

Name \_\_\_\_\_

**NOTE: You must show your work for each problem to get credit.****MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.****Simplify the expression.**

- 1)  $8^5 \cdot 8^6$  A)  $8^{30}$  B)  $8^{11}$  C)  $16^{11}$  D)  $64^{30}$  1) \_\_\_\_\_

**Use the properties of exponents to simplify the expression.**

- 2)  $(x^2)^5$  A)  $x^7$  B)  $x^{10}$  C)  $5x^2$  D)  $10x$  2) \_\_\_\_\_

**Simplify.**

- 3)  $2^0$  A) 1 B) -1 C) 0 D) 2 3) \_\_\_\_\_

**Perform the indicated operations.**

- 4)  $(4n^6 - 3n + 6n^3) + (-2n^3 + 8n^6 - 4n)$  A)  $12n^6 + 4n^3 - 7n$  B)  $9n^{10}$  C)  $12n + 4n^6 - 7n^3$  D)  $5n^6 + 2n^3 + 2n$  4) \_\_\_\_\_

- 5)  $(-3x^2 + 7x^4 + 1 - 8x^3) - (6 + 4x^3 + 3x^4 - 7x^2)$  5) \_\_\_\_\_  
A)  $10x^4 - 4x^3 - 10x^2 - 5$  B)  $4x^4 - 12x^3 + 4x^2 - 5$   
C)  $10x^4 - 4x^3 - 10x^2 + 7$  D)  $4x^4 - 4x^3 - 10x^2 + 7$

**Find the product.**

- 6)  $(-4x^3y^4)(-2x^4y^2)$  A)  $8x^7y^6$  B)  $8xy^7$  C)  $8x^6y^7$  D)  $8xy^6$  6) \_\_\_\_\_

- 7)  $11x^6(-8x^5 + 5x^3)$  A)  $-88x^{11} + 5x^3$  B)  $-33x^{11} - 33x^9$  C)  $-33x^6$  D)  $-88x^{11} + 55x^9$  7) \_\_\_\_\_

- 8)  $(3x - 5)(x + 5)$  A)  $x^2 + 10x - 22$  B)  $3x^2 + 10x - 25$  C)  $3x^2 - 22x - 25$  D)  $x^2 - 25x + 10$  8) \_\_\_\_\_

- 9)  $(x + 5y)(x - 8y)$  A)  $x^2 - 3xy - 40y^2$  B)  $x^2 - 3xy - 3y^2$  C)  $x - 3xy - 40y$  D)  $x^2 - 6xy - 40y^2$  9) \_\_\_\_\_

- 10)  $(a - 7)(a + 7)$  A)  $a^2 - 14$  B)  $a^2 + 14a - 49$  C)  $a^2 - 14a - 49$  D)  $a^2 - 49$  10) \_\_\_\_\_

- 11)  $(7y + x)(7y - x)$  11) \_\_\_\_\_  
A)  $49y^2 - 14xy - x^2$  B)  $49y^2 + 14xy - x^2$   
C)  $49y^2 - x^2$  D)  $14y^2 - x^2$

12)  $(w - 2)^2$   
 A)  $w^2 + 4$                       B)  $w^2 - 4w + 4$                       C)  $w + 4$                       D)  $4w^2 - 4w + 4$                       12) \_\_\_\_\_

13)  $(7m + 9)^2$   
 A)  $49m^2 + 81$                       B)  $49m^2 + 126m + 81$   
 C)  $7m^2 + 126m + 81$                       D)  $7m^2 + 81$                       13) \_\_\_\_\_

**Factor out the greatest common factor. Simplify the factors, if possible.**

14)  $5x^3 + 15x$   
 A)  $5x^2(x + 3)$                       B)  $5x(x^2 + 3)$                       C)  $5x(x^2 + 10x)$                       D)  $5x(x^2 + 3x)$                       14) \_\_\_\_\_

15)  $5t^2 - 10t - 25$   
 A)  $5(t^2 - 5t - 20)$                       B)  $5t(t^2 - 2t - 5)$                       C)  $5(t^2 - 10t - 25)$                       D)  $5(t^2 - 2t - 5)$                       15) \_\_\_\_\_

**Factor by grouping.**

16)  $15x^2 + 25x + 12x + 20$   
 A)  $(15x + 4)(x + 5)$                       B)  $(15x - 4)(x - 5)$                       C)  $(5x - 4)(3x - 5)$                       D)  $(5x + 4)(3x + 5)$                       16) \_\_\_\_\_

17)  $15a^3 - 18a^2b + 10ab^2 - 12b^3$   
 A)  $(3a^2 - 2b^2)(5a + 6b)$                       B)  $(15a^2 + 2b^2)(a - 6b)$   
 C)  $(3a^2 + 2b^2)(5a - 6b)$                       D)  $(3a^2 + 2b)(5a - 6b)$                       17) \_\_\_\_\_

**Factor the trinomial, if possible.**

18)  $x^2 - x - 12$   
 A)  $(x - 4)(x + 4)$                       B)  $(x + 1)(x - 7)$                       C)  $(x + 3)(x - 4)$                       D)  $(x + 4)(x - 3)$                       18) \_\_\_\_\_

19)  $x^2 + 4xy - 21y^2$   
 A)  $(x + 7y)(x - 3y)$                       B)  $(x - 7y)(x + y)$                       C)  $(x - 7y)(x + 3y)$                       D)  $(x - y)(x + 3y)$                       19) \_\_\_\_\_

**Factor the trinomial completely.**

20)  $3x^3 + 9x^2 - 30x$   
 A)  $(x - 2)(3x^2 + 15)$                       B)  $3x(x - 2)(x + 5)$                       C)  $(3x^2 + 6x)(x - 5)$                       D)  $3x(x + 2)(x - 5)$                       20) \_\_\_\_\_

**Factor the trinomial, if possible.**

21)  $15y^2 + 32y + 16$   
 A)  $(15y + 4)(y + 4)$                       B)  $(3y + 4)(5y + 4)$                       C)  $(15y + 1)(y - 16)$                       D)  $(3y - 4)(5y - 4)$                       21) \_\_\_\_\_

**Factor the perfect square trinomial completely.**

22)  $9m^2 + 48m + 64$   
 A)  $(3m - 8)^2$                       B)  $(3m - 9)^2$   
 C)  $(3m + 8)(3m - 8)$                       D)  $(3m + 8)^2$                       22) \_\_\_\_\_

**Factor.**

23)  $y^2 - 16$   
 A)  $(y + 4)(y - 4)$                       B)  $(y + 16)(y - 16)$                       C)  $(y^2 + 4)(y^2 - 4)$                       D)  $(y - 4)(y - 4)$                       23) \_\_\_\_\_

**Solve the equation.**

24)  $7x + 1 = x - 7$

A)  $\left\{-\frac{4}{3}\right\}$

B)  $\left\{-\frac{6}{7}\right\}$

C)  $\{-1\}$

D)  $\left\{-\frac{8}{7}\right\}$

24) \_\_\_\_\_

25)  $\frac{x-5}{7} = \frac{x+3}{2}$

A)  $\left\{-\frac{31}{5}\right\}$

B)  $\left\{\frac{31}{9}\right\}$

C)  $\left\{-\frac{26}{5}\right\}$

D)  $\left\{-\frac{11}{5}\right\}$

25) \_\_\_\_\_

26)  $-7.9x + 1.5 = -64.5 - 1.3x$

A) {8.4}

B) {10}

C) {-73}

D) {8.5}

26) \_\_\_\_\_

**Solve the formula for the indicated variable.**

27)  $I = Prt$ , for  $r$

A)  $r = \frac{P - I}{1 + t}$

B)  $r = \frac{I}{Pt}$

C)  $r = P - It$

D)  $r = \frac{P - 1}{It}$

27) \_\_\_\_\_

28)  $F = \frac{9}{5}C + 32$ , for  $C$

A)  $C = \frac{F - 32}{9}$

B)  $C = \frac{9}{5}(F - 32)$

C)  $C = \frac{5}{F - 32}$

D)  $C = \frac{5}{9}(F - 32)$

28) \_\_\_\_\_

**Solve the problem.**

29) Find the length of a rectangular lot with a perimeter of 82 m if the length is 5 m more than the width.

A) 46 m

B) 18 m

C) 23 m

D) 41 m

29) \_\_\_\_\_

30) A toy company uses the linear model  $y = -3x + 571$  to predict the decline in sales of a toy after it has been on the market more than one year. If  $x$  is the number of months after the first year and  $y$  is the number of toys sold in hundreds during that month, how many toys will be sold 13 months after the first year?

A) -170,000 toys

B) -18,600 toys

C) 61,000 toys

D) 53,200 toys

30) \_\_\_\_\_

**Find the sum or difference. Write the answer in standard form.**

31)  $(2 - 4i) + (3 + 7i)$

A)  $-1 + 11i$

B)  $5 + 3i$

C)  $5 - 3i$

D)  $-5 - 3i$

31) \_\_\_\_\_

32)  $(4 + 6i) - (-7 + i)$

A)  $-11 - 5i$

B)  $11 - 5i$

C)  $-3 + 7i$

D)  $11 + 5i$

32) \_\_\_\_\_

**Find the product. Write the answer in standard form.**

33)  $(9 - 4i)(2 + 9i)$

A)  $54 + 73i$

B)  $-36i^2 + 73i - 18$

C)  $-18 - 89i$

D)  $54 - 73i$

33) \_\_\_\_\_

34)  $(8 + 5i)^2$

A)  $89 - 80i$

B)  $39 - 80i$

C)  $89 + 80i$

D)  $39 + 80i$

34) \_\_\_\_\_

Solve the equation by the zero-factor property.

35)  $x^2 + 2x - 15 = 0$

- A) {3, 5}                      B) {-5, 3}                      C) {-5, -3}                      D) {-3, 5}

35) \_\_\_\_\_

Solve the equation by the square root property.

36)  $(x + 9)^2 = 36$

- A) {15, 3}                      B) {-15, -3}                      C) {-45}                      D) {-3}

36) \_\_\_\_\_

Solve the equation using the quadratic formula.

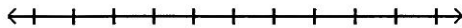
37)  $x^2 - 14x + 65 = 0$

- A) {11, 3}                      B)  $\{-7 \pm 4i\}$                       C)  $\{7 \pm 4i\}$                       D)  $\{14 \pm 8i\}$

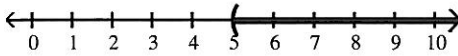
37) \_\_\_\_\_

Solve and graph the inequality. Give answer in interval notation.

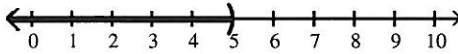
38)  $-6x + 12 > -7x + 17$



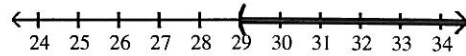
- A)  $(5, \infty)$



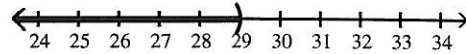
- C)  $(-\infty, 5)$



- B)  $(29, \infty)$

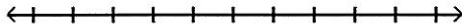


- D)  $(-\infty, 29)$

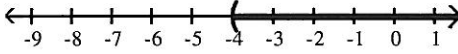


38) \_\_\_\_\_

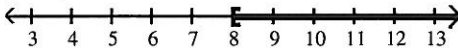
39)  $-4x + 3 \leq -5x + 11$



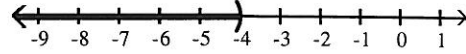
- A)  $(-4, \infty)$



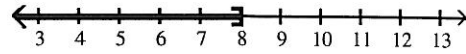
- C)  $[8, \infty)$



- B)  $(-\infty, -4)$

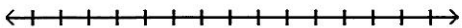


- D)  $(-\infty, 8]$

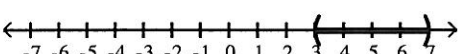


39) \_\_\_\_\_

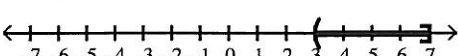
40)  $15 < 4x + 3 \leq 31$



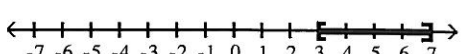
- A) (3, 7)



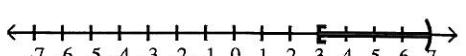
- C) [3, 7]



- B) [3, 7]



- D) [3, 7)



40) \_\_\_\_\_

Solve the equation.

41)  $\frac{1}{x} + \frac{2}{3x} = 4$

- A)  $\left\{\frac{3}{4}\right\}$                       B)  $\left\{\frac{5}{4}\right\}$                       C)  $\left\{\frac{5}{12}\right\}$                       D)  $\emptyset$

41) \_\_\_\_\_

Decide what values of the variable cannot possibly be solutions for the equation.

42)  $\frac{1}{x-3} - \frac{1}{x+9} = 11$

42) \_\_\_\_\_

A)  $-\frac{1}{9}, \frac{1}{3}$

B) -9, 3

C)  $-\frac{1}{3}, \frac{1}{9}$

D) -3, 9

For the points P and Q, find the distance d(P, Q).

43) P(4, -1), Q(6, -7)

43) \_\_\_\_\_

A)  $2\sqrt{10}$

B) 8

C) 32

D)  $32\sqrt{2}$

For the points P and Q, find the coordinates of the midpoint of the segment PQ

44) P(0, -4), Q(0, 9)

44) \_\_\_\_\_

A) (0, -13)

B)  $\left(0, -\frac{13}{2}\right)$

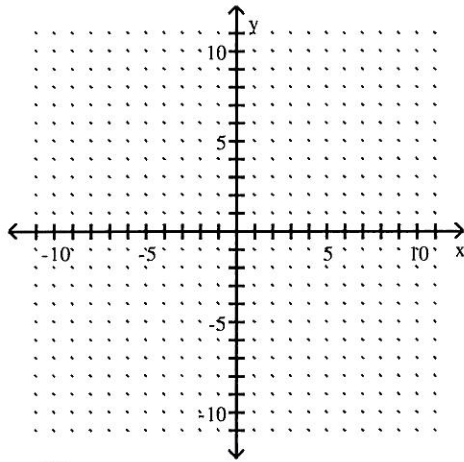
C) (0, 5)

D)  $\left(0, \frac{5}{2}\right)$

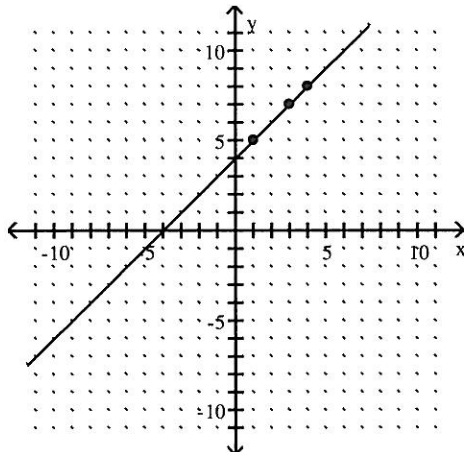
Graph the equation by determining the missing values needed to plot the ordered pairs.

45)  $y + x = 4$ ; (1, ), (4, ), (3, )

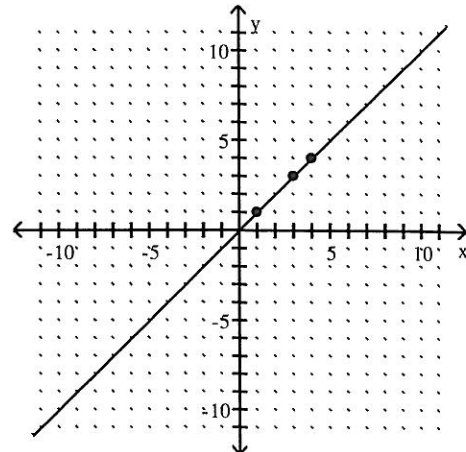
45) \_\_\_\_\_



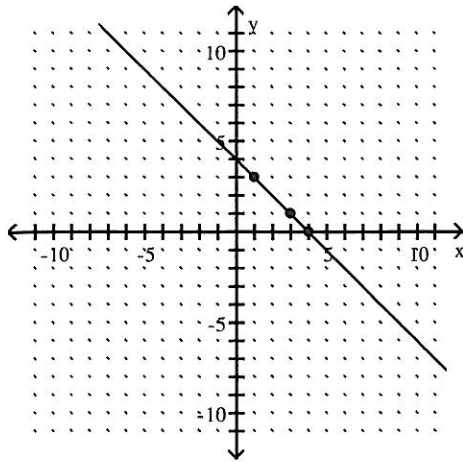
A)



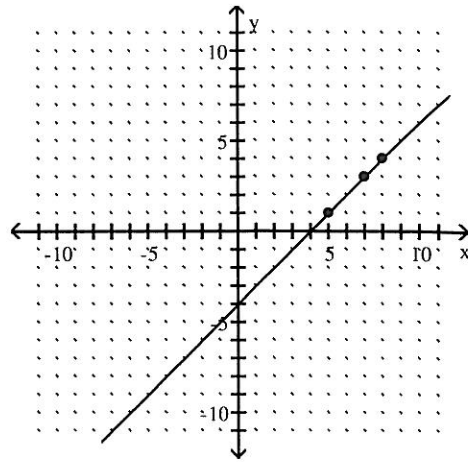
B)



C)



D)



Find the center-radius form of the equation of the circle.

46) center  $(-6, -4)$ , radius 3

A)  $(x + 4)^2 + (y + 6)^2 = 3$

C)  $(x + 6)^2 + (y + 4)^2 = 9$

B)  $(x - 6)^2 + (y - 4)^2 = 9$

D)  $(x - 4)^2 + (y - 6)^2 = 3$

46) \_\_\_\_\_

Solve the system by substitution.

47)  $x + 4y = -26$

$4x + 4y = -20$

A)  $\{(7, 2)\}$

B)  $\{(3, -8)\}$

C)  $\{(2, -7)\}$

D)  $\emptyset$

47) \_\_\_\_\_

Solve the system by elimination.

48)  $x + 3y = 18$

$6x + 4y = 24$

A)  $\{(-6, 0)\}$

B)  $\{(0, 6)\}$

C)  $\{(1, 5)\}$

D)  $\emptyset$

48) \_\_\_\_\_

Solve the system. If the system has infinitely many solutions, write the solution set with  $x$  arbitrary.

49)  $4x - y = 2$

$-8x + 2y = -4$

A)  $\{(x, 2 - 4x)\}$

B)  $\{(x, 8x - 2)\}$

C)  $\{(x, 4x - 2)\}$

D)  $\emptyset$

49) \_\_\_\_\_

Evaluate the expression.

50)  $10 + 8^2 - (-7) \cdot 6$

A) 116

B) 32

C) 402

D) 198

50) \_\_\_\_\_

51)  $-2^5$

A) -10

B) -32

C) 32

D) 10

51) \_\_\_\_\_

52) Let  $x = -4$ ,  $y = 7$ . Evaluate  $|x - y|$ .

A) -11

B) -3

C) 3

D) 11

52) \_\_\_\_\_

Factor.

53)  $25x^2 - 4$

A)  $(5x - 2)^2$

B)  $(25x + 1)(x - 4)$

C)  $(5x + 2)(5x - 2)$

D)  $(5x + 2)^2$

53) \_\_\_\_\_

**Simplify.**

54)  $(-2)^0$   
A) 0

B) 2

C) 1

D) -1

54) \_\_\_\_\_

55)  $-5x^0$   
A) 1

B) -1

C) 0

D) -5

55) \_\_\_\_\_

**Use the properties of exponents to simplify the expression.**

56)  $(6t)^5$   
A)  $6t^5$

B)  $6^5t^5$

C)  $30t^5$

D)  $6^5t$

56) \_\_\_\_\_

57)  $(-5x)^3$   
A)  $15x^3$

B)  $125x$

C)  $-125x^3$

D)  $-15x$

57) \_\_\_\_\_

58)  $\left(\frac{a^3}{b^4}\right)^3$   
A)  $\frac{a^{12}}{b^9}$

B)  $\frac{a^4}{b^{12}}$

C)  $\frac{a^9}{b^{12}}$

D)  $\frac{a^9}{b^4}$

58) \_\_\_\_\_

**Simplify the expression.**

59)  $(2a^8) \cdot (3a^2)$   
A)  $6a^{16}$

B)  $6a^{10}$

C)  $5^{16}$

D)  $5^{10}$

59) \_\_\_\_\_

60)  $(-4n^2) \cdot (3n^3)$   
A)  $-12n^6$

B)  $-1n^5$

C)  $-1n^6$

D)  $-12n^5$

60) \_\_\_\_\_

Answer Key

Testname: SUMMER MATH

- |       |       |
|-------|-------|
| 1) B  | 51) B |
| 2) B  | 52) D |
| 3) A  | 53) C |
| 4) A  | 54) C |
| 5) B  | 55) D |
| 6) A  | 56) B |
| 7) D  | 57) C |
| 8) B  | 58) C |
| 9) A  | 59) B |
| 10) D | 60) D |
| 11) C |       |
| 12) B |       |
| 13) B |       |
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| 16) D |       |
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| 28) D |       |
| 29) C |       |
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| 31) B |       |
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| 34) D |       |
| 35) B |       |
| 36) B |       |
| 37) C |       |
| 38) A |       |
| 39) D |       |
| 40) C |       |
| 41) C |       |
| 42) B |       |
| 43) A |       |
| 44) D |       |
| 45) C |       |
| 46) C |       |
| 47) C |       |
| 48) B |       |
| 49) C |       |
| 50) A |       |

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