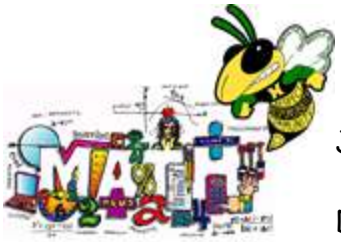


Summer Math Packet
for Students Entering Grade 6, NRMS

June 15, 2021

Dear Parents and Guardians of Students entering Grade 6,

We are looking forward to working with your child next year. In order to better prepare all students for the start of grade 6, we are recommending that students continue practicing prerequisite math skills and concepts learned in grade 5 during the summer. As this year has been unprecedented with several months of remote learning, we hope that students can relax and take a break during July, and maybe work on this packet in August. This is certainly your choice.

We are offering this packet as an OPTIONAL review so students can practice what they have already learned and be best prepared for grade 6. The answers are also included so students can check their work and understanding of the concepts.

If you or your child have any questions, please feel free to contact me through my school email at: mbunten@nrpsk12.org

Have a wonderful summer,

Mrs. Maria Bunten
NRMS Math Curriculum Leader

Some excellent video series for support as needed. In the YouTube search box, your child can just type in the concept they are practicing with one of these series' names:

Math Antics
Anywhere Math
Khan Academy

If you are interested in purchasing a copy of the *Grade 6 Big Ideas Math* book (green) that we use, please use this ISBN number: 978-1-60840-449-0
All students will have access to a hard copy book (which stays in classroom) and the on-line version with extra problem sets, video tutorials, etc. during the school year.

Open Link for Answers: **ANSWERS for all packet problems (2021)**

Section A: Operations with Whole Numbers

Solve each expression without a calculator. Feel free to use graph paper as needed.

1) 1,035 ÷ 23	2) 492 x 832
3) 240,021 - 56,409	4) 467 + 19 + 4759 + 265

Section B: Order of Operations

Follow the Order of Operations to solve these questions. Work below the expression to form a V shape.

PEMDAS
- parentheses
- exponents
- multiplication or division (whichever comes first from left to right)
- addition or subtraction (whichever comes first from left to right)

Example: 8 - 4 ÷ 2 + 2
8 - 2 + 2
6 + 2
8

5) Place parentheses into the equation to make it true. Then solve to prove your answer.

a) 42 x 10 = 10 - 4 x 70

b) 143 = 13 x 5 + 6

6) 15 x 8 - 3	7) 36 ÷ 4 x 3	8) (29 - 18) + 14 ÷ 2 + 6
9) 36 - 5(16 - 11)	10) 64 ÷ 8 x 2	11) $24 + 6^2 - 1^4$

Section C Prime and Composite Numbers

Recall that a prime number has only two factors (itself and one). Ex. 7 = 1 x 7
A composite number has more than two factors. Ex. 8 = 1 x 8 and 2 x 4

12) For each number below, check off either prime or composite. Then list all the factors of each number as factor pairs.

	prime	composite	All of its factors (write as factor pairs)
15			
19			
27			
36			
47			
108			

13) What is the smallest prime number? _____

Section D: Multiples

Recall that a multiple is the product of the number you are exploring and another whole number. Ex. multiples of 5 are 5, 10, 15, 20, 25, etc.
Don't forget the first multiple of any number is that number.

13) List the first 5 multiples of each number in the chart below.

Ex. 5	5, 10, 15, 20, 25 …
7	
12	
8	
3	
11	

14) What is the first common multiple of 5 and 6? _____

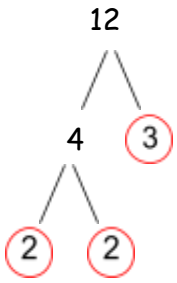
15) What is the first common multiple of 5 and 12? _____

16) What is the first common multiple of 3, 4, and 5? _____

Section E : Prime Factorization

Use a factor tree to find the prime factorization of each number given. Circle all the prime factors, then write the expression to show the final answer.

Example: What is the prime factorization of 12?



So 12 = $2 \times 2 \times 3 = 2^2 \times 3$

17) prime factorization of 20	18) prime factorization of 63	19) prime factorization of 100
20) prime factorization of 36	21) prime factorization of 50	22) prime factorization of 108

Section F: Improper and Mixed Numbers

23) Convert the improper fractions in the left column to mixed numbers.

24) Convert the mixed numbers in the right column to improper fractions.

$\frac{8}{3} =$

$\frac{23}{4} =$

$\frac{13}{2} =$

$\frac{39}{8} =$

$\frac{44}{10} =$

$4\frac{1}{6} =$

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

$3\frac{1}{2} =$

$2\frac{1}{5} =$

$7\frac{2}{3} =$

Section G: Operations with Fractions

- Write answers in simplest form.
- Write equivalent fractions when the denominators are different, before adding or subtracting (not for multiplying).
- Convert mixed numbers to improper fractions before multiplying.

25) $\frac{5}{9} + \frac{6}{9} =$

26) $\frac{7}{12} + \frac{5}{8} =$

27) $1\frac{3}{4} + 2\frac{3}{4} =$

28) $\frac{9}{10} - \frac{1}{2} =$

29) $2\frac{5}{9} - 1\frac{2}{9} =$

30) $\frac{15}{18} - \frac{5}{9} =$

31) $\frac{2}{9} \times \frac{5}{6} =$

32) $\frac{8}{12} \times \frac{7}{12} =$

33) $3\frac{1}{2} \times 2\frac{2}{3} =$

Section H : Operations with Decimals

Remember: Line up each digit vertically (and the decimal point) when adding or subtracting decimals

Example:

14.9 - 0.287 =

$$\begin{array}{r} 14.9 \\ -\ 0.287 \\ \hline 13.613 \end{array} \quad \text{or} \quad \begin{array}{r} 14.900 \\ -\ 0.287 \\ \hline 13.613 \end{array}$$

DO NOT line up the decimals when multiplying or dividing decimals. (You will learn how to divide decimal by decimals in 6th grade math.)
In multiplication, just line up the farthest digit on the right for each factor being multiplied. Then figure out the total number of decimal places needed (sum of place values of both factors).

Example: 59.3 x 1.204 =

59.3		or	1.204	(3 decimal places)
x 1.204			x 59.3	(1 decimal place)
2372			3612	
11860			10836	
593……			6020……	
71.3972			71.3972	(total of 4 decimal places needed)

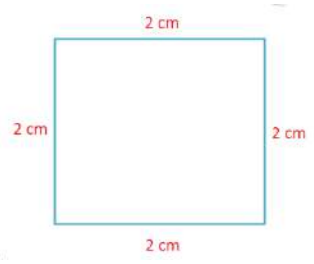
Solve each problem in the table below. First, rewrite the problem vertically!
Please show your decimal point clearly. Use estimation to check for reasonableness.

34) 38. 092 + 4. 17	35) 903.51 - 84.028
36) 15.6 + 2.04 + 110.7	37) 25.05 - 13.164
38) 16.1 x 3.85	39) 2.04 x 0.136

Section I: Geometry

Name each polygon and then calculate each perimeter (distance around) and/or area (space inside).

40)

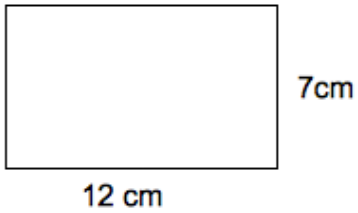


_____

Perimeter = _____

Area = _____

41)

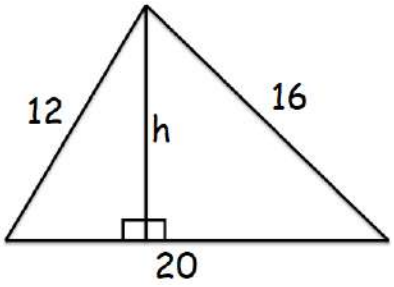


_____

Perimeter = _____

Area = _____

42)

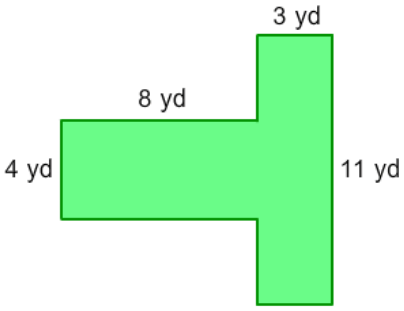


_____

Perimeter = _____

(We will learn about area of triangles in 6th grade)

43)



This is an irregular _____

Perimeter = _____

Area (hint: break this figure up into smaller rectangles first)

_____

Section J: Word Problems (mixed concepts)

44) A box is in the shape of a right rectangular prism. The base of the box has an area of 15 square inches. The height of the box is 12 inches.
What is the volume of the box in cubic inches?
(Draw a picture if that helps you)

45) Thea is making meatballs for dinner. She needs ground turkey and ground beef to make them. Ground turkey costs $4.50 per pound. She buys 2.6 pounds of ground turkey. What is the total cost of the turkey?

46) Thea needs 5.5 pounds of ground beef for those meatballs (in question #45). If she already has 2.75 pounds at home, how much does she need to buy?

47) Still working with those meatballs - Note that 2.6 + 5.5 = 8.1 pounds in all.
Thea wants to make meatballs with her 'melon ball scooper' that uses 0.3 pounds per 'scoop'. How many meatballs can she make with all of the 8.1 points of meat she has?
(You can draw a simple picture if you wish or just calculate.)

48) Caleb wants to rent a kayak. Kayak rentals cost $14.50 for a half hour. If Caleb rents a kayak for one hour and forty-five minutes, how much will it cost him?

49) Harvey wants to buy a gift for his father that costs $35.92 and a gift for his sister that costs $52.08. He has saved $16.28. How much more does he need to save in order to buy the gifts?

50) Keith has saved 3800 cents from selling lemonade. How many dollars does Keith have?

51) Susan has 200 green balloons. Sally has 40 times more green balloons than Benny. How many green balloons does Benny have?

52) Alyssa's shelves hold 43 books each. How many shelves will Alyssa need if Alyssa has 215 books?

53) Nancy was told to practice playing viola for $2\frac{1}{6}$ hours per day. Nancy has already played $1\frac{2}{5}$ hours today. How many hours does Nancy still need to practice today?

Section K: Measurement Conversions

Use this chart to help you answer questions #54 - 59 about 'US Customary or Standard measures'.

54) How many miles are there in 21,120 yards?	55) How many hours are there in 3 weeks?
56) Since 1 quart = 2 pints, and there are 4 quarts in a gallon, how many pints are in one gallon?	57) How many pounds are equivalent to 840 ounces?
58) How many days are there in 2.5 years?	59) How many inches are on a football field that has a length of 100 yards?

Now use this chart to help you solve questions #60 - 65 about 'Metric Measures'.

Metric Measures

Kilo	Hecto	Deca	* Unit *	Deci	Centi	Milli
 10 x 10 x 10 x LARGER than a unit	10 x 10 x LARGER than a unit	10 x LARGER than a unit	***Meter*** *(length)* ***Liter*** *(liquid volume)* ***Gram*** *(mass/weight)* **1 unit**	10 x SMALLER than a unit	10 x 10 x SMALLER than a unit	10 x 10 x 10 x SMALLER than a unit 
1 kilo = 1,000 units	1 hecto = 100 units	1 deca = 10 units		10 deci = 1 unit	100 centi = 1 unit	1,000 milli = 1 unit
km = kilometer kL = kiloliter kg = kilogram	hm = hectometer hL = hectoliter hg = hectogram	dam = decameter daL = decaliter dag = decagram	m = meter L = liter g = gram	dm = decimeter dL = deciliter dg = decigram	cm = centimeter cL = centiliter cg = centigram	mm = millimeter mL = milliliter mg = milligram
Example: 5 kilo	50 hecto	500 deca	5,000 units	50,000 deci	500,000 centi	5,000,000 milli

DIVIDE numbers by 10 if you are getting bigger (same as moving decimal point one space to the left)

MULTIPLY numbers by 10 if you are getting smaller (same as moving decimal point one space to the right)

60) 42 meters = _____ centimeters	61) 25 kilometers = _____ meters
62) 3100 milligrams = _____ grams	63) _____ kilograms = 500 grams
64) 7 liters = _____ deciliters	65) _____ milliliters = 2.4 kiloliters

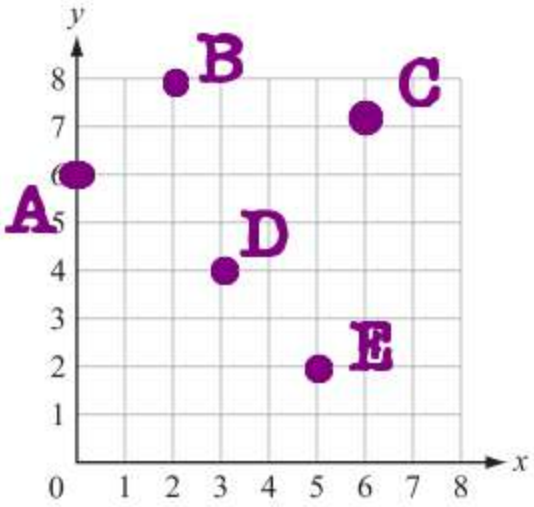
<u>Section L : Solving one step equations</u>

Find the value of each variable (letter) using mental math.

66) n + 12 = 40	67) 32 - m = 19	68) 89 + h = 137
69) 186 ÷ k = 62	70) w × 6 = 120	71) p - 15 = 49

Section M : Plotting Points on the Coordinate Plane

72) Identify each point shown with its correct coordinates.
Recall that all points are given as (x, y) order.



Point A = _____

Point B = _____

Point C = _____

Point D = _____

Point E = _____

73) Now add in these points onto the coordinate grid shown above.

Point F = (7, 4) Point G = (2, 0) Point H = (0, 1)

Section N: Order of Operations and Mental Math

Solve each expression shown using mental math. Remember to use the order of operations. (PEMDAS)

74) $5 \times (8 + 6 - 2) =$

75) $[8 + 6 \times 2] \div 4 =$

76) $(21 + 21) \div 7 =$

77) $3^2 + 7 \times 2 =$

78) $(14 - 9) \times 1^2 =$

79) $(15 + 3) \times (9 - 7) =$

80) $5^2 - 13 + 12 - 5 =$

Section O: A Bit More Geometry

Circle the answer that answers each question below about geometric figures.

81) Which geometric figure has all right angles?

a) triangle b) hexagon c) circle d) rectangle

82) Which geometric figure has more than 6 sides?

a) rhombus b) hexagon c) octagon d) pentagon

83) Which type of triangle has interior angles with equal measures?

a) scalene b) equilateral c) isosceles d) right

84) Which geometric figure is NOT made up of opposite parallel sides?

a) square b) rectangle c) parallelogram d) kite

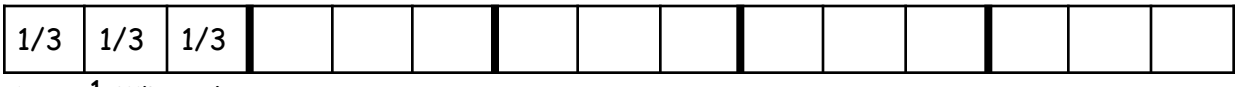
85) Which geometric figure is NOT a polygon?

a) circle b) trapezoid c) decagon d) irregular pentagon

Section P: Division with Unit Fractions

For these questions, please draw a visual fraction model that helps you interpret and then solve the problem.

Example: Martin used ⅓ cup of oatmeal in each batch of raisin cookies he made. He used 5 cups of oatmeal in all. How many batches of cookies did Martin make?



5 ÷ ⅓ = 5 x 3 = 15 batches

86) Josie had ½ of a bag of candy to share with 3 friends (Careful - including Josie that makes 4 kids). How much candy does each person get?

87) Kristen and David need to make posters for their school's field day event. Each poster will require ⅛ pint of paint. If they have 3 pints of paint to use, how many posters can they make?

Section Q: Rounding Decimals

Look at the digit to the right of the one you are rounding to.
Then follow the rule: "Five or more, let it soar. Four or less, let it rest."

Given decimal value	Round to nearest whole number	Rounded to nearest 10th	Rounded to nearest 100th
88) 13.627			
89) 0. 806			
90) 257.8125			

Section R: Division with Mixed Number Quotients

For this last section, divide and then write each quotient (answer) as a mixed number in simplest form.

Example: $45 \div 6 = 7\frac{3}{6} = 7\ \frac{1}{2}$

91) 58 ÷ 3 =	92) 122 ÷ 16 =	93) 415 ÷ 7 =
94) 320 ÷ 25 =	95) 1473 ÷ 30 =	96) 5989 ÷ 12 =

Section S: Last one!

Some daily/weekly math practice for you to do (15 - 20 minutes per week).

97) Practice your multiplication and division facts.

- Use flash cards
- Ask a parent, older sibling or friend to 'quiz' you.
- Play a math game such as on www.mathplayground.com or IXL

98) Figure out the time that has elapsed (gone by) between two things you've done today.

- Example: I started typing my project at 8:30 AM. I finished at 1:18 PM.
  That means 4 hours and 48 minutes have elapsed
  - Video for help (if needed): Khan Academy - Elapsed Time

99) Practice adding and subtracting whole numbers and decimals *using mental math*.

- Example: There were 45 pieces of licorice in the jar when it was new. Now there are only 7 left. How many have we eaten? 45 - 7 = ??
- Example: My dad paid for our ice creams at the park with a $20 bill. He got $1.28 back in change. How much were our ice creams? 20.00 - 1.28 = ??
- Example: In my new book, I read 19 pages this morning, 23 yesterday, and 35 pages the day before. So far I have read a total of how many pages? 23 + 35 + 19 = ???

100) Find examples of geometric shapes, patterns, angles, parallel lines, perpendicular lines, etc. in architecture and in nature. Enjoy your summer!