

## Summer Packet 2026

Date \_\_\_\_\_ Period \_\_\_\_\_

**This summer packet is due the first week of school. You must show work on #'s (11-43)(47-50) in order to receive full credit. You will receive a grade for completing this packet. The questions on the summer packet will be reviewed the first week of school followed by a test on the same concepts.**

**Name the set or sets to which each number belongs. N= Natural, W= Whole, Z= Integers, Q= Rational, I= Irrational, and R= Real.**

1)  $\frac{7}{2}$

- A) I, R                      B) Z, Q, R  
C) W, Z, Q, R            D) Q, R

2) 0

- A) W, Z, Q, R              B) Z, Q, R  
C) N, W, Z, Q, R        D) Q, R

3)  $\sqrt{15}$

- A) Q, R                      B) Z, Q, R  
C) I, R                      D) W, Z, Q, R

4) 9

- A) I, R                      B) W, Z, Q, R  
C) Q, R                      D) N, W, Z, Q, R

5) 12

- A) N, W, Z, Q, R  
B) W, Z, Q, R  
C) Z, Q, R  
D) Q, R

6) -7

- A) Q, R                      B) I, R  
C) N, W, Z, Q, R        D) Z, Q, R

7)  $\frac{19}{15}$

- A) W, Z, Q, R  
B) I, R  
C) Q, R  
D) N, W, Z, Q, R

8)  $\sqrt{71}$

- A) N, W, Z, Q, R        B) I, R  
C) W, Z, Q, R            D) Q, R

9)  $\sqrt{47}$

- A) Q, R                      B) I, R  
C) N, W, Z, Q, R        D) Z, Q, R

10)  $\sqrt{79}$

- A) Q, R  
B) W, Z, Q, R  
C) N, W, Z, Q, R  
D) I, R

**Simplify. Your answer should contain only positive exponents.**

11)  $9 \cdot 3^3$

- A) 1      B)  $\frac{1}{3}$   
C)  $3^5$     D)  $\frac{1}{3^3}$

12)  $2^0 \cdot 2^2$

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

13)  $4 \cdot 4^{-3}$

- A)  $4^6$       B) 4  
C)  $\frac{1}{4^2}$       D)  $4^4$

14)  $2 \cdot 2^2 \cdot 2^2$

- A)  $\frac{1}{2^3}$       B)  $2^9$   
C)  $2^3$       D)  $2^5$

15)  $4^0 \cdot 4^0 \cdot 4^2$

- A)  $4^4$       B)  $\frac{1}{4^2}$   
C)  $4^7$       D)  $4^2$

16)  $2m^2n^{-1} \cdot mn^2$

- A)  $6m^5n^4$     B)  $\frac{4m^2}{n^2}$   
C)  $2m^3n$      D)  $\frac{8}{mn^3}$

17)  $2x^{-3}y^3 \cdot y^3$

- A)  $\frac{32}{y^6x^4}$       B)  $6y^2x^4$   
C)  $\frac{2y^6}{x^3}$         D)  $\frac{2x^3}{y}$

18)  $2x^{-1}y^3 \cdot 3x^0y^4$

- A)  $\frac{6y^7}{x}$         B)  $\frac{6x^3}{y^4}$   
C)  $12y^2$      D)  $\frac{9x^5}{y^2}$

19)  $4x^4y^{-2} \cdot 4x^{-4} \cdot x^2y^0$

- A)  $\frac{16y^3}{x}$         B)  $\frac{16x^2}{y^2}$   
C)  $\frac{12y^2}{x^7}$         D)  $\frac{8x^3}{y^2}$

20)  $2x^3 \cdot 4yx^{-3}$

- A)  $\frac{2y^4}{x^2}$         B)  $\frac{2}{x^2y^2}$   
C)  $8y$         D)  $8y^8$

21)  $2^4$

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

22)  $(3^0)^{-4}$

- A)  $\frac{1}{3^2}$         B) 1  
C)  $3^6$         D)  $\frac{1}{3^8}$

23)  $(2^{-1})^2$

A)  $2^{12}$

B)  $\frac{1}{2^4}$

C)  $\frac{1}{2^2}$

D) 1

24)  $(2^2)^{-3}$

A) 1

B)  $2^3$

C)  $\frac{1}{2^6}$

D)  $\frac{1}{2^{12}}$

25)  $(m^4 n^{-4})^2$

A)  $m^6 n^6$

B)  $81n^{12}$

C)  $\frac{m^6}{n^4}$

D)  $\frac{m^8}{n^8}$

26)  $(m^{-1} n^2)^3$

A)  $\frac{n^6}{m^3}$

B)  $\frac{n^3}{m^9}$

C)  $\frac{1}{8n^3 m^6}$

D) 1

27)  $(n^3)^3$

A)  $\frac{n^4}{m^{16}}$

B)  $n^9$

C)  $\frac{16}{n^{16}}$

D)  $64m^3$

28)  $(2y^2)^{-4}$

A)  $\frac{x^4}{y^8}$

B)  $\frac{1}{x^{16} y^{16}}$

C)  $81x^8 y^{16}$

D)  $\frac{1}{16y^8}$

29)  $(3v^3)^3$

A)  $\frac{1}{256u^4 v^{16}}$

B)  $\frac{1}{81v^4 u^8}$

C)  $\frac{u^4}{3v^4}$

D)  $27v^9$

30)  $\frac{4y^0}{4x^4 y^4}$

A)  $\frac{1}{x^4 y^4}$

B)  $\frac{x^7 y^2}{2}$

C)  $x^2 y^2$

D)  $\frac{y^3}{2x^2}$

31)  $\frac{u^4 v^3}{u^{-4} v^2}$

A)  $\frac{2}{u^3 v^2}$

B)  $\frac{4v}{3u^4}$

C)  $\frac{u}{3v^5}$

D)  $u^8 v$

**Simplify. Write each answer in scientific notation.**

$$32) \frac{1.6 \times 10^{-2}}{4.82 \times 10^3}$$

- A)  $3.32 \times 10^{-5}$
- B)  $3.32 \times 10^{-6}$
- C)  $3.32 \times 10^{-6}$
- D)  $0.332 \times 10^{-6}$

$$33) \frac{6.97 \times 10^1}{8.1 \times 10^3}$$

- A)  $0.8605 \times 10^{-3}$
- B)  $8.605 \times 10^{-3}$
- C)  $5.646 \times 10^5$
- D)  $0.5646 \times 10^5$

$$34) \frac{6.6 \times 10^3}{3.18 \times 10^{-6}}$$

- A)  $2.075 \times 10^9$
- B)  $2.075 \times 10^{10}$
- C)  $2.099 \times 10^{-2}$
- D)  $2.099 \times 10^{-3}$

**Evaluate each expression.**

$$35) \left(1\frac{2}{3} \times \frac{7}{5}\right) \div 3\frac{1}{4}$$

- A)  $\frac{28}{39}$
- B)  $\frac{67}{39}$
- C)  $\frac{151}{156}$
- D)  $\frac{385}{156}$

$$36) 2 \div \frac{1}{2} \times 1\frac{1}{2}$$

- A) 5
- B)  $\frac{25}{6}$
- C) 6
- D)  $\frac{18}{5}$

$$37) 3\frac{2}{3} \div 3\frac{5}{6} - \frac{1}{3}$$

- A)  $\frac{1112}{345}$
- B)  $\frac{43}{69}$
- C)  $\frac{159}{46}$
- D)  $\frac{181}{69}$

$$38) 38 \div (16 - 14) + (10 + 20) \times 6$$

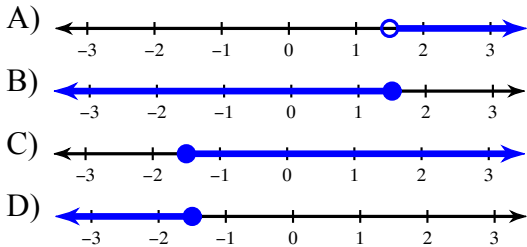
- A) 199
- B) 205
- C) 182
- D) 202

$$39) (9 + 4 + 14 - 10) \div (18 - 1)$$

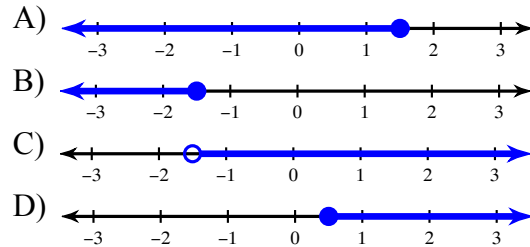
- A) 17
- B) 1
- C) 14
- D) 18

Draw a graph for each inequality.

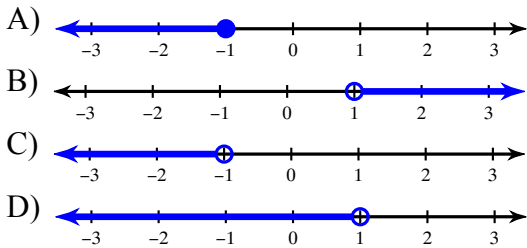
40)  $-m \geq -1\frac{1}{2}$



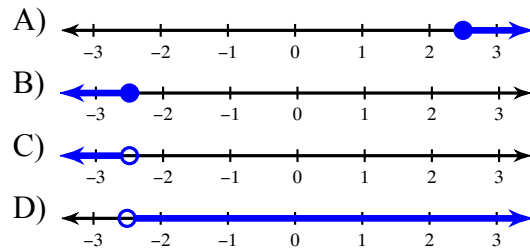
41)  $b \leq -\frac{3}{2}$



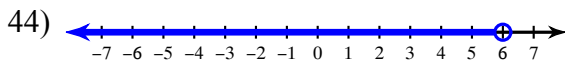
42)  $-r \geq 1$



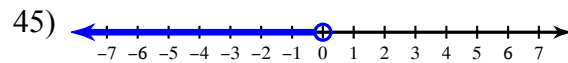
43)  $-b > 2\frac{1}{2}$



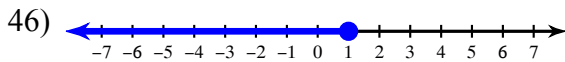
Write an inequality for each graph.



- A)  $k \geq 6$       B)  $k < 6$   
 C)  $k \geq -6$       D)  $k \leq 6$



- A)  $r \leq 0$       B)  $r > 0$   
 C)  $r < 0$       D)  $r \geq 0$



- A)  $n > 1$       B)  $n < 1$   
 C)  $n \leq 1$       D)  $n \geq 1$

Solve each equation.

47)  $2(5 + 3n) - 2(7 - 2n) = 8n + 6 + n$

- A)  $\{-11\}$       B)  $\{8\}$   
 C)  $\{16\}$       D)  $\{10\}$

48)  $-3(7n + 4) - 4(5 - 6n) = 1 - 5n + 4n - 1$

- A)  $\{8\}$       B)  $\{-8\}$   
 C)  $\{-13\}$       D)  $\{\text{All real numbers.}\}$

49)  $-4(b + 5) - 4b = 4(7 - 5b)$

- A)  $\{-10\}$       B)  $\{9\}$   
 C)  $\{4\}$       D)  $\{7\}$

50)  $\frac{63}{2} = -\frac{7}{2}\left(\frac{5}{2}n - \frac{7}{3}\right)$

- A) No solution.      B)  $\left\{3\frac{1}{4}\right\}$   
 C)  $\left\{-\frac{8}{3}\right\}$       D)  $\left\{3\frac{5}{6}\right\}$