1.
Solve the equation.

$$2(4 + 2x) = 3(x - 5)$$

The solution set is $\{\quad\}$.
(Simplify your answer. Type N if there is no solution.)

2.
Solve the equation.

$$\frac{x}{x+4} = \frac{4}{3}$$

The solution set is $\{\quad\}$.
(Simplify your answer. Type N if there is no solution.)

3.
Sonya, who is paid time-and-a-half for hours worked in excess of 40 hours, had gross weekly wages of $841 for 52 hours worked. What is her regular hourly rate?

Sonya's regular hourly rate is $\$\quad$ per hour.

4.
Solve the following equation by factoring.

$$x^2 - 6x = 0$$

The solution set is $\{\quad\}$.
(Use a comma to separate answers as needed.)

5.
Solve the equation by factoring.

$$z^2 + 2z - 15 = 0$$

What is the solution set?

$\{\quad\}$ (Use a comma to separate answers as needed.)

6.

Solve the equation by the square root method.

$$(x-7)^2 = 49$$

What is the solution set?

{ $\boxed{}$ } (Use a comma to separate answers as needed.)

7.

What number should be added to complete the square of the following expression?

$$x^2 - 18x$$

The number that should be added to $x^2 - 18x$ to complete the square is $\boxed{}$.

8.

Solve the quadratic equation by completing the square.

$$x^2 + 6x = 7$$

What is the solution set?

{ $\boxed{}$ } (Use a comma to separate answers as needed.)

9.

Use the quadratic formula to find the real solutions, if any, of the equation.

$$x^2 - 2x - 10 = 0$$

$x = \boxed{}$

(Type exact answers, using radicals as needed. Use a comma to separate answers. Type N if there are no real solutions.)

10.

Find the real solutions, if any, using the quadratic formula.

$$3x^2 - 7x + 2 = 0$$

x = ☐
(Simplify your answer. Use a comma to separate answers as needed. Type N if the solution is not a real number.)

11.

Write the expression in the standard form $a + bi$.

$$(8 - 8i) + (5 + 5i)$$

$(8 - 8i) + (5 + 5i) = $ ☐ (Simplify your answer.)

12.

Write the expression in the standard form $a + bi$.

$$(-6 + 5i) - (8 - 9i)$$

$(-6 + 5i) - (8 - 9i) = $ ☐
(Simplify your answer. Type your answer in the form $a + bi$.)

13.

Write the expression in the standard form $a + bi$.

$$(2 - 9i)(8 + i)$$

$(2 - 9i)(8 + i) = $ ☐ (Simplify your answer.)

14.

Write the expression in the standard form $a + bi$.

$$\frac{8 - i}{8 + i}$$

$\frac{8 - i}{8 + i} = $ ☐ (Simplify your answer.)

15.

Solve the equation in the complex number system.

$$x^2 + 1 = 0$$

The solution set is $\{\ \square\ \}$.
(Simplify your answer. Use a comma to separate answers as needed.)

16.

Express the graph shown in color using interval notation. Also express the graph as an inequality involving x.

Choose the correct interval notation below that is represented by the graph.

○ A. $(-2, 3]$
○ B. $[-3, 2)$
○ C. $[-3, 2]$
○ D. $\{-3, 2\}$

Choose the correct inequality below that is represented by the graph.

○ A. $-3 \leq x < 2$
○ B. $-3 < x \leq 2$
○ C. $-3 < x < 2$
○ D. $-3 \leq x \leq 2$

17.

Write the given inequality using interval notation, and illustrate the inequality using the real number line.
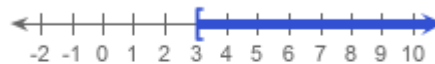
$3 \le x \le 7$

Use interval notation to express the inequality. What is the resulting interval?

☐

Choose the graph that illustrates the inequality on the real number line.
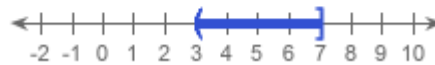
○ A.

-2 -1 0 1 2 3 4 5 6 7 8 9 10

○ B.

-2 -1 0 1 2 3 4 5 6 7 8 9 10

○ C.

-2 -1 0 1 2 3 4 5 6 7 8 9 10

○ D.

-2 -1 0 1 2 3 4 5 6 7 8 9 10

18.

Solve the inequality.

$7 - 6(1 - x) \le 9$

What is the solution?

☐

(Type your answer in interval notation. Type an integer or a simplified fraction.)

19.

Solve the inequality.

$-3 < \dfrac{2x - 4}{5} < 0$

What is the solution?

☐

(Type your answer in interval notation. Type an integer or a simplified fraction.)

20.   Solve the equation.

$$|6x + 8| = 4$$

The solution set is $\{\boxed{}\}$.
(Use a comma to separate answers as needed. Type N if there is no real solution.)

21.   Solve the inequality.

$$|x - 2| + 8 < 9$$

What is the solution set?

$\boxed{}$ (Type your answer in interval notation.)

22.   Solve the inequality.

$$|3 - 4x| > 9$$

What is the solution set?

$\boxed{}$

(Type your answer in interval notation. Type integers or simplified fractions.)

23.   Translate the sentence into a mathematical equation.

The total revenue derived from selling x televisions is $140 per television times the number of televisions sold.

Let R represent the revenue and x the number of televisions sold.

$R = \boxed{}$

24.

The manager of a store that specializes in selling tea decides to experiment with a new blend. She will mix some Earl Grey tea that sells for $6 per pound with some Orange Pekoe tea that sells for $4 per pound to get 300 pounds of the new blend. The selling price of the new blend is to be $5.50 per pound, and there is to be no difference in revenue from selling the new blend versus selling the other types. How many pounds of the Earl Grey tea and Orange Pekoe tea are required?

The blend should have ☐ pounds of Earl Grey and ☐ pounds of Orange Pekoe.

25.

Trent can deliver his newspapers in 40 minutes. It takes Lois 60 minutes to do the same route. How long would it take them to deliver the newspapers if they work together?

It will take ☐ minutes.

1. -23

2. -16

3. 14.50

4. $0,6$

5. $-5,3$

6. $0, 14$

7. 81

8. $1,-7$

9. $1+\sqrt{11}, 1-\sqrt{11}$

10. $\dfrac{1}{3}, 2$

11. $13-3i$

12. $-14+14i$

13. $25-70i$

14. $\dfrac{63}{65}-\dfrac{16}{65}i$

15. $i,-i$

16. B
    A

17. $[3, 7]$
    C

18. $\left[-\infty, \dfrac{4}{3}\right]$

19. $\left[-\dfrac{11}{2}, 2\right]$

20. $-\dfrac{2}{3}, -2$

21. $(1, 3)$

22. $\left(-\infty, -\dfrac{3}{2}\right] \cup (3, \infty)$

23. 140x

24. 225
    75

25. 24