

# Algebra 1 Summer Packet

Dear Student,

Welcome to Sayreville Middle School and your math course for the year! There is much to learn this year, and each class session during school will require students to work diligently, both during and outside of class. This summer Math packet addresses the material that you should be comfortable with before the start of Algebra 1. This Math packet serves 2 purposes:

- 1) It will allow you to remain mathematically fresh during the summer and
- 2) It will enable you to “hit the ground running” when this course begins.

**This packet should be completed and brought with you on the first day of school. Use the answer key provided to check your work. If you come across questions that you are unsure of, make note and bring that up to your teacher during the review.** It would be a mistake to complete this packet immediately upon the completion of this past school year as well as waiting until just before the next school year begins. Take some time off and look towards beginning the packet come mid-summer. It is important that the techniques practiced in this packet are fresh in your mind come the first day of school.

**You will be assessed on this content within the first week or so of school.**

Good luck!

Name: \_\_\_\_\_

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**Solve:**

- 1) Write the following numbers in order from greatest to least:  
 $4 \times 10^{-3}$ ,  $2.2 \times 10^4$ ,  $6 \times 10^1$
- 2) Write the following numbers in order from least to greatest:  
 $8.1 \times 10^2$ ,  $9 \times 10^3$ ,  $2.7 \times 10^5$
- 3) Write the following numbers in order from least to greatest:  
 $9.5 \times 10^{-3}$ ,  $7.7 \times 10^{-3}$ ,  $1.5 \times 10^5$
- 4) Write the following numbers in order from greatest to least:  
 $1.8 \times 10^{-3}$ ,  $4.4 \times 10^{-5}$ ,  $7.5 \times 10^{-5}$
- 5) Write the following numbers in order from least to greatest:  
 $2.4 \times 10^3$ ,  $2.8 \times 10^{-2}$ ,  $4.9 \times 10^3$

**Simplify:**

- 6) Find a rational number between  $\frac{47}{42}$  and  $\frac{8}{7}$
- 7) Find a rational number between  $\frac{2}{5}$  and  $\frac{11}{25}$
- 8) Find a rational number between  $\frac{9}{19}$  and  $\frac{37}{76}$
- 9) Find a rational number between 27 and 28
- 10) Find a rational number between  $\frac{39}{74}$  and  $\frac{20}{37}$

**Simplify:**

11)  $2 + 3 \cdot 2$

12)  $5 - 10 + 1$

13)  $9 [5^2 - 2(1 + 4)] \div 9 + 7$

14)  $9 [6^2 - 1(8 + 2)] \div 9 + 10$

15)  $6 [5^2 - 9(7 + 5)] \div 6 + 9$

16)  $28 \div 4 \cdot 7 - 2^2$

17)  $5(10 + 3) - 4$

18)  $(8 - 9) \cdot 3$

19)  $3 \frac{1}{4} + 1 \frac{6}{7}$

20)  $7 + \frac{5}{6}$

21)  $-1 + 1 \frac{1}{10}$

22)  $\frac{-7}{11} + \frac{7}{10}$

$$23) \quad \frac{-1}{2} - 1\frac{5}{8}$$

$$24) \quad -3 - \frac{9}{7}$$

$$25) \quad -2\frac{1}{3} - 1\frac{5}{8}$$

$$26) \quad \frac{-5}{12} - 7\frac{1}{2}$$

$$27) \quad \frac{5}{11} \cdot \frac{-7}{6}$$

$$28) \quad 1\frac{1}{3} \cdot -1$$

$$29) \quad \frac{-2}{3} \cdot \frac{2}{3}$$

$$30) \quad \frac{-3}{4} \cdot -1\frac{1}{5}$$

$$31) \quad \frac{-1}{6} \cdot 3$$

$$32) \quad \frac{5}{9} \cdot \frac{-1}{4}$$

$$33) \quad \frac{1}{4} \div \frac{-5}{12}$$

$$34) \quad \frac{2}{11} \div \frac{1}{5}$$

35)  $\frac{-3}{8} \div -4$

36)  $\frac{1}{5} \div \frac{-7}{12}$

37)  $\frac{-5}{8} \div \frac{1}{6}$

38)  $\frac{-1}{6} \div \frac{3}{4}$

39) Evaluate:  $-4x + 4 + 3x^2 + x - 3$  when  $x = 1$ .

40) Evaluate:  $3x^2(x + 4) + 9$  when  $x = -2$ .

41) Evaluate:  $20 - 2x(3x^2 - 2x + 1)$  when  $x = -1$ .

42) Evaluate:  $-2x - 1 - (-4x)$  when  $x = 4$ .

43) Evaluate:  $10(-2x^2 + x) - 5x - 2 + 10$  when  $x = 4$ .

44) Evaluate:  $-x^2(4x - 3) - 1$  when  $x = 5$ .

45) Is  $x = -1$  a solution of:  $4x + 4 - (3x - 3) = 5$

46) Is  $x = -3$  a solution of:  $3(-2x + 1) - 2x^2 - 5x - 1 + 4 = 21$

47) Is  $x = 0$  a solution of:  $16 - 4x(2x - 5) = -68$

48) Is  $x = 2$  a solution of:  $-4x^2 - 3 - 3x^2 + 3x + 3 = -22$

49) Is  $x = 1$  a solution of:  $-2x(14 + 2x^2) + 17 = -15$

50) Is  $x = -1$  a solution of:  $4x(-3x^2 - 3x) - 5 = 1195$

51) Is  $E = 9$ ,  $m = 1$  and  $c = 1$  a solution to  $E = mc^2$ ?

52) Is  $d = 8$ ,  $r = 2$  and  $t = 3$  a solution to  $d = rt$ ?

53) Is  $C = -30$  and  $F = -22$  a solution to

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

54) Is  $A = 55$ ,  $l = 5$  and  $w = 11$  a solution to  $A = lw$ ?

55) Is  $P = -4$ ,  $l = 5$  and  $w = 3$  a solution to  $P = 2l + 2w$ ?

56) Is  $a = -24$ ,  $b = -10$  and  $c = 26$  a solution to  $a^2 + b^2 = c^2$ ?

57) Find the mean of:

14, 13, 17, 15, 12, 15, 13, 14, 13

58) Find the mean of:

11, 9, 8, 6, 7, 11, 5, 11, 7, 7, 7

59) Find the mean of:

16, 12, 13, 15, 12, 18, 13, 15, 14, 12

60) Find the mean of:

12, 11, 9, 6, 7, 6, 8, 12, 10, 6

61) Find the median of:

2, 0, 2, 1, 2, 3, 0, 2, 4, 0

62) Find the median of:

3, 3, 4, 7, 2, 1, 1, 6, 7, 1, 3, 2, 1

63) Find the median of:

12, 12, 13, 13, 7, 12, 12

64) Find the median of:

19, 25, 24, 25, 23, 25, 21, 23, 19, 23, 22, 23

65) Find the mode of:

22, 23, 22, 22, 22, 19, 19

66) Find the mode of:

19, 23, 25, 25, 23, 25, 20, 24, 22

67) Find the mode of:  
7, 7, 9, 11, 6, 10, 11, 9, 9, 11, 9, 7, 8

68) Find the mode of:  
25, 26, 25, 24, 21, 23, 21, 24, 22, 21

69) What are the next 2 numbers in the pattern?  
21, 18, 15, 12, 9, \_\_\_\_\_, \_\_\_\_\_

70) Fill in the missing values:

x	1	2	3	4	5	6
y	35	38	41	44		

71) Fill in the missing values:

x	1	2	3	4	5	6
y	-24	-28	-32	-36		

72) Fill in the missing values:

x	1	2	3	4	5	6
y	-28	-24	-20	-16		

73) Describe the following pattern:  
1, -2, 4, -8, 16

74) Describe the following pattern:  
-2, -8, -32, -128, -512

75) Describe the following pattern:  
1, -5, 25, -125, 625

76) What are the next 2 numbers in the pattern?  
2, -4, 8, -16, 32, \_\_\_\_\_, \_\_\_\_\_

77) Describe the following pattern:  
2, 4, 5, 5, 4

78) Fill in the missing values:

x	1	2	3	4	5	6
y	3	9	17	27		

79) Fill in the missing values:

x	1	2	3	4	5	6
y	0	1	1	0		

80) Describe the following pattern:  
2, 6, 11, 17, 24

**Translate the Verbal Statements:**

- 81) Nine divided by the sum of eight and a number      82) Six divided by a number
- 83) Seven plus the quantity of nine increased by a number      84) Seven minus the quantity of nine less than a number
- 85) Two plus the sum of five and a number      86) Four minus a number
- 87) Eight times the quantity of nine decreased by a number is one.      88) Twice the difference of two and a number equals three.
- 89) Four less than the quantity of one seventh of a number equals seven.      90) One half of the quantity of five minus a number is two.
- 91) Nine is seven less than the sum of one and a number.      92) Three times the quantity of five less than a number is nine.

**Simplify:**

- 93)  $t^6(3t^5)^2$       94)  $2y(5y^6)^2$
- 95)  $h^4u^2(4h^3u^6)^2$       96)  $d^2(2d)^2$