SATPREP
Assignment : ***System of Equations***

Multiple-Choice

1. If $2x - 3y = 11$ and $3x + 15 = 0$, what is the value of y?
   (A) -7
   (B) -5
   (C) $\frac{1}{3}$
   (D) 3

2. If $2a = 3b$ and $4a + b = 21$, then $b =$
   (A) 1
   (B) 3
   (C) 4
   (D) 7

3. If $2p + q = 11$ and $p + 2q = 13$, then $p + q =$
   (A) 6
   (B) 8
   (C) 9
   (D) 12

$$2(x + y) = 3y + 5$$
$$3x + 2y = -3$$

4. Which equivalent equation could be used to solve the system of equations above?
   (A) $3\left(\frac{5+y}{2}\right) + 2y = -3$
   (B) $3\left(\frac{5}{2} - y\right) + 2y = -3$
   (C) $3x + 2(2x - 5) = -3$
   (D) $3x + 2(5 - 2x) = -3$

5. If $x - y = 3$ and $x + y = 5$, what is the value of y?
   (A) -4
   (B) -2
   (C) -1
   (D) 1

6. If $5x + y = 19$ and $x - 3y = 7$, then $x + y =$
   (A) -4
   (B) -1
   (C) 3
   (D) 4

7. If $x - 9 = 2y$ and $x + 3 = 5y$, what is the value of x?

(A) −2
(B) 4
(C) 11
(D) 17

8. If $\frac{1}{x}+\frac{1}{y}=\frac{1}{4}$ and $\frac{1}{x}-\frac{1}{y}=\frac{3}{4}$, then $x=$

(A) $\frac{1}{4}$
(B) $\frac{1}{2}$
(C) 2
(D) 4

9. If $5a + 3b = 35$ and $\frac{a}{b}=\frac{2}{5}$, what is the value of a?

(A) $\frac{14}{5}$
(B) $\frac{7}{2}$
(C) 5
(D) 7

10. If $\frac{x}{y}=6$, $\frac{y}{w}=4$, and $x = 36$, what is the value of w?

(A) $\frac{1}{2}$
(B) $\frac{3}{2}$
(C) 2
(D) 4

11. If $4r + 7s = 23$ and $r - 2s = 17$ then $3r + 3s =$

(A) 8
(B) 24
(C) 32
(D) 40

12. If $\frac{p-q}{2} = 3$ and $rp - rq = 12$, then $r =$

(A) −1
(B) 1
(C) 2
(D) 4

13. If $(a + b)^2 = 9$ and $(a - b)^2 = 49$, what is the value of $a^2 + b^2$?

(A) 17
(B) 20
(C) 29
(D) 58

$$3x - y = 8 - x$$
$$6x + 4y = 2y - 9$$

14. For the system of equations above, what is the value of the product xy?
    (A) –3
    (B) –2
    (C) 2
    (D) 3

15. If $3x + y = c$ and $x + y = b$, what is the value of x in terms of c and b?
    (A) $\frac{c-b}{3}$
    (B) $\frac{c-b}{2}$
    (C) $\frac{b-c}{3}$
    (D) $\frac{b-c}{2}$

16. If $a + b = 11$ and $a - b = 7$, then $ab =$
    (A) 6
    (B) 8
    (C) 10
    (D) 18

$$x - z = 7$$
$$x + y = 3$$
$$z - y = 6$$

17. For the above system of three equations, $x =$
    (A) 5
    (B) 6
    (C) 7
    (D) 8

$$a = 4c$$
$$c = re$$
$$a = 5e$$

18. For the system of equations above, if $e \neq 0$, what is the value of r?
    (A) $\frac{1}{20}$
    (B) $\frac{4}{5}$
    (C) $\frac{5}{4}$
    (D) 1

19. During the next football season, a player's earnings, x, will be 0.005 million dollars more than those of a teammates' earnings, y. The two players will earn a total of 3.95 milion dollars. Which system of equations could be used to determine the amount each player will earn, in millions of dollars?

(A) $x + y = 3.95$
$x + 0.005 = y$

(B) $x - 3.95 = y$
$y + 0.005 = x$

(C) $y - 3.95 = x$
$x + 0.005 = y$

(D) $x + y = 3.95$
$y + 0.005 = x$

Food	Protein	Calories
Cereal	5 g	90
Milk	8 g	80

20. The table above shows the number of grams of protein and the number of calories in single servings of bran flakes cereal and milk. How many servings of each are needed to get a total of 35 grams of protein and 470 calories?

(A) 2 servings of milk; 4 servings of cereal

(B) $2\frac{1}{2}$ servings of milk; $2\frac{1}{2}$ servings of cereal

(C) 3 servings of milk; $2\frac{1}{2}$ servings of cereal

(D) $2\frac{1}{2}$ servings of milk; 3 servings of cereal

Grid-In

1. If 5 sips + 4 gulps = 1 glass and 13 sips + 7 gulps = 2 glasses, how many sips equal a gulp?

2. When Amy exercises in her fitness center for 1 hour she burns a total of 475 calories. If she burns 9 calories a minute jogging on the treadmill and then burns 6.5 calories a minute pedaling on the stationary bicycle, how many minutes of the hour does she spend exercising on the bicycle?

3. John and Sara each bought the same type of pen and notebook in the school bookstore, which does not charge sales tax. John paid \$5.55 for two pens and three notebooks, and Sara paid \$3.50 for one pen and two notebooks. How much does the school bookstore charge for one notebook?

$$\frac{1}{2}r - \frac{1}{3}s = 8$$
$$\frac{5}{8}r - \frac{1}{4}s = 29$$

4. For the system of equations above, what is the value of $r + s$?