At-Home Math Connection

Grade 4 - Quarter 1

Dear Parents and Caregivers,

Below you will find a short description of the mathematics your child is working on this quarter. We recommend your child engage with the provided practice at home. Thank you for your continued support. Have fun with your mathematician(s)!

Quarter Focus:
Scholars learn about factors and multiples and apply their understanding of the area of rectangles. Scholars determine if a number between 1 and 100 is prime or composite. Scholars explore the size of fractions, write equivalent fractions, and compare and order fractions with the denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. Scholars also begin to learn about multiplying fractions and whole numbers.

Area, Factors and Multiples: Scholars learn about the meaning of factors and multiples by relating them to the concept of area. They use square tiles to build rectangles with given length and width. Then, they find the area of the rectangles.

For example, this rectangle has an area of 14 square units with side lengths of 7 and 2.

We can say that 7 and 2 are a factor pair of 14, and that 7 x 2 =14.

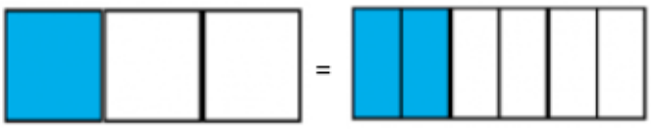
We can also say that 14 is a multiple of 7 and a multiple of 2.

Scholars discover that some numbers have many factor pairs and others have only one possible factor pair. They decide if a number is prime or composite based on how many rectangles can be made with that number as the area. A composite number is a whole number that has factors other than 1 and itself. Examples of composite numbers include but are not limited to - 4, 6, 8, 9, 10, 18…. and examples of prime numbers (non-composite) include but are not limited to- 2, 3, 5, 7, 13… Through tasks, scholars also look for patterns with factors and multiples.

Size and Location of Fractions: Scholars compare fractions with the same numerators or the same denominators, and recall that equivalent fractions have the same size. Scholars consider the size of fractions whose denominators are related, such as $\frac{1}{5}$ and $\frac{1}{10}$, or $\frac{1}{6}$ and $\frac{1}{12}$. They also compare fractions to benchmarks such as $\frac{1}{2}$ and 1. (For instance, they see that is $\frac{1}{10}$ less than $\frac{1}{2}$ and $\frac{3}{5}$ is more than $\frac{1}{2}$.)

Equivalent Fractions: Scholars partition shapes into EQUAL size pieces to find equivalent fractions.

$\frac{1}{3} = \frac{2}{6}$



$\frac{1}{3} = \frac{2}{6}$

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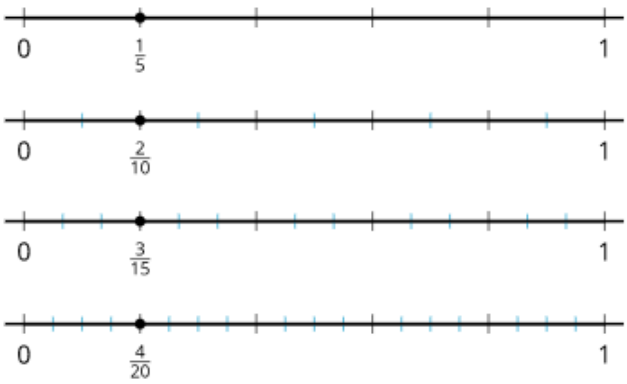
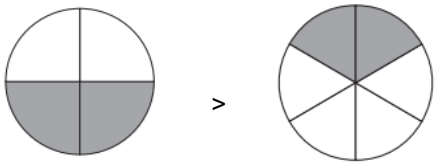
Scholars take a closer look at equivalent fractions and reason using number lines. They show that fractions that are at the same point on the number line are equivalent.
Scholars then learn to tell if two fractions are equivalent without using number lines.



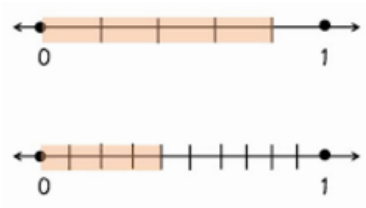
For example, they can explain that the fraction $\frac{2}{3}$ is equivalent to $\frac{8}{12}$ because the numerator and the denominator of $\frac{2}{3}$ are each multiplied by the same number, 4 ($\frac{4}{4}$ = 1), to get $\frac{8}{12}$.
Scholars use such observations to identify and write equivalent fractions.

Fraction Comparison: Scholars compare fractions with different numerators and denominators using various strategies. For example, they may think about how far each fraction is from 0 on a number line, how each fraction compares to or 1, or think of the fractions in terms of the same denominator.

Scholars record the results of comparisons with symbols > , < , or = . They then solve problems that involve comparing fractional measurements, such as lengths in fractions of an inch.



$\frac{1}{2} > \frac{2}{6}$



$\frac{4}{5} > \frac{4}{10}$

Fraction Multiplication: Previously, scholars thought about multiplication as equal groups of whole numbers of objects, such as 5 bags with 2 oranges in each bag. They think about equal groups of fractional pieces, such as 5 plates with $\frac{1}{2}$ orange on each plate. They see that the amount can be represented by 5 x $\frac{1}{2}$, which is $\frac{5}{2}$.

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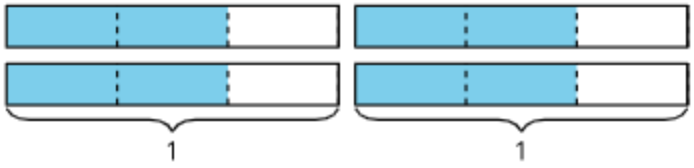
Scholars then make sense of diagrams and equations that represent the multiplication of a whole number and a fraction, such as $4 \times \frac{2}{3} = \frac{8}{3}$.

Diagrams can help scholars see that some fractions can be represented by more than one multiplication expression. For example, the diagram shows that the following expressions all have the value of $\frac{8}{3}$.



$4 \times \frac{2}{3}$

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

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

$8 \times \frac{1}{3}$

Curious about the Grade 4 Quarterly Assessment? *The assessment consists of 12 multiple choice questions worth 2 points each, 1 constructed response question worth 2 points, and 1 extended response question worth 3 points.*

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Try it At Home!

Area, Factors, and Multiples Practice:

1. Complete the statements for each number. Explain your reasoning.

   Questions that may be helpful as they work:

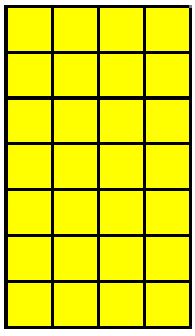
- How did you know this was a factor of that number?
- How did you know this was a multiple of that number?
- How are factors related to multiples?
- Is the number prime or composite? How do you know?

Factor **A whole number is another whole number that divides it evenly.**	**Multiple** **The result of one number multiplied by another number.**
5 is a factor of ____ because . . .	5 is a multiple of ____ because . . .
12 is a factor of ____ because . . .	12 is a multiple of ____ because . . .

2. Write an expression that can be used to find the area of the rectangle below.

   _____

   What is the area of the rectangle? Area = _____



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Equivalent Fraction Practice:

Show an equivalent fraction using a visual model or a number line.

1. $\frac{2}{8} = \square$

2. $\frac{4}{6} = \square$

Fraction Comparison Practice:

1. Ask your child to compare $\frac{2}{3}$ and $\frac{3}{6}$. Draw a visual model or use words to explain your thinking.

   Questions that may be helpful as they work:

- How are the two fractions alike? How are they different?
- What strategy did you use to compare?
- Is there a different strategy that you could use to compare

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2. Use a visual model or number line to solve.

   Mike ran $\frac{5}{8}$ mile. His sister ran $\frac{3}{10}$ mile. Who ran the shorter distance?

Fraction Multiplication Practice:

Solve:

1. $2 \times \frac{2}{6}$

2. Jose ran $\frac{4}{5}$ of a mile each day on Monday, Wednesday, and Friday. How many miles did he run in all?

3. James is baking cookies. One batch of cookies needs $\frac{1}{4}$ of a teaspoon of vanilla. James wants to make 5 batches. How much vanilla does James need?

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Answer Key

Area, Factors, and Multiples Practice

1. Possible answers include:
   5 is a factor of (1, 5)
   5 is a multiple of (10, 15, 20...)
   12 is a factor (1, 2, 3, 4, 6, 12)
   12 is a multiple of (12, 24, 36...)

1. 7 x 4 or 4 x 7
   Area = 28 square units

Equivalent Fraction Practice

1. Possible answers - $\frac{1}{4}, \frac{4}{16}, \frac{6}{24}$

2. Possible answers - $\frac{2}{3}, \frac{8}{12}, \frac{12}{24}$

Fraction Comparison Practice

1. $\frac{2}{3} > \frac{3}{6}$

2. His sister ran a shorter distance.

$\frac{5}{8} > \frac{3}{10}$

Fraction Multiplication Practice

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

2. $\frac{12}{5}$

3. $\frac{5}{4}$

~*Adapted from:* Illustrative Math Family Materials, Howard County Public School District, Kansas Department of Education - Flip Book, Number Talks - by: Sherry Parrish, Teaching Student-Centered Mathematics - by: John A. Van de Walle, et al.