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| **Mathematics Family Letter**  **Unit 2: Operations and Algebraic Thinking: The Relationship Between Multiplication and Division** |
| Dear Family, |
| Our class is starting a new unit in math about multiplication and division. During this unit, students develop an understanding of representing and solving problems involving multiplication and division.  During this unit, students will develop an understanding of the properties of multiplication and will also use the inverse relationship between multiplication and division to solve division problems. Students will develop an understanding that we use division in two ways: sharing equally or creating groups of equal sets. By the end of Grade 3, it is expected that students will know and understand the meaning of division and develop the ability to apply it in problem solving situations.  Throughout the unit, students work toward the following goals:   |  |  |  |  | | --- | --- | --- | --- | | Benchmark/Goals | | Examples | | | Recognize multiplication as repeated addition. | | There are 4 cyclists riding together. How many bicycle tires are there in all?  2 + 2 + 2 + 2 = 8  4 x 2 = 8 | | | Demonstrate an understanding of multiplication as a combination of equal groups. | | Here are 3 stars.  Each star has 5 points.  There are 15 points in all.  3 x 5 = 15 | | | Use arrays to solve multiplication problems. | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |   8  4 | 4 x 8 = 32 | | Benchmark/Goals | Examples | | | | | Commutative Property | If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known.   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | |  |  |  |  |  |  | | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | | | | | | Associative Property | 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  |     or by 5 x 2 = 10, then 3 x 10 = 30   |  |  | | --- | --- | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  | | --- | --- | |  |  | |  |  | |  |  | |  |  | |  |  |  |  |  | | --- | --- | |  |  | |  |  | |  |  | |  |  | |  |  | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Distributive Property | Knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 +2) = (8 x 5) + (8 x 2) = 40 + 16 = 56.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |   8 x 5 = 40 + 8 x 2 = 16  40 + 16 = 56 | | Understand division as an unknown factor problem. | Find 32 ÷ 8 by finding the number that makes when multiplied by 8.  32 ÷ 8 is the same as finding 8 x = 32 | | Fluently multiply and divide within 100. | By the end of Grade 3, students should know from memory all products of two one-digit numbers. | | Identify patterns in a multiplication table. | Multiplying with an even factor results in an even product and multiplying two odd factors results in an odd product. | | Multiply one-digit whole numbers by multiples of 10 in the range of 10-90. | 9 x 80 = 720  5 x 60 = 300 |      |  |  | | --- | --- | | Benchmark/Goals | Examples | | Interpret and use division as partitioning a total into equal groups | There are 35 flowers.  Gina wants to put them into 7 bouquets.  How many flowers will go in each bouquet?  There will be 5 flowers in each bouquet.  35 ÷ 7 = 5 | | Interpret division as creating groups of equal sets. | There are 35 flowers.  Gina wants to put them in bouquets of 5 flowers each.  How many bouquets can she make?    She can make 7 bouquets  35 ÷ 5 = 7 | | Solve division problems using repeated subtraction. | 15 ÷ 3 = 5  15 – 3 =12 – 3 =9 - 3=6- 3=3-3=0 | | Determine the unknown whole number in a multiplication or division equation relating three whole numbers | 4 x □ = 12 □ = 3  16 ÷ □ = 2 □ = 8  □ x 4 = 20 □ = 5 | |
| In our math class, students spend time discussing problems in depth and are asked to share their reasoning and solutions. It is most important that children accurately and efficiently solve math problems in ways that make sense to them and be able to explain how they reached their answer. At home, encourage your child to learn their multiplication facts and explain his or her math reasoning to you.  The activities below are related to the mathematics in this unit. You can use the activities to enrich your child’s mathematical learning experience.  **Things That Come in Groups**  Your child has been relating multiplication to everyday life by finding things that come in equal groups. Some examples are listed below.   * Eggs come in a carton of 12. * Juice boxes come in packages of 3 or 6. * Spiders have 8 legs. * Cars have 4 tires. * A week has 7 days.   Your family may continue to keep track of what kinds of things come in groups. Are there some numbers for which many examples exist? Are there some that are very hard to find?    **Multiplication and Division Problems in Everyday Situations**  Your child has also been working on understanding multiplication situations. Encourage your child to think about situations that involve equal groups.   * How many legs are on the seven pigeons we saw in the park? * How many toes are under the table while we eat dinner? * How many words would you write if you wrote your spelling words 3 times each? * If we share this batch of cookies equally, how many cookies will each person in our family get? * Five boxes of cereal cost $15.00. How much does one box cost?   **Math and Literature**  Here are some suggestions of children’s books that contain relevant mathematical ideas about multiplication and division. Look for these books at your local library.   * Giganti, Paul Jr. Each Orange Had 8 Slices. * Hong, Lily Toy. Two of Everything: A Chinese Folktale. * Pinczes, Elinor J. One Hundred Hungry Ants. |
| Thank you for supporting your child’s learning. |
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