

Algebra and Functions – Answer Key

Page 2:

- 1) C
- 3) D
- 4) B
- 6) C
- 7) D
- 14) B

Page 3:

- 1) C
- 2) A
- 4) A
- 10) C
- 14) D

Page 4:

- 15) $x = -1$
- 19) $3/5$

Page 5:

21) ORQ – See attached

Page 6:

21) ORQ – See attached

Page 7:

- 23) B
- 25) B
- 29) B

Page 8:

- 22) A
- 33) D
- 34) C
- 35) C
- 37) A

Page 9:

- 28) A
- 29) A
- 30) D
- 34) B
- 37) B

Page 10:

- 26) A
- 39) C

Page 11:

- 31) ORQ – See attached
- 36) ORQ – See attached

Page 12:

- 41) ORQ – See attached
- 42) ORQ – See attached

A) The maximum amount of sauce the company allows in a small bottle is 18.25 oz . I know this because the tolerance is $.25 \text{ oz}$, making me add $.25$ to the value of 18 .

Work $\rightarrow 18 + 0.25 = 18.25 \text{ oz}$

B) $|x - 18| \leq 0.25$

$x - 18 \leq 0.25 \rightarrow x \leq 18.25$

$x - 18 \geq -0.25$

$x \geq 17.75$

$17.75 \leq x \leq 18.25$

C) The tolerance the company allows for the large bottle is 0.45 oz . I know this because I subtracted the label value from the minimum amount, and also from the maximum amount. Both times, I got 0.45 , be it positive or negative, making it the tolerance. Work $\rightarrow 24 - 23.55 = 0.45$ $24 - 24.45 = 0.45$

D) $|y - 24| \leq 0.45$

A) In Figure 6, there are 5 pentagons, 1 more pentagon than the preceding figure.

B) $(n-1)$

C) There are 51 dots in Figure 6. Each figure has a number of dots equal to the number of dots from the preceding figure plus 3 more than the number of dots added to the preceding figure. For example, Figure 4 has 22 dots because 12 (# of dots in Figure 3) $+ 10$ ($3 + 7$ (# of dots added to the 5 dots of Figure 2 to get the 12 dots of Figure 3)) $= 22$ dots. So, 35 (# of dots in Figure 5) $+ 16$ ($3 + 13$ (# of dots added to the 22 dots of Figure 4 in order to get the 35 dots of Figure 5)) $= 51$ (# of dots in Figure 6).

D) To find the number of dots in Figure 10, subtract the number of dots in Figure 8 from the number of dots in Figure 9, add 3 to that number, then add that number to the number of dots in Figure 9.

a. $1500 \div 125 = 12$

\$12 per hour

b. $125 - 50 = 75$ hours

$1500 \div 75 = 20$

\$20 per hour

c. $\frac{1500}{x} = y$ or $xy = 1500$

d. As the value of x increases, the value of y decreases.
As the value of x decreases, the
value of y increases. The
values are inversely proportional.

a) $x + y = 20$

b.) $2.50x + 4y = 59$

c.) The chef used 14 pounds of grapes and 6 pounds of blueberries

$$x + y = 20 \rightarrow x = 20 - y$$

$$2.50x + 4y = 59$$

$$2.50(20 - y) + 4y = 59$$

$$50 - 2.50y + 4y = 59$$

$$50 + 1.5y = 59$$

$$1.5y = 9$$

$$y = 6 \text{ pounds (blueberries)}$$

$$x + (6) = 20$$

$$x = 14 \text{ pounds (grapes)}$$

a. \$1,020.

$$\text{Work: } 1,000(1+0.02)^1 = 1,000(1.02) = 1,020$$

b. \$1,061.21

$$\text{Work: } 1,000(1+0.02)^3 = 1,000 \cdot 1.061208 = 1,061.208 \approx 1,061.21$$

c. Pavel. He earned \$61.51 interest while Elaine only earned \$61.21 interest.

$$\text{Work: } 800(1+0.025)^3$$

$$800(1.025)^3$$

$$800(1.076890625)$$

$$861.51252$$

$$861.51$$

$$- 800.00$$

$$61.51$$

$$1,061.21$$

$$- 1,000.00$$

$$61.21$$

- a) y -int = where the graph hits the y -axis
 y -int = 80ft
- b) The y -int represents where it was thrown from (the bridge) and where it started its path through the air
- c) See graph. The ball reached its maximum height of 144ft after 2 seconds
- d) See graph. The ball reached its maximum height at 144ft.
- e) The river was at 0ft. The ball reached 0 feet after 5 seconds of being in the air

