

## FOMP 10 Chapter 9 Review Pack v1

### Answer Section

#### SHORT ANSWER

1. ANS:  
(-3, 5)

PTS: 1                    DIF: 1-2                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

2. ANS:  
(-2, 3)

PTS: 1                    DIF: 1-2                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

3. ANS:  
(6, 5)

PTS: 1                    DIF: 1-2                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

4. ANS:  
-4

PTS: 1                    DIF: 1-2                    OBJ: Section 9.2                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Elimination  
KEY: elimination | identify the ordered pair | linear systems

5. ANS:  
(5, 6)

PTS: 1                    DIF: 1-2                    OBJ: Section 9.2                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Elimination  
KEY: elimination | identify the ordered pair | linear systems

6. ANS:  
21

PTS: 1                    DIF: 1-2                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations  
KEY: substitution | identify two numbers | words to equation

7. ANS:  
(3, -1)

PTS: 1                    DIF: 1-2                    OBJ: Section 9.2                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Elimination  
KEY: elimination | identify the ordered pair | fraction solution | linear systems

8. ANS:  
(-16, -4)

PTS: 1                    DIF: 3-4                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

9. ANS:  
(-10, -6)

PTS: 1                    DIF: 3-4                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

10. ANS:  
(-3, -6)

PTS: 1                    DIF: 3-4                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

11. ANS:  
(3, -4)

PTS: 1                    DIF: 3-4                    OBJ: Section 9.1                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Substitution  
KEY: substitution | identify the ordered pair | linear systems

12. ANS:  
44

PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations                    KEY: substitution | scenario

13. ANS:  
75

PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations                    KEY: substitution | scenario

14. ANS:  
11 m

PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations  
KEY: elimination | scenario | words to equation

15. ANS:  
88 and 87

PTS: 1                    DIF: 3-4                    OBJ: Section 9.2                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Elimination  
KEY: elimination | identify two numbers | words to equation

16. ANS:  
1 and 5
- PTS: 1                    DIF: 3-4                    OBJ: Section 9.2                    NAT: RF9  
TOP: Solving Systems of Linear Equations by Elimination  
KEY: elimination | identify two numbers | words to equation
17. ANS:  
9
- PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations                    KEY: substitution | scenario
18. ANS:  
22
- PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations  
KEY: substitution | identify two numbers | words to equation
19. ANS:  
9
- PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations                    KEY: substitution | scenario
20. ANS:  
88 quarters and 44 dimes
- PTS: 1                    DIF: 3-4                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations  
KEY: substitution | identify two numbers | scenario
21. ANS:  
\$7000.00
- PTS: 1                    DIF: 5-6                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations                    KEY: substitution | scenario
22. ANS:  
\$10 000.00 at 1.2% and \$30 000.00 at 2.8%
- PTS: 1                    DIF: 5-6                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations  
KEY: substitution | simple interest | scenario
23. ANS:  
\$21
- PTS: 1                    DIF: 5-6                    OBJ: Section 9.3                    NAT: RF9  
TOP: Solving Problems Using Systems of Linear Equations                    KEY: substitution | scenario

24. ANS:

For the first vertex, consider the lines represented by

$$y = x + 2 \quad \textcircled{1}$$

$$y = 17 - 2x \quad \textcircled{2}$$

At the point of intersection,

$$x + 2 = 17 - 2x$$

$$3x = 15$$

$$x = 5$$

Substitute  $x = 5$  into equation  $\textcircled{1}$ :

$$y = 5 + 2$$

$$y = 7$$

The coordinates of the first vertex are (5, 7).

For the second vertex, consider the lines represented by

$$y = x + 2 \quad \textcircled{1}$$

$$y = -x + 8 \quad \textcircled{2}$$

At the point of intersection,

$$x + 2 = -x + 8$$

$$2x = 6$$

$$x = 3$$

Substitute  $x = 3$  into equation  $\textcircled{1}$ :

$$y = 3 + 2$$

$$y = 5$$

The coordinates of the second vertex are (3, 5).

For the third vertex, consider the lines represented by

$$y = 17 - 2x \quad \textcircled{1}$$

$$y = -x + 8 \quad \textcircled{2}$$

At the point of intersection,

$$17 - 2x = -x + 8$$

$$x = 9$$

Substitute  $x = 9$  into equation  $\textcircled{1}$ :

$$y = -9 + 8$$

$$y = -1$$

$$y = -1$$

The coordinates of the third vertex are (9, -1).

PTS: 1

DIF: 5-6

OBJ: Section 9.1 | Section 9.3

NAT: RF9

TOP: Solving Systems of Linear Equations by Substitution | Solving Problems Using Systems of Linear Equations

KEY: substitution | identify the ordered pair | linear systems

25. ANS:


Substitute  $x = 3$  and  $y = -3$  into each equation:

$$ax + by = -15$$

$$a(3) + b(-3) = -15 \quad \textcircled{1}$$

$$2ax - 3by = 0$$

$$2a(3) - 3b(-3) = 0 \quad \textcircled{2}$$

Multiply equation  $\textcircled{1}$  by 3, and add to equation  $\textcircled{2}$  

$$a = -3$$

Substitute  $a = -3$  into equation  $\textcircled{1}$ :

$$b = 2$$

The ordered pair  $(3, -3)$  is the solution for the linear system when  $a = -3$  and  $b = 2$ .

PTS: 1

DIF: 5-6

OBJ: Section 9.1 | Section 9.2

NAT: RF9

TOP: Solving Systems of Linear Equations by Substitution | Solving Systems of Linear Equations by Elimination

KEY: substitution | elimination | identify the coefficient | linear systems

26. ANS:

Let  $x$  represent the mass of the 25% copper alloy used, and let  $y$  represent the mass of the 50% copper alloy used, both in grams.

$$x + y = 2500 \quad \textcircled{1}$$

$$0.25x + 0.5y = 0.4(2500) \quad \textcircled{2}$$

Solve equation  $\textcircled{1}$  for  $y$ :

$$x + y = 2500$$

$$y = 2500 - x \quad \textcircled{3}$$

Substitute  $y = 2500 - x$  into equation  $\textcircled{2}$ :

$$0.25x + 0.5y = 0.4(2500)$$

$$0.25x + 0.5(2500 - x) = 1000$$

$$0.25x + 1250 - 0.5x = 1000$$

$$-0.25x = -250$$

$$x = 1000$$

Substitute  $x = 1000$  into equation  $\textcircled{3}$ :

$$y = 2500 - 1000$$

$$y = 1500$$

To make 2500 g of an alloy that is 40% copper, 1000 g of the 25% copper alloy and 1500 g of the 50% copper alloy should be used.

PTS: 1

DIF: 5-6

OBJ: Section 9.3

NAT: RF9

TOP: Solving Problems Using Systems of Linear Equations

KEY: substitution | scenario

27. ANS:

Let  $x$  be the mass of sunflower seeds and let  $y$  be the mass of raisins in Raylene's trail mix, both in kilograms.

$$y = 1.5x \quad \textcircled{1}$$

$$12x + 6y = 126 \quad \textcircled{2}$$

Substitute equation  $\textcircled{1}$  into equation  $\textcircled{2}$ :

$$12x + 6(1.5x) = 126$$

$$x = 6$$

Substitute  $x = 6$  into equation  $\textcircled{1}$ :

$$y = 1.5(6)$$

$$y = 9$$

Raylene should buy 6 kg of sunflower seeds and 9 kg of raisins.

PTS: 1                      DIF: 5-6                      OBJ: Section 9.3                      NAT: RF9

TOP: Solving Problems Using Systems of Linear Equations                      KEY: substitution | scenario

28. ANS:

a) Let  $f$  be the speed of the fishing boat, and let  $c$  be the speed of the river's current, both in km/h.

Upstream:

$$60 = (f - c)5$$

$$f - c = 12 \quad \textcircled{1}$$

Downstream:

$$60 = (f + c)4$$

$$f + c = 15 \quad \textcircled{2}$$

Add equation  $\textcircled{1}$  and equation  $\textcircled{2}$ :

$$\begin{array}{r} f - c = 12 \\ + (f + c = 15) \\ \hline f = 13.5 \end{array}$$

The speed of the fishing boat is 13.5 km/h.

b) Substitute  $f = 13.5$  into equation  $\textcircled{2}$ :

$$13.5 + c = 15$$

$$c = 1.5$$

The river's current is 1.5 km/h.

PTS: 1                      DIF: 5-6                      OBJ: Section 9.3                      NAT: RF9

TOP: Solving Problems Using Systems of Linear Equations

KEY: distance | speed | time | substitution | elimination | scenario

29. ANS:

a) Let  $a$  represent the cost of admission for an adult, and let  $c$  represent the cost of admission for a child, both in dollars.

$$11c + 4a = 455.50 \quad \textcircled{1}$$

$$9c + 4a = 398.50 \quad \textcircled{2}$$

b) Multiply equation  $\textcircled{1}$  by 4, and multiply equation  $\textcircled{2}$  by 4, then subtract them:

$$c = 28.50$$

Substitute  $c = 28.50$  into equation  $\textcircled{2}$ :

$$a = 35.50$$

The cost of admission for an adult is \$35.50 and the cost of admission for a child is \$28.50.

PTS: 1                      DIF: 5-6                      OBJ: Section 9.3                      NAT: RF9

TOP: Solving Problems Using Systems of Linear Equations                      KEY: elimination | scenario

30. ANS:

Let  $x$  represent the number of two-seat tables needed, and let  $y$  represent the number of four-seat tables.

$$x + y = 33 \quad \textcircled{1}$$

$$2x + 4y = 82 \quad \textcircled{2}$$

Solve equation  $\textcircled{1}$  for  $y$ :

$$x + y = 33$$

$$y = 33 - x$$

Substitute  $y = 33 - x$  into equation  $\textcircled{2}$ :

$$2x + 4y = 82$$

$$2x + 4(33 - x) = 82$$

$$x = 25$$

Substitute  $x = 25$  into equation  $\textcircled{1}$ :

$$25 + y = 82$$

$$y = 8$$

Calculate the cost of the tables:

$$25(29.95) + 8(39.95) = 1068.35$$

The total cost for 25 two-seat tables and 8 four-seat tables is \$1068.35.

PTS: 1

DIF: 5-6

OBJ: Section 9.3

NAT: RF9

TOP: Solving Problems Using Systems of Linear Equations

KEY: substitution | scenario

31. ANS:

$$x = -3, y = -2, z = -2$$

PTS: 1

DIF: 7-8

OBJ: Section 9.1

NAT: RF9

TOP: Solving Systems of Linear Equations by Substitution

KEY: substitution | three variables | linear systems

32. ANS:

$$a = -5, b = 200, \text{ and } c = 0$$

PTS: 1

DIF: 7-8

OBJ: Section 9.3

NAT: RF9

TOP: Solving Problems Using Systems of Linear Equations

KEY: three variables | identify the coefficient | scenario