HOMEWORK & EXTRA PRACTICE SCENARIOS

Algebra 2 Series
Book 1 Homework Guide

A NOTE TO PARENTS AND TEACHERS:
Each book in the Summit Math Algebra 2 Series has 2 parts. The first half of the book is the Guided Discovery Scenarios. The second half of the book is the Homework & Extra Practice Scenarios. Each section has a separate Answer Key. If the Answer Key does not provide enough guidance, you can access more information about how to solve each scenario using the resources listed below.

1. **GUIDED DISCOVERY SCENARIOS**

   If you would like to get step-by-step guidance for the Guided Discovery Scenarios in each Algebra 2 book, you can subscribe to the Algebra 2 Videos for $9/month or $60/year ($5/mo.). With a subscription, you can access videos for every book in the Series. The videos show you how to solve each scenario in the Guided Discovery Scenarios section of the Algebra 2 books. You can find out more about these videos at www.summitmathbooks.com/algebra-2-videos.

2. **HOMEWORK & EXTRA PRACTICE SCENARIOS**

   If you would like to get step-by-step guidance for the Homework & Extra Practice Scenarios in the book, you can use this Homework Guide. It provides more detailed guidance for solving the Homework & Extra Practice Scenarios in Book 1 of the Algebra 2 Series. Some scenarios are not included. If you would like something included in this Homework Guide, please email the author and explain which scenario(s) you would like to see included or which scenario(s) you would like more guidance for in this Homework Guide.

ANSWER KEY

6a.
$P = 0.60 + 0.20w \rightarrow P = 0.60 + 0.20(10) \rightarrow P = 0.60 + 2 \rightarrow P = \$2.60$

6b.
$P = 0.60 + 0.20(0) \rightarrow P = 0.60 + 0 \rightarrow P = \$0.60$
This price does not make sense because you cannot send an envelope that weighs 0 ounces.

7c.
In the price function, $P = 0.60 + 0.20w$, replace P with 5 and solve for w.
$5 = 0.60 + 0.20w \rightarrow$ subtract 0.60 on both sides
$4.40 = 0.20w \rightarrow$ divide by 0.20 on both sides
$22 = w$

8a.
In the first 2 rows of the table, the price for 7 ounces is $2, while the price for 12 ounces is $3. The price increases by $1 when the weight increases by 5 ounces. A rate of $1 per 5 ounces can also be expressed as a unit rate of $0.20 per 1 ounce. $1 ÷ 5 = $0.20. The unit rate shows that the price increases by $0.20 when the weight increases by 1 ounce.

In the table's fourth row, the price for 25 ounces is $5.60. In row 5, the price is $6.80. The price in row 5 is $1.20 more than row 4. Divide $1.20 into increases of $0.20 $\rightarrow$ $1.20 ÷ $0.20 = 6. If the price increases by $1.20, the weight increases by 6 ounces. The weight in row 4 is 25, so the weight in row 5 is 25 + 6, or 31 ounces.

In row 6, the weight is 39, which is 14 ounces more than row 4. Multiply 14 by $0.20 $\rightarrow$ 14 · $0.20 = $2.80. When the weight increases by 14 ounces, the price increases by $2.80. In row 4, the price is $5.60. Add $2.80 to $5.60 $\rightarrow$ $2.80 + $5.60 = $8.40. In row 6, the price is $8.40.

8b.
The price increases by $0.20 per ounce. If one envelope weighs 20 ounces more than another one, its price will increase by 20 · $0.20 = $4.00. It will cost $4.00 more.

9a.
The price function is $P = 0.60 + 0.20w$. P of 17 is the price when the weight is 17. To find P of 17, replace the w in the equation with 17 and solve for P.
$P = 0.60 + 0.20(17) \rightarrow P = 0.60 + 3.40 \rightarrow P = \$4.00$

9b.
P of 40 is the price when the weight is 40. To find P of 40, replace the w in the equation with 40 and solve for P.
$P = 0.60 + 0.20(40) \rightarrow P = 0.60 + 8.00 \rightarrow P = \$8.60$

10.
To find the weight when the price is $10, replace the P in the equation with 10 and solve for w.
$10 = 0.60 + 0.20w$ → subtract 0.60 on both sides
$9.40 = 0.20w$ → divide by 0.20 on both sides
$47 = w$
The weight is 47 ounces when the price is $10.

13a.
To find $V(-2)$, find a point in the graph where $k = -2$.
Since $(-2, 6)$ is a point on the function, when $k = -2$, $V = 6$. Thus, $V(-2) = 6$.

13b.
To find k when $V(k) = 4$, find all points in the graph where $V = 4$. The only point on the function where $V = 4$ is $(1, 4)$. If $V(k) = 4$, then $k = 1$.

14a.
In the equation $y = -7x + 11$, replace x with -5 and solve for y.
$y = -7x + 11$ → $y = -7(-5) + 11$ → $y = 35 + 11$ → $y = 46$

14b.
In the equation $y = -7x + 11$, replace y with 60 and solve for x.
$60 = -7x + 11$ → subtract 11 on both sides
$49 = -7x$ → divide by -7 on both sides
$-7 = x$

15d.
In the equation $T(n) = 10 - 3n$, replace $T(n)$ with 10 and solve for n.
$10 = 10 - 3n$ → subtract 10 on both sides
$0 = -3n$ → divide by -3 on both sides → 0 divided by -3 is 0
$0 = n$

16a.
In the equation $H(y) = \frac{y - 5}{6}$, replace y with -7 and solve for $H(y)$.
$H(-7) = \frac{-7 - 5}{6}$ → $H(-7) = \frac{-12}{6}$ → $H(-7) = -2$

16b.
The blank space in "$H(\underline{\quad}) = 11$" is a y-value. To find y, replace $H(y)$ with 11 and solve for y.
$11 = \frac{y - 5}{6}$ → multiply by 6 on both sides
$66 = y - 5$ → add 5 to both sides
$71 = y$
$H(71) = 11$

17a.
To find $R(5)$, find a point in the graph where $m = 5$.
Since $(5, 4)$ is a point on the function, when $m = 5$, $R = 4$. Thus, $R(5) = 4$.

17b.
To find $R(-2)$, find a point in the graph where $m = -2$.
Since $(-2, 4)$ is a point on the function, when $m = -2$, $R = 4$. Thus, $R(-2) = 4$.

18a.
To find m when $R(m) = 8$, find all points in the graph where $R = 8$. The only point on the function where $R = 8$ is $(0, 8)$. If $R(m) = 8$, then $m = 0$.

18b.
To find m when $R(m) = 6$, find all points in the graph where $R = 6$.
There are 3 points: $(-5, 6), (-1, 6)$, and $(2, 6)$.
If $R(m) = 6$, then $m = -5, -1$ or 2.

18c.
To find m when $R(m) = 3$, find all points in the graph where $R = 3$.
There are 3 points: $(-3, 3), (2.75, 3)$, and $(3.5, 3)$.
If $R(m) = 3$, then $m = -3, 2.75$ or 3.5.

19-26.
Refer to the Answer Key for the Homework & Extra Practice Scenarios of the book.

27a.
Since the bucket starts with 10 cups of water and it is empty after 5 minutes, the amount of water in the bucket decreases by 10 cups in 5 minutes, or 2 cups per minute. To show this in a graph, start with a point at $(0, 10)$ and then place points at $(1, 8), (2, 6), (3, 4), (4, 2), (5, 0)$. Draw a line through the points to show that the water is continually decreasing.

28-38.
Refer to the Answer Key for the Homework & Extra Practice Scenarios of the book.

39a.
If $g(1)$ is 3, then $g(x) = 3$ when $x = 1$. In the graph, plot the point $(1, 3)$.

39b.
If $g(2)$ is 2, then $g(x) = 2$ when $x = 2$. In the graph, plot the point $(2, 2)$.

39c.
If $g(4)$ is 0, then $g(x) = 0$ when $x = 4$. In the graph, plot the point $(4, 0)$.

39d.
The graph of a linear function is a line because it has a constant slope. Since two points on this line are $(1, 3)$ and $(2, 2)$, the slope of this line is $\frac{-1}{1}$, or just -1. To plot another point, move down 1, right 1. If one of the points on the line is $(4, 0)$, then $g(10)$ is 6 units to the right of $(4, 0)$. Since the line's slope is -1 (down 1, right 1), a point plotted 6 units to the right is also 6 units down (down 6, right 6). If you start at $(4, 0)$ and move down 6, right 6, you end up at the point $(10, -6)$. Thus, $g(10) = -6$.

You can also find $g(10)$ by using the linear function for $g(x)$. A linear function can be written in Slope-Intercept Form as $y = mx + b$, where m is the slope and b is the y-intercept. The slope of $g(x)$ is -1 and the line crosses the y-axis at $(0, 4)$, so b = 4.
Thus, the equation for $g(x)$ is $y = -x + 4$ or $g(x) = -x + 4$. To find $g(10)$, replace x with 10.
$g(10) = -10 + 4 \rightarrow g(10) = -6$