

Learn at Home Resource Packet – General Overview

Grade 4

This NYS Next Generation Learning Standards aligned packet of resources is designed for students and their caregivers who wish to support in-school learning with activities that can be done independently and/or with a partner. The packet includes several activities that support the major mathematical work of the grade with a particular focus on building grade level numeracy. In grade 4, students' ability to fluently add and subtract multi-digit whole numbers, estimate products and recognize and generate equivalent fractions supports their ability to engage conceptually with important content of the year. These activities should each take 40-60 minutes (although many can be extended) and may be completed in any order.

How to use this guide - For many activities, you will find:

- information about the standards both content and practice that the activity supports;
- a description and/or instructions for the activity;
- materials required;
- one or more focus or discussion questions that will help deepen the learning of the activity;
- and suggestions for extending or adjusting the activity.

Activity

Multiplying Fractions by Whole Numbers

From www.commoncoreworksheets.com

NYS Next Generation Mathematics Learning Standard(s)

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

NY4.NF.4 :

Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

NY-4.NF.4a Understand a fraction a/b as a multiple of $1/b$.

NY-4.NF.4b Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a whole number by a fraction.

NY-4.NF.4c Solve word problems involving multiplication of a whole number by a fraction.

Mathematical Practice(s)

MP2: Reason abstractly and quantitatively.

MP4: Model with mathematics.

Description

This worksheet shows of visual model that helps students understand multiplication of fractions by whole numbers as repeated addition.

Materials

- Colored pencils (optional)

Focus questions for discussion

- How is this similar to multiplication with whole numbers? How is it different?
- Did you find any shortcuts that would help you multiply without coloring in the models?



Multiplying Fractions by Whole Numbers (visual)

Name: _____

Use the visual model to solve each problem.

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

To solve multiplication problems with fractions one strategy is to think of them as addition problems. For example the problem above is the same as:

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

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

If we shade in $\frac{2}{4}$ on the fractions below 3 times we can see a visual representation of the problem.



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

After shading it in we can see why $\frac{2}{4}$ three times is equal to 1 whole and $\frac{2}{4}$.



Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

1) $\frac{4}{8} \times 4 =$ 

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

3) $\frac{3}{4} \times 6 =$ 

4) $\frac{3}{6} \times 6 =$ 

5) $\frac{4}{12} \times 4 =$ 

6) $\frac{2}{3} \times 4 =$ 

7) $\frac{7}{12} \times 4 =$ 

8) $\frac{3}{8} \times 6 =$ 

9) $\frac{1}{4} \times 4 =$ 

10) $\frac{8}{10} \times 4 =$ 

11) $\frac{6}{8} \times 3 =$ 

12) $\frac{2}{3} \times 2 =$ 

Activity

Factor Captor

From www.illustrations.nctm.org

<https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Factor-Game/>

NYS Next Generation Mathematics Learning Standard(s)

Gain familiarity with factors and multiples.

NY-4.OA.4

Find all factor pairs for a whole number in the range of 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range of 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Mathematical Practice(s)

MP1: Make sense of problem and persevere in solving them

MP7: Look for and make use of structure.

Description:

This game helps with students gain fluency with factors and multiples.

Materials:

- Paper clips or something to use as a marker for the numbers on the board.

Focus questions for discussion

- What numbers have the most factors on game grid 1? Game Grid 2?
- What numbers have the fewest factors?

Possible extensions/adjustments:

There are two games boards to choose from. Start with the first grid and when you have mastered the grid, move on to game grid 2.

Activity

Carnival Tickets

From Illustrativemathematics.org

NYS Next Generation Mathematics Learning Standard(s)

Use the four operations with whole numbers to solve problems

NY-4.OA.3

Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.

Mathematical Practice(s)

MP2: Reason abstractly and quantitatively

MP4: Model with mathematics

Task: Use the table below to answer the questions below.

Every year a carnival comes to Hallie's town. The price of tickets to ride the rides has gone up every year.

| Year | Ticket Price |
|------|--------------|
| 2008 | \$2.00 |
| 2009 | \$2.50 |
| 2010 | \$3.00 |
| 2011 | \$3.50 |
| 2012 | \$4.00 |

- a. In 2008, Hallie's allowance was \$9.00 a month. How many carnival tickets could she buy with one month's allowance?

- b. If her allowance had stayed the same, \$9.00 a month, how many carnival tickets could she buy in 2012?
- c. In 2012, Hallie's allowance was \$14.00 per month. How much did her monthly allowance increase between 2008 and 2012?
- d. How much more did a carnival ticket cost in 2012 than it did in 2008?
- e. Was Hallie able to buy more carnival tickets in 2008 or in 2012 with one month's allowance?
- f. What would Hallie's allowance need to be in 2012 in order for her to be able to buy as many carnival tickets as she could in 2008?

g. What happens to your ability to buy things if prices increase and your allowance doesn't increase?

Activity

Comparing Money Raised

From Illustrativemathematics.org

NYS Next Generation Mathematics Learning Standard(s)

Use the four operations with whole numbers to solve problems

NY-4.OA.1

Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. e.g., Interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 or 7 times as many as 5. Represent “Four times as many as eight is thirty-two” as an equation, $4 \times 8 = 32$.

NY-4.OA.2

Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. Use drawings and equations with a symbol for the unknown number to represent the problem.

Mathematical Practice(s)

MP4: Model with mathematics

Description:

The task challenges the student to solve three multiplicative comparison problems.

Materials:

- Comparing Money Raised task
- Pencil

Task from <https://tasks.illustrativemathematics.org/content-standards/tasks/263>

Comparing Money Raised

Solve each problem. Use drawings and equations to represent each problem.

1. Helen raised \$12 for the food bank last year and she raised 6 times as much money this year. How much money did she raise this year?
2. Sandra raised \$15 for the PTA and Nita raised \$45. How many times as much money did Nita raise as compared to Sandra?
3. Luis raised \$45 for the animal shelter, which was 3 times as much money as Anthony raised. How much money did Anthony raise?

Cynthia's Perfect Punch

From Illustrativemathematics.org

NYS Next Generation Mathematics Learning Standard(s)

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

NY-4.NF.3c

Add and subtract mixed numbers with like denominators. E.g. replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction.

Mathematical Practice(s)

MP1: Make sense of problems and persevere in solving them.

MP4: Model with mathematics.

Description:

The task challenges the student to determine whether Cynthia's container will be big enough for her punch recipe.

Materials:

- Cynthia's Perfect Punch task
- Pencil

Task from <http://tasks.illustrativemathematics.org/content-standards/4/NF/B/3/tasks/874>

Cynthia's Perfect Punch

Cynthia is making her famous “Perfect Punch” for a party. After looking through the recipe, Cynthia knows that she needs to mix $5\frac{5}{8}$ gallons of fruit juice concentrate with $3\frac{7}{8}$ gallons of water.

- a. Just as she is about to get started she realizes that she only has one 10-gallon container to use for mixing. Will this container be big enough to hold all the ingredients?

- b. How much punch will this recipe make?

Activity J:

The Locker Game

From Illustrativemathematics.org

NYS Next Generation Mathematics Learning Standard(s)

Use the four operations with whole numbers to solve problems

NY-4.OA.4

Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Mathematical Practice(s)

MP1: Make sense of problems and persevere in solving them

MP7: Look for and make use of structure

MP8: Look for and express regularity in repeated reasoning

Description:

The task challenges the student to determine which lockers remain open, touched by only two, three, and the most students at the end of the game.

Materials:

- The Locker Game Task
- Pencil

Task from <http://tasks.illustrativemathematics.org/content-standards/4/OA/B/4/tasks/938>

The Locker Game



The 20 students in Mr. Wolf's 4th grade class are playing a game in a hallway that is lined with 20 lockers in a row.



- The first student starts with the first locker and goes down the hallway and opens all the lockers.
- The second student starts with the second locker and goes down the hallway and shuts every other locker.
- The third student stops at every third locker and opens the locker if it is closed or closes the locker if it is open.
- The fourth student stops at every fourth locker and opens the locker if it is closed or closes the locker if it is open.

This process continues until all 20 students in the class have passed through the hallway.

- a. Which lockers are still open at the end of the game? Explain your reasoning.
- b. Which lockers were touched by only two students? Explain your reasoning.
- c. Which lockers were touched by only three students? Explain your reasoning.
- d. Which lockers were touched the most?