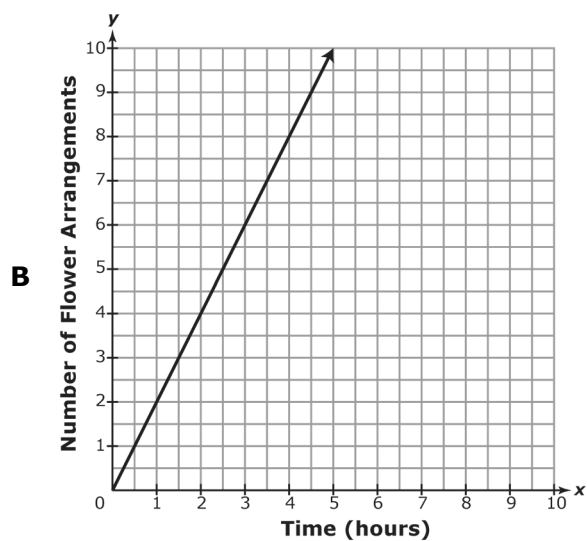
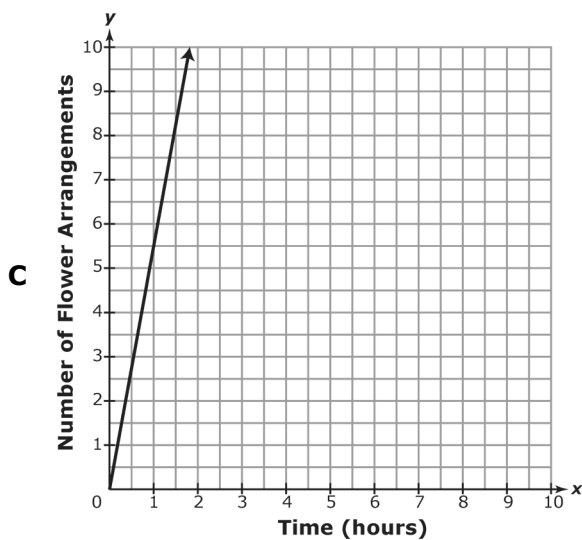
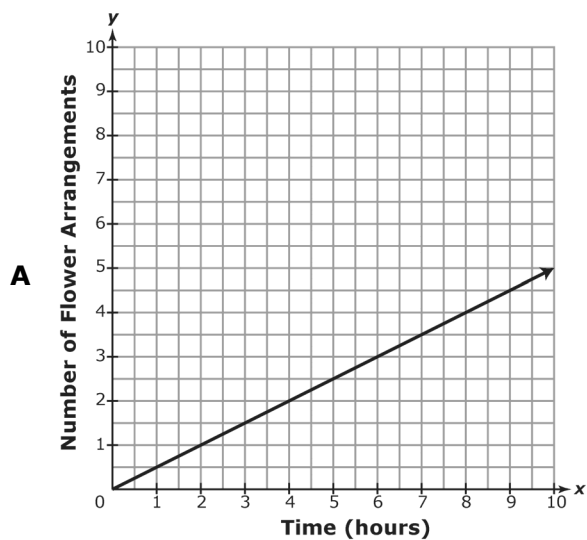


Which measurement is closest to the total surface area of the jewelry box in square inches?

- A 124 square inches
- B 181 square inches
- C 214 square inches
- D 276 square inches

EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 7 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

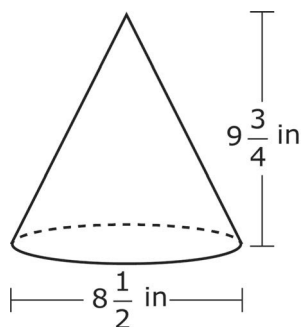
- 8** The table shows the rainfall in inches that fell in several Texas cities during the month of July 2008.

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

- 9** A cone and its dimensions are shown in the diagram.



Which measurement is closest to the volume of the cone in cubic inches?

- A** 184.42 in³
- B** 553.26 in³
- C** 737.69 in³
- D** 2,213.06 in³

EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

- 10** 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

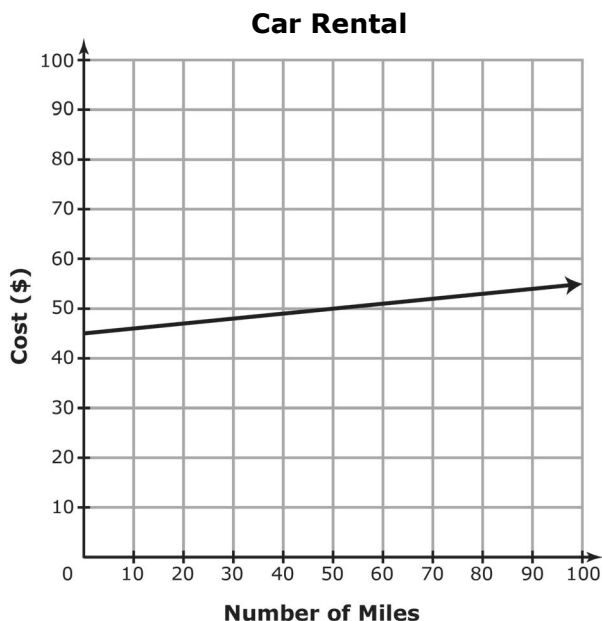
Time, x (minutes)	Water Remaining, y (liters)
8	17
16	12
24	7
32	5

- 11** 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 Mathematic 7 Pre-AP, Sem 1

12 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?

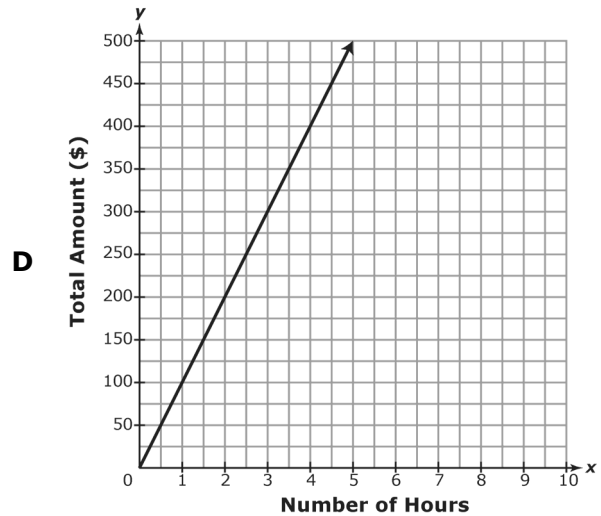
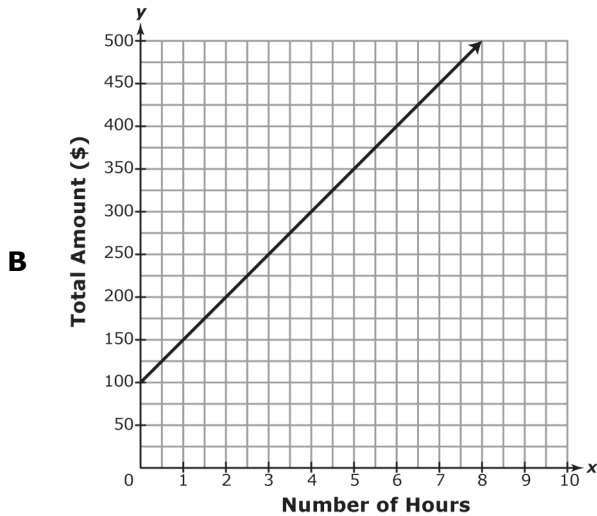
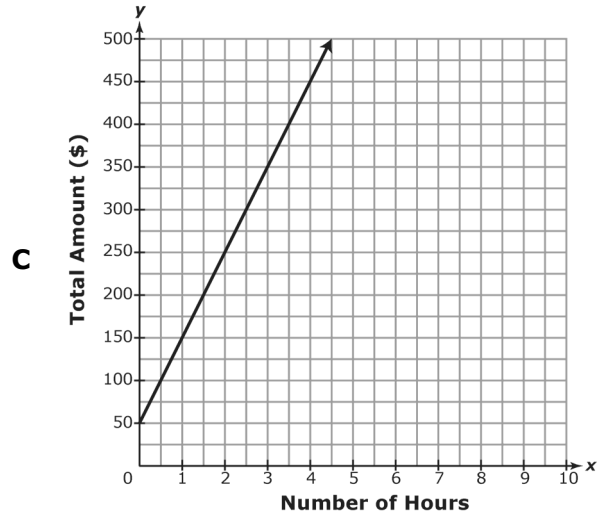
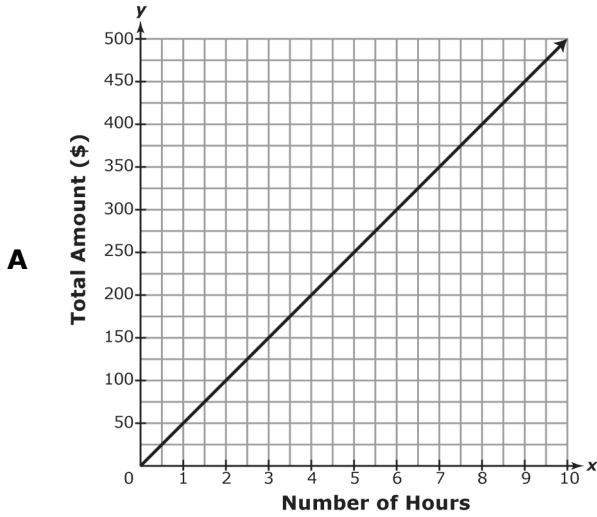
- A $C = 45 - m$
- B $C = 45 + m$
- C $C = 45 - 0.10m$
- D $C = 45 + 0.10m$

13 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 $y = -x - 2$
 $y = x + 2$

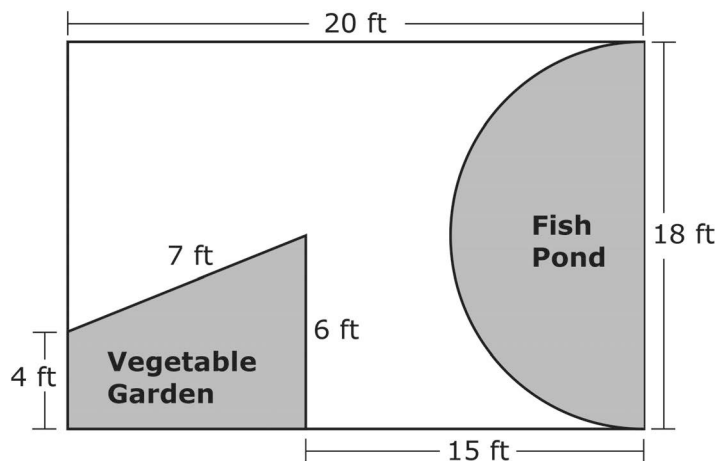
EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

14 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

- 15** Nicole has a fish pond and a vegetable garden in her backyard. A diagram of her backyard and its dimensions are shown.



Which measurement is closest to the area of Nicole's backyard not occupied by the fish pond or the vegetable garden in square feet?

- A** 81 ft²
- B** 198 ft²
- C** 208 ft²
- D** 360 ft²

- 16** 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?

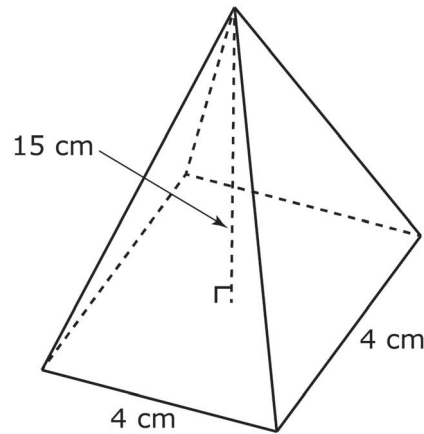
+	0	0	0	0	0	0	0
-	0	0	0	0	0	0	0
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

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

EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

17

The dimensions of a square pyramid are shown in the diagram.



Based on this information, what is the volume of the pyramid in cubic centimeters?

- A 60 cm³
- B 80 cm³
- C 120 cm³
- D 240 cm³

18

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 (\$)
5	627.50
15	1,382.50
18	1,609.00
24	2,062.00

C

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

B

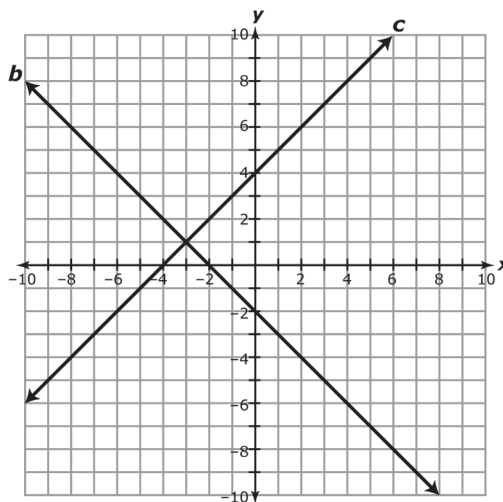
Number of Computers Sold	Total Salary (\$)
3	226.50
9	679.50
13	981.50
17	1,283.50

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

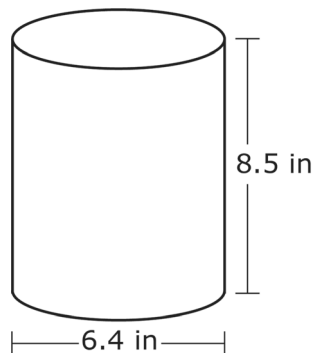
- 19 Two linear equations are graphed on a coordinate plane as shown.



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

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

- 20 Carmen is creating a label for the cylinder shown in the diagram.



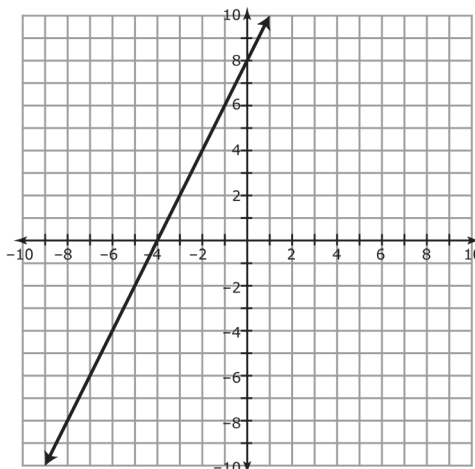
Which measurement is closest to the lateral surface area of the cylinder in square inches?

- A 170.90 in²
- B 235.24 in²
- C 273.44 in²
- D 341.81 in²

EXAMPLE ITEMS Mathematic 7 Pre-AP, Sem 1

21

The graph of a linear function is shown.



What is the y-intercept of the graph of this linear 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 Mathematics 7 Pre-AP Key, Sem 1

Item#	Key	SE	SE Justification
1	A	8.5G	Identify functions using sets of ordered pairs, tables, mappings, and graphs.
2	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.
3	-9	8.8C	Solve one-variable equations with variables on both sides of the equal sign that represent mathematical problems.
4	B	8.5A	Represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$.
5	C	8.7C	Use the Pythagorean Theorem to solve problems.
6	D	8.7B	Use previous knowledge of surface area to make connections to the formulas for total surface area and determine the solutions for problems involving rectangular prisms.
7	B	8.4B	Graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship.
8	D	8.2D	Order a set of real numbers arising from mathematical and real-world contexts.
9	A	8.7A	Solve problems involving the volume of cones.
10	C	7.7	Represent linear relationships using tables.
11	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.
12	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.
13	A	8.9	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.
14	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.
15	C	7.9C	Determine the area of composite figures containing combinations of rectangles, trapezoids, triangles, and semicircles.
16	500	8.5E	Solve problems involving direct variation.
17	B	7.9A	Solve problems involving the volume of square pyramids.
18	A	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.
19	D	8.9	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.
20	A	8.7B	Use previous knowledge of surface area to make connections to the formulas for lateral surface area and determine solutions for problems involving cylinders.
21	8	8.4C	Use data from a table or graph to determine the rate of change or slope and y -intercept in mathematical and real-world problems.