

7th Grade Math Summer Packet

Dear Students, Parents and Guardians,

Welcome to Bak Middle School of the Arts Mathematics!

Enclosed you will find a math packet to be **completed this summer**. These skills are all **prerequisite skills** for 7th grade math, meaning that they were taught in grades k-6. It is expected that students will be proficient at all of these skills. They will be assessed during the first few weeks of school.

**No Calculators! Show all appropriate work
(on a separate piece of paper, if necessary) and circle your answers.**

The packet will be collected within the first few weeks of school.

This assignment will be a portion of your first marking period homework grade.

In addition, it is imperative that all middle school students **master their multiplication facts**. Quick recall of all the facts from 0-12 will allow students to complete tasks in math quickly and with greater accuracy.

Mastery of multiplication facts is accomplished through memorization and frequent practice. The ideal experience is to practice with flashcards which can be purchased at the dollar store or made by hand. Parents practicing with students is highly recommended!

Besides traditional flashcards, below you will find a list of some available resources to assist in mastery of multiplication facts:

Websites:

- www.multiplication.com
- https://www.mathplayground.com/index_multiplication_division.html
- <https://fun4thebrain.com/mult.html>

Apps (Free):

- Math Speed Drill
- Math In A Flash
- Multiplication Flash Cards
- Times Tables
- Times Tables Quiz!
- Multiplication Math Games Math
- Math Champions Lite

On the next two pages you will find two 5 minute multiplication drills. If your child is not able to successfully answer the multiplication facts in the 5 minute window, please use the above resources.

**Please ensure all multiplication facts (0-12)
are memorized by the first day of school.**

Name _____

Date _____

$$\begin{array}{r} 5 \\ 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ 10 \\ \hline \end{array}$$

12
12

10
10

$$\begin{array}{r} 12 \\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ 11 \\ \hline \end{array}$$

11
12

9
12

Name _____

Date _____

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 12 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

Addition and Subtraction of Fractions and Mixed Numbers

Addition and Subtracting Fractions:

- 1) Rewrite the fractions with a common denominator
- 2) Add or subtract the numerators
- 3) Simplify the fraction

$$\begin{array}{r} \frac{1}{3} + \frac{1}{6} \\ \frac{1 \times 2}{3 \times 2} = \frac{2}{6} \\ + \frac{1 \times 1}{6 \times 1} = \frac{1}{6} \\ \hline \frac{3 \div 3}{6 \div 3} = \frac{1}{2} \end{array}$$

Addition and Subtracting Mixed Numbers:

- 1) Rewrite the fractions with a common denominator
- 2) Rename, if necessary
- 3) Add or subtract the fractions. Add or subtract the whole numbers
- 4) Simplify if necessary

$$\begin{array}{r} 3\frac{1}{4} - 1\frac{1}{3} \\ 3\frac{1}{4} = \cancel{3}^2 \frac{3}{12} + \frac{12}{12} = 2\frac{15}{12} \\ - 1\frac{1}{3} = 1\frac{4}{12} \\ \hline 1\frac{11}{12} \end{array}$$

Find the sum. Write your answer in simplest form.

1. $\frac{1}{4} + \frac{1}{2}$

2. $\frac{2}{5} + \frac{1}{3}$

3. $\frac{7}{15} + \frac{3}{10}$

4. $\frac{11}{28} + \frac{4}{7}$

5. $\frac{3}{4} + \frac{1}{12}$

6. $\frac{9}{10} + \frac{13}{20}$

7. $4\frac{15}{16} + 7\frac{3}{4}$

8. $2\frac{16}{25} + 3\frac{18}{20}$

9. $3\frac{2}{5} + 9\frac{1}{10}$

10. $6\frac{1}{42} + 4\frac{5}{6}$

11. $18\frac{7}{9} + 16$

12. $4\frac{7}{8} + \frac{1}{3}$

Find the difference. Write your answer in simplest form.

13. $\frac{7}{8} - \frac{1}{4}$

14. $\frac{13}{15} - \frac{1}{3}$

15. $\frac{7}{9} - \frac{2}{6}$

16. $\frac{21}{24} - \frac{3}{8}$

17. $\frac{3}{14} - \frac{1}{7}$

18. $\frac{9}{10} - \frac{1}{2}$

19. $9\frac{1}{6} - 4\frac{1}{12}$

20. $12\frac{18}{25} - 8\frac{4}{5}$

21. $5\frac{8}{9} - 3\frac{2}{3}$

22. $8\frac{12}{16} - 7\frac{31}{32}$

23. $10\frac{3}{4} - 6\frac{4}{5}$

24. $13\frac{7}{8} - \frac{10}{12}$

Multiplication and Division of Fractions and Mixed Numbers

Multiplying Fractions and Mixed Numbers:

- 1) Convert mixed numbers to improper fractions
- 2) Cross simplify if possible
- 3) Multiply the 2 numerators and then multiply the 2 denominators
- 4) Simplify if necessary

$$2\frac{1}{4} \cdot \frac{1}{3}$$

$$2\frac{1}{4} = \frac{9}{4}$$

$$\overset{3}{\cancel{9}} \cdot \frac{1}{\cancel{3}_1} = \boxed{\frac{3}{4}}$$

Dividing Fractions and Mixed Numbers:

- 1) Convert mixed numbers to improper fractions
- 2) "Same, Change, Flip" (keep first fraction the same, change division to multiplication, flip second fraction to its reciprocal)
- 3) Cross simplify if possible and then multiply
- 4) Simplify if necessary

$$\frac{3}{7} \div \frac{9}{10}$$

$$\overset{1}{\cancel{3}} \cdot \frac{10}{\cancel{9}_3} = \boxed{\frac{10}{21}}$$

Find the product. Write your answer in simplest form.

25. $\frac{1}{8} \cdot \frac{1}{7}$

26. $\frac{2}{9} \cdot \frac{12}{14}$

27. $\frac{7}{12} \cdot \frac{8}{14}$

28. $\frac{9}{24} \cdot \frac{16}{81}$

29. $\frac{3}{14} \cdot \frac{21}{33}$

30. $\frac{1}{2} \cdot \frac{9}{13}$

31. $2\frac{1}{6} \cdot \frac{3}{5}$

32. $8\frac{4}{5} \cdot 1\frac{5}{11}$

33. $2\frac{1}{2} \cdot \frac{2}{5}$

34. $9\frac{2}{3} \cdot 6$

35. $13\frac{1}{3} \cdot 2\frac{1}{10}$

36. $7 \cdot \frac{1}{3}$

Find the quotient. Write your answer in simplest form.

37. $\frac{5}{6} \div \frac{1}{4}$

38. $\frac{1}{2} \div \frac{1}{4}$

39. $\frac{3}{4} \div \frac{9}{12}$

40. $\frac{21}{35} \div \frac{7}{25}$

41. $\frac{6}{7} \div 3$

42. $\frac{2}{11} \div \frac{1}{33}$

43. $1\frac{1}{4} \div 2\frac{1}{3}$

44. $5\frac{3}{6} \div 3$

45. $10\frac{1}{4} \div \frac{2}{5}$

46. $3\frac{2}{3} \div 1\frac{1}{7}$

47. $4\frac{3}{8} \div \frac{9}{10}$

48. $8 \div \frac{3}{4}$

Operations with Decimals

Adding and Subtracting Decimals:

- 1) Line up decimal points
- 2) Bring the decimal down
- 3) Add or subtract as if numbers are whole numbers

$$5.2 + 10.03$$

$$\begin{array}{r} 5.2 \\ + 10.03 \\ \hline 15.23 \end{array}$$

Multiplying Decimals:

- 1) Ignore the decimal points
- 2) Multiply as if numbers are whole numbers
- 3) Count the number of decimal places in the problem and move the decimal point in answer that many places

$$1.03 \times 2.8$$

$$\begin{array}{r} 1.03 \\ \times 2.8 \\ \hline 824 \\ 2060 \\ \hline 2884 \end{array}$$

Dividing Decimals:

- 1) If there is a decimal in the divisor, move it to the end of the number and move the decimal in the dividend the same number of places
- 2) Bring decimal point in dividend straight up.
- 3) Divide. Add zeros to dividend and bring down if necessary.

$$6.4 \div 1.2$$

$$\begin{array}{r} 5.3 \\ 1.2 \overline{) 6.40} \\ \underline{60} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

Find the sum or difference.

49. $6.2 + 3.4$

50. $8.04 - 6.8$

51. $12.4 + 0.899$

52. $12.9 - 2.043$

53. $163.29 + 13.987$

54. $13 - 6.7$

55. $3.91 + 1.93$

56. $34.2 - 29.027$

Find the product.

57. 9.2×3.1

58. $(14.1)(2.7)$

59. 91×4.5

60. $(82.04)(1.2)$

61. $(1.1)(6.78)$

62. 45×0.1

63. 0.010×13.9

64. $(2.34)(5.6)$

Find the quotient.

65. $2 \overline{)8.4}$

66. $13 \overline{)1.56}$

67. $2 \overline{)7.45}$

68. $8 \overline{)9}$

69. $3.4 \overline{)68}$

70. $0.2 \overline{)9.4}$

71. $0.15 \overline{)0.045}$

72. $0.3 \overline{)4}$

Geometry

Area Formulas: (remember area = the space inside a figure)

$$\text{Area of Rectangle} = \text{length} \times \text{width}$$

$$\text{Area of Triangle} = \frac{1}{2} \text{base} \times \text{height}$$

$$\text{Area of Circle} = \pi \cdot \text{radius}^2$$

$$\text{Area of Parallelogram} = \text{base} \times \text{height}$$

Perimeter: (remember perimeter = the distance around a figure)

Perimeter of any polygon: add up all the sides

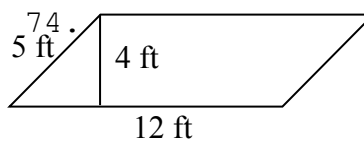
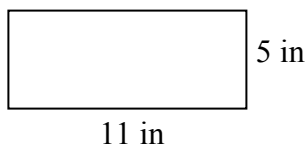
$$\text{Circumference of Circle} = 2 \cdot \pi \cdot \text{radius}$$

Volume: (remember volume = the capacity of a 3D figure)

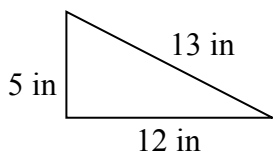
$$\text{Volume of Rectangular Prism} = \text{length} \times \text{width} \times \text{height}$$
$$\pi \cdot \text{diameter}$$

Find the area and perimeter (or circumference). Use 3.14 for pi:

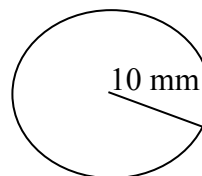
73.



75.

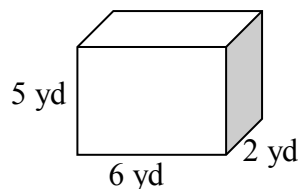


76.



Find the volume:

77.



Solve the word problem:

78. Danny is installing a fence around his rectangular yard. His yard is 20 feet long by 45 feet wide. If the fencing he picked out costs \$25 per foot, how much money will Danny spend on the fence?
79. Tameka wants to put a carpet in her rectangular bedroom. Her room is 22 feet long by 18 feet wide. How much carpeting will Tameka need?
80. Don wants to bring some sand home from his vacation at the beach. He has a box that is 3 inches wide, 4 inches long and 2 inches tall. How much sand can he fit in the box?

Solving One-step Equations

Addition Equations:

Subtract the number on the same side of the equal sign as the variable from each side of the equation

$$x + 3 = 9$$

$$\begin{array}{r} x + \cancel{3} = 9 \\ -\cancel{3} \quad -3 \\ \hline x = 6 \end{array}$$

Subtraction Equations:

Add the number on the same side of the equal sign as the variable to each side of the equation

$$14 = x - 7$$

$$\begin{array}{r} 14 = x - \cancel{7} \\ +\cancel{7} \quad +7 \\ \hline 21 = x \end{array}$$

Multiplication Equations:

Divide each side of the equation by the number on the same side of the equal sign as the variable

$$5m = 105$$

$$\begin{array}{r} \cancel{5}m = \frac{105}{\cancel{5}} \\ \hline m = 21 \end{array}$$

Division Equations:

Multiply each side of the equation by the number on the same side of the equal sign as the variable

$$\frac{y}{13} = 5$$

$$\begin{array}{r} \cancel{13} \times \frac{y}{\cancel{13}} = 5 \times 13 \\ \hline y = 65 \end{array}$$

Solve for the given variable:

81. $x + 18 = 32$

82. $18f = 720$

83. $h - 56 = 57$

84. $\frac{b}{6} = 12$

85. $12 = r - 76$

86. $33 + d = 65$

87. $14m = 42$

88. $10c = 5$

89. $38 = 19j$

90. $w + 65 = 100$

91. $r - 7 = 9$

92. $x \div 12 = 9$

93. $14 + x = 18$

94. $\frac{p}{22} = 7$

95. $47 = x - 5$

96. $k + 16 = 76$

97. $2 = 6m$

98. $t - 8 = 14$

99. $\frac{h}{19} = 11$

100. $47 = 18 + b$

Operations with Integers

Adding Integers

- Negative + Negative: Add the absolute values of the two numbers and make the answer negative.

$$\text{ex: } -5 + (-9) \longrightarrow 5 + 9 = 14 \longrightarrow \text{answer: } (-14)$$

- Negative + Positive (or Positive + Negative): Subtract the absolute values of the two numbers (larger minus smaller) and take the sign of the number with the greater absolute value.

$$\text{ex: } -7 + 12 \longrightarrow 12 - 7 = 5 \longrightarrow 12 > 7, \text{ so answer is positive } \longrightarrow \text{answer: } (5)$$

$$\text{ex: } 6 + (-9) \longrightarrow 9 - 6 = 3 \longrightarrow 9 > 6, \text{ so answer is negative } \longrightarrow \text{answer: } (-3)$$

Subtracting Integers

- Keep the first number the same, change the subtraction sign to an addition sign, and change the sign of the second number. Then use the integer addition rules.

$$\text{ex: } -3 - 9 \longrightarrow -3 + (-9) = (-12)$$

$$\text{ex: } 15 - (-8) \longrightarrow 15 + 8 = (23)$$

$$\text{ex: } -6 - (-4) \longrightarrow -6 + 4 = (-2)$$

Multiplying & Dividing Integers

Ignore the signs and multiply or divide as usual. Then determine the sign of the answer using the following rules:

- Negative \cdot or \div Negative = Positive
- Negative \cdot or \div Positive (or Positive \cdot or \div Negative) = Negative

$$\text{ex: } -3 \cdot (-5) \longrightarrow 3 \cdot 5 = 15 \longrightarrow \text{neg} \cdot \text{neg} = \text{pos} \longrightarrow \text{answer: } (15)$$

$$\text{ex: } 48 \div (-6) \longrightarrow 48 \div 6 = 8 \longrightarrow \text{pos} \div \text{neg} = \text{neg} \longrightarrow \text{answer: } (-8)$$

Order of Operations

Parentheses

Exponents

Multiplication & Division (left to right)

Addition & Subtraction (left to right)

Find the sum or difference.

1. $-80 + 77$

2. $77 + 160$

3. $-64 + (-33)$

4. $104 - (-92)$

5. $-105 - (-122)$

6. $185 - (-154)$

7. $-53 - (-59)$

8. $-6 + (-35)$

9. $15 - (-26) - (-39)$

10. $-93 + 191 + (-179)$

11. $18 + (-34) + 52$

12. $-50 - (-93) + (-17)$

Find the product or quotient.

13. $60 \div 12$

14. $-194 \div (-2)$

15. $88 \cdot (-2)$

16. $-12 \cdot 10$

17. $-10 \cdot (-11)$

18. $90 \div (-6)$

19. $3 \cdot (-59)$

20. $-7 \cdot (-2)$

21. $-28 \cdot (-22) \div (-88)$

22. $-56 \cdot 140 \div (-80)$

23. $108 \div (-12) \cdot (-12)$

24. $-84 \cdot (-17) \div 42$

Evaluate the numerical expression. (Be sure to use the order of operations!)

25. $-78 + (-2) \cdot (-56)$

26. $-65 + 6 \div (-3) + 40$

27. $-94 - (84 - 10)$

28. $43 + (-23) - (-57)$

29. $-15 - (-11) + 5 \cdot (-4)$

30. $-26 - (-64) + (-93)$

31. $-84 \div 4 + (-20)$

32. $-56 + (-50) + (-10) \cdot (-9)$