

Shared Bank of High Bloom's Level Questions for 4th Grade Math

N.ME.04.02 – Compose and decompose numbers using place value to 1,000,000's, e.g. 25,068 is 2 ten thousands, 5 thousands, 0 hundreds, 6 tens, and 8 ones.

1. Which number represents the following statement: 4 ten thousands, 6 thousands, 3 tens, 2 ones?
How do you know?

4,632 46,032

2. Tim took the expanded word form of 3 ten thousands, 4 thousands, 8 hundreds, 6 ones and wrote it as 3,486. Is he correct? Explain your thinking.

N.ME.04.03 – Understand the magnitude of numbers up to 1,000,000; recognize the place values of numbers and the relationship of each place value to the place to its right, e.g., 1,000 is 10 hundreds.

1. Would you rather have 99,999 pieces of candy or 100,000 pieces of candy? How does place value help you make this decision?

N.ME.04.04 – Find all factors of any whole number through 50, list factor pairs, and determine if a one-digit number is a factor of a given whole number.

1. Is 18 a factor of 36 or is 36 a factor of 18? Explain your thinking.

2. The number 16 can be represented by a 4 x 4 square grid. Give 2 more examples of square numbers and the way they can be represented.
3. Show all the factors of 36:
4. Show all the factors of 48:

N.ME.04.05 – List the first ten multiples of a given one-digit whole number; determine if a whole number is a multiple of a given one-digit whole number.

*Misconceptions: Confusing factors and multiples. Being able to identify place value and columns (naming). Understanding that places value means more than size of number – example: 1,000 > 999. Every place has to have a place holder 12,806 has to be 1 ten thousand, 2 thousands, 8 hundreds, 0 tens, 6 ones. Understanding the difference between: is a factor of... and, has a factor of...
18 is a factor of 36 36 has a factor of 18*

1. If you had to teach multiples to a first grader, how would you connect it to what they already know? Give an example including at least 10 multiples.

2. Do you find it easier to find factors of a number or multiples of a number? Why?

3. Clue 1: My number is a factor of 36
Clue 2: My number is greater than 6
Clue 3: My number is a multiple of 18
List all possible answers: _____

N.MR.04.06- Know that some numbers including 2,3,5,7, and 11 have exactly 2 factors (1 and the number itself) are called prime numbers.

Misconceptions: All prime numbers are odd and all odd numbers are prime.

1. Which group of numbers has the fewest factors?
 - a.) 3,5,7,9
 - b.) 2,3,5,7
 - c.) 2,12,15,20
 - d.) 2,3,5,14

2. I am a 2-digit prime number. The sum of my digits is 10. What number am I? Explain how you found me.

3. Which number is not prime 2, 9, 17 or 19? How did you know?

4. What is a prime number?

5. Give 4 examples of a prime number: _____

6. What is a composite number?

7. Give 4 examples of a composite number: _____

8. Would sets of composite numbers or sets of prime numbers have fewer factors? Explain how you know this to be true.

9. Choose a prime and a composite number and show your work to prove your thinking.

10. How can you tell if a number is prime?

11. How can you tell if a number is composite?

N.MR.04.07- Use factors and multiples to compose and decompose whole numbers.

Misconceptions: Students confuse the vocabulary of “factors” and “multiples”.

1. I am a number less than 40. One of my factors is 7. I am a multiple of 5. What number am I? Explain how you found me.

2. I am a common multiple of 2 and 5. I am also a factor of 100. The sum of my digits is 5.
 - a.) 10
 - b.) 50
 - c.) 7
 - d.) 500

3. Can there be a greatest common multiple? Explain your thinking.

4. My number is a multiple of 4. It is less than 95 and has a factor of 6. What is my number?
5. My number is a multiple of 9. It is less than 100 and has a factor of 7. What is my number?
6. My number is a multiple of 6. It is less than 95 and has a factor of 8. What is my number?
7. My number is a multiple of 3. It is less than 100 and has a factor of 12. What is my number?

N.ME.04.09 - Multiply two-digit numbers by 2, 3, 4, and 5 using the distributive property, e.g., $21 \times 3 = (1 + 20) \times 3 = (1 \times 3) + (20 \times 3) = 3 + 60 = 63$.

1. Using the distributive method for multiplying two numbers, give the product for each of the following. Show your work for each step:

A. 35×2

B. 45×3

C. 86×4

D. 92×5

2. What is another way to write the following expressions (or equations):

68×7 _____

90×4 _____

25×6 _____

N.FL.04.11- Divide numbers up to four-digits by one-digit numbers and by 10:

1. A cherry farmer has 9000 cherries to put into cups. It takes 10 cherries to fill one cup. How many cups will the farmer be able to fill with cherries?
2. Maria had 440 red ribbons to split among 8 classrooms. Each class gets one box of ribbons. How many ribbons will be in each box?
3. What is 2243 divided by 6?
4. What is 2433 divided by 3?
5. 252 pencils had to be shared equally among 4 first grade classrooms. How many pencils will each class get?

N.FL.04.12 - Find the value of the unknowns in equations such as $a/10=25$; $125/b=25$:

Complete the pattern:

1. $4 \div a = 2$
 $4 \div b = 20$
 $4 \div c = 200$
 $4 \div d = 2000$

2. $a \div 10 = 48$

3. $100 \div a = 25$

4. For the following equation, Suzie thinks the answer is 3, but her friend April disagrees. She thinks the answer is 192. Which girl is correct, and why? Show your work.

$$k \div 8 = 24$$

5. What is the value of z in this number sentence? z divided by 6 = 24

6. What is the value of m in this number sentence? $7 \times m = 210$

7. What is the value of k in this number sentence? $40 \times k = 400$

N.MR.04.13 - Use the relationship between multiplication and division to simplify computations and check results:

1. Which math problem can be checked using $3 \times 9 = 27$?

- a.) $27 \times 3 =$
- b.) $27 + 3 =$
- c.) $27 \div 3 =$
- d.) $27 - 3 =$

2. Cindy did the following problem: $75 \div 5 = 12$. Is her work correct? Why or Why not. Prove your answer using multiplication.

N.MR.04.14 - Solve contextual problems involving whole number multiplication and division:

1. Ray and Lisa have a box of 117 baseball cards. They want to distribute the cards evenly among 13 friends. Show or explain two different ways that Ray and Lisa distributed the cards evenly.

* **Teacher Note:** (During debriefing, choose a student who used repeat subtraction and a student who used division.)

N.ME.04.15 - Read and interpret decimals up to two decimal places; relate to money and place value decomposition.

1. Using words, name the following decimal amounts:

a. 0.10

b. 0.01

c. 0.23

d. 0.462

e. 0.5555

2. In what place is the underlined digit? (tenths, hundredths, thousandths)

a. 0.10 _____

b. 0.01 _____

c. 0.23 _____

d. 0.462 _____

e. 0.5555 _____

3. If the following decimals were money, how many cents would they be worth?

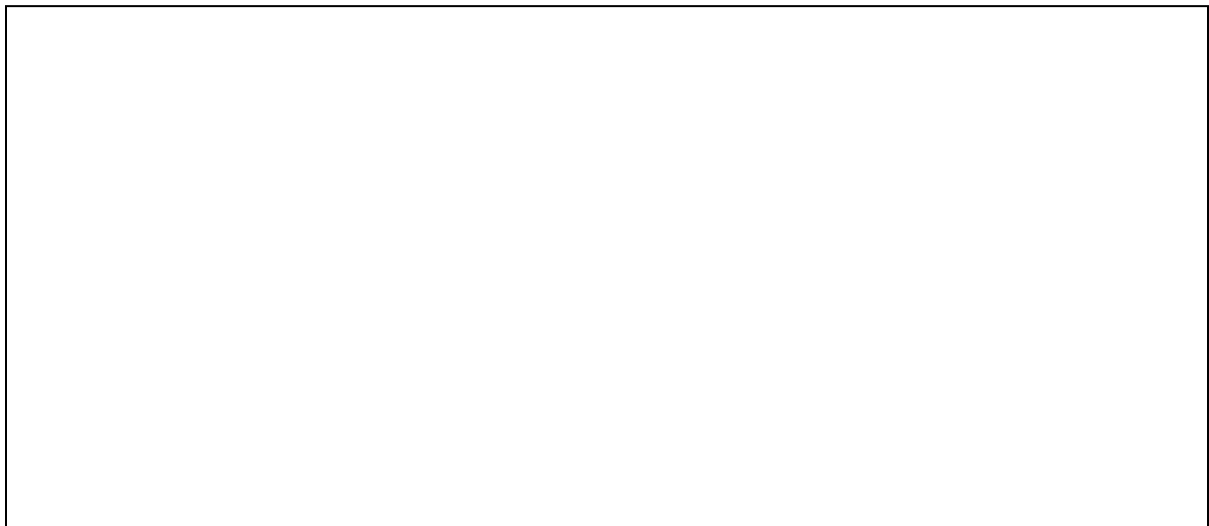
- a. 0.10 \$ _____
- b. 0.01 \$ _____
- c. 0.23 \$ _____
- d. 0.462 \$ _____
- e. 0.5555 \$ _____

4. Choose which decimal has a greater value

.10 or .01 _____? Prove your thinking

5. Mary is serving the brownies at her 10th birthday. Cheryl said that she is not very hungry. Would Mary give her a piece that is .10 of the pan or .01 of the pan.

Use this box to draw how Mary would slice the brownies. Then shade the piece of brownie that is equal to .10 of the pan in blue. Now shade the piece of brownie that is equal to .01 of the pan in green.



6. If you had the chance to earn .01 of a dollar or .10 of a dollar which would you rather earn? Why?

7. Match the money vocabulary to the decimal amounts.

- a. Penny _____
- b. Nickel _____
- c. Dime _____
- d. Quarter _____
- e. Fifty Cent Piece _____

.10	.50
.25	25.
.001	.01
1.00	.05

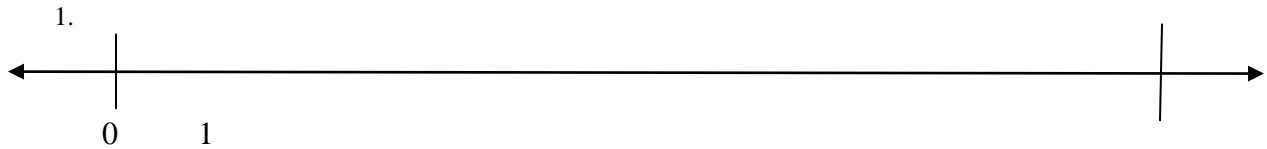
N.ME.04.16 - Know that terminating decimals represents fractions whose denominators are 10, 10 x 10, 10 x 10 x 10, etc., e.g., powers of 10.

1. Jim was served $\frac{1}{10}$ of a cake. Jane was given 0.10 of the same cake. Jim argued that Jane had more. Is he correct? Explain your thinking.

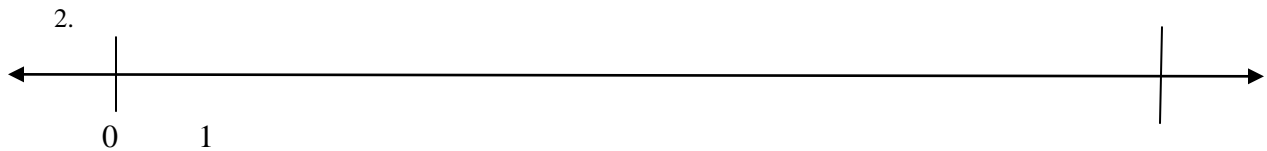
2. Write $\frac{4}{10}$ as a decimal. _____

3. Write 0.10 as a fraction. _____

N.ME.04.17 - Locate tenths and hundredths on a number line.



On the number line above mark and label 0.10, 0.20, 0.50



On the number line above, mark and label 0.01, 0.02, 0.55

3. Which decimal is greater 0.20 or 0.02? _____

N.ME.04.18 – Read, write, interpret, and compare decimals up to two decimal places.

1. Greater than or less than. Fill in the blank with one of the following symbols: $<$, $>$, or $=$

$0.23 \underline{\quad} 0.13$

$0.97 \underline{\quad} 1.00$

$0.45 \underline{\quad} 0.39$

$0.9 \underline{\quad} 0.09$

$0.67 \underline{\quad} 0.70$

$0.34 \underline{\quad} 0.21$

$0.31 \underline{\quad} 0.13$

$0.06 \underline{\quad} 0.02$

$0.87 \underline{\quad} 0.88$

$4.54 \underline{\quad} 4.67$

$3.99 \underline{\quad} 5.01$

$0.88 \underline{\quad} 0.9$

2. Put the following numbers in order greatest to least:

0.24, 0.37, 0.06, 0.13, 0.28, 0.2

2.31, 2.45, 2.4, 2.6, 2.05, 2.50

6.10, 6.73, 6.83, 6.09, 6.28, 6.75

3. Insert three decimals between the following decimals.

0.25 0.9

0.3 0.6

1.1 1.2

4. Use pictures, numbers, and words to explain which decimal is larger.

0.25 and 0.75

0.70 and 0.07

5. Quinn and Nancy shared a large pizza. Quinn ate 0.25 of the pizza. Nancy ate 0.75 of the pizza. Was there any pizza left? Explain your answer.

N.MR.04.21 – Explain why equivalent fractions are equal, using models such as fraction strips or the number line for fractions with denominators of 12 or less, or equal to 100.

1. Prove that the following two fractions are equivalent using pictures and words.

Fraction	Picture
$\frac{1}{6}$	
$\frac{2}{12}$	

N.ME.04.22 – Locate fractions with denominators of 12 or less on the number line; include mixed numbers.

Label the following point on the number line



- A. $\frac{1}{2}$ B. $\frac{3}{4}$ C. $\frac{3}{2}$ D. $\frac{7}{4}$



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



- A. $\frac{2}{10}$ B. $\frac{4}{5}$ C. $\frac{11}{10}$ D. 1



- A. $\frac{2}{6}$ B. $\frac{1}{12}$ C. $\frac{24}{12}$ D. $1\frac{9}{12}$

N.ME.04.24 – Know that fractions of the form m/n where m is greater than n , are greater than 1 and are called improper fractions; locate improper fractions on the number line.

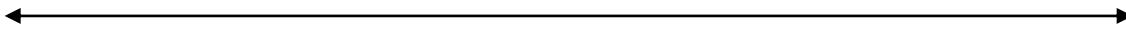
1. What two numbers on the number line do all positive proper fractions fall between? ____ and ____.

2. All positive improper fractions are greater than or equal to what number on the number line?

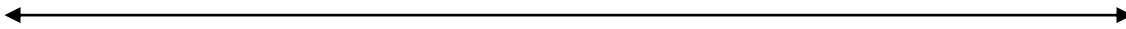
3. Label the following points on the number line.



A. $8/2$ B. $5/2$ C. $9/3$ D. $12/5$



A. $8/7$ B. $15/7$ C. $28/7$ D. $23/7$



A. $5/10$ B. $10/5$ C. $22/20$ D. $25/20$

4. Steven insisted he ate $9/8$ of a pizza. Is this possible? Explain your answer using your math vocabulary.

N.MR.04.25 and N.MR.04.21

1. Prove that the following two fractions are equivalent using pictures and words.

Fraction	Picture
$\frac{15}{4}$	
$3 \frac{1}{2}$	

- 2.

$$\frac{21}{5} \longrightarrow 5 \overline{)21} \begin{array}{r} 4r1 \\ -20 \\ \hline 1 \end{array} \longrightarrow 4\frac{1}{5}$$

N.MR.04.26 – Compare and order up to three fractions with denominators 2, 4, and 8, and 3, 6, and 12, including improper fractions and mixed numbers.

1. Put the following fractions in order from least to greatest.

$$\frac{3}{12}, \frac{1}{3}, \frac{4}{6}$$

Explain how you know your answer is correct.

2. Put the following fractions in order from least to greatest.

$$\frac{15}{4}, \frac{17}{5}, 3\frac{1}{2}$$

Explain how you know your answer is correct.

3. Choose the missing fraction that would make the equation true.

$$\frac{1}{2} < \underline{\hspace{1cm}} < 2$$

- A. $1\frac{1}{2}$
- B. $\frac{3}{4}$
- C. $\frac{7}{4}$
- D. None of the above
- E. All of the above

Explain your answer.

N.MR.04.27 – Add and subtract fractions less than 1 with denominators through 12 and/or 100, in cases where the denominators are equal or when one denominator is a multiple of the other, e.g., $\frac{1}{12} + \frac{5}{12} = \frac{6}{12}$, $\frac{1}{6} + \frac{5}{12} = \frac{7}{12}$, $\frac{3}{10} - \frac{23}{100} = \frac{7}{100}$.

1. Jen, Katie and Melissa were working on a school project. Jen brought $\frac{3}{4}$ of a roll of fabric, Katie brought $\frac{1}{12}$ of a roll of fabric and Melissa brought $\frac{2}{6}$ of a roll of fabric to use. How much fabric did they have altogether? Who brought the most fabric? Who brought the least amount of fabric? *Show your solution using words, numbers and pictures.*

N.MR.04.27 and N.MR.04.29 – Find the value of an unknown in equations such as $\frac{1}{8} + x = \frac{5}{8}$ or $\frac{3}{4} - y = \frac{1}{2}$.

Misconceptions: The greater the denominator, bigger the fraction. If a denominator has little value, then it is a fraction with little value. The idea that a mixed number can be equal to an improper fraction. Fractions with different denominators can be located on the same number line. Depending on where the variable is depends on what operation to use to solve the equation. The denominators of equivalent fractions can be any size. ($\frac{1}{10}$ is equal to $\frac{10}{100}$)

Solve for the variable.

1. $\frac{3}{4} - y = \frac{1}{2}$

2. $1 + x = 5$

N.MR.04.28 - Solve contextual problems involving sums and differences for fractions where one denominator is a multiple of the other (denominators 2-12, and 100):

1. Jim put $\frac{1}{3}$ cup of flour in a bowl. Then he mixed in $\frac{1}{6}$ cup more flour. Now how much flour is in the bowl?
 - a.) $\frac{1}{18}$ cup
 - b.) $\frac{2}{9}$ cups
 - c.) $\frac{3}{6}$ cups
 - d.) 1 cup

N.MR.04.29 - Find the value of an unknown in equations with fractions.

Misconceptions: Students add or subtract without finding common denominators. They perform the incorrect operation to find the missing value.

1. $\frac{1}{4} + x = \frac{3}{8}$ What is the value of x ? How do you know?

2. April ate $\frac{2}{8}$ of a pizza. Troy ate some more. There was half of the pizza left. How much did Troy eat? Draw a picture to help you solve the problem:

Explain how you got your answer:

3. $g - \frac{2}{3} = \frac{1}{3}$ What is the value of g ?

- a.) $\frac{3}{6}$
- b.) $\frac{1}{3}$
- c.) 1

d.) $\frac{2}{9}$

N.MR.04.30 - Multiply fractions by whole numbers, using repeated addition and area or array models.

1. Use repeated addition to solve the following problems.

a.) $5 \times \frac{1}{4} =$ _____

b.) $\frac{1}{2} \times 7 =$ _____

c.) $3 \times \frac{1}{3} =$ _____

N.MR.04.31- For problems that use addition and subtraction of decimals through hundredths, represent with mathematical statements and solve.

Misconceptions: Recognizing the correct place value when writing numbers in correct decimal form before adding or subtracting.

1. Betsy and Grace take a fourth grade math test. One of the questions asks them to add 8 and four tenths + 4 and 6 hundredths. Betsy's answer was 12.46 and Grace's was 13. Who was correct? How do you know?

2. Jamie Metzger earns \$125.50 on Monday, \$165.49 on Tuesday, and \$173.20 on Wednesday. How much more did she earn on Wednesday than on Monday?

3. In Seattle it rained 46.4 inches in 2010. In Las Vegas it rained 5.78 inches. How many inches of rain fell in Las Vegas and Seattle in 2010 combined?

a.) 52.18 inches

b.) 10.32 inches

c.) 103.2 inches

d.) 114 inches

N.FL.04.34 - Estimate the answers to calculations involving addition, subtraction, or multiplication:

1. Taylor bought 6 books in her favorite series. The total was \$18.12. Each book costs the same amount. How much did each book cost?
 - a.) \$0.32
 - b.) \$3.02
 - c.) \$3.20
 - d.) \$32.00

Answer: B