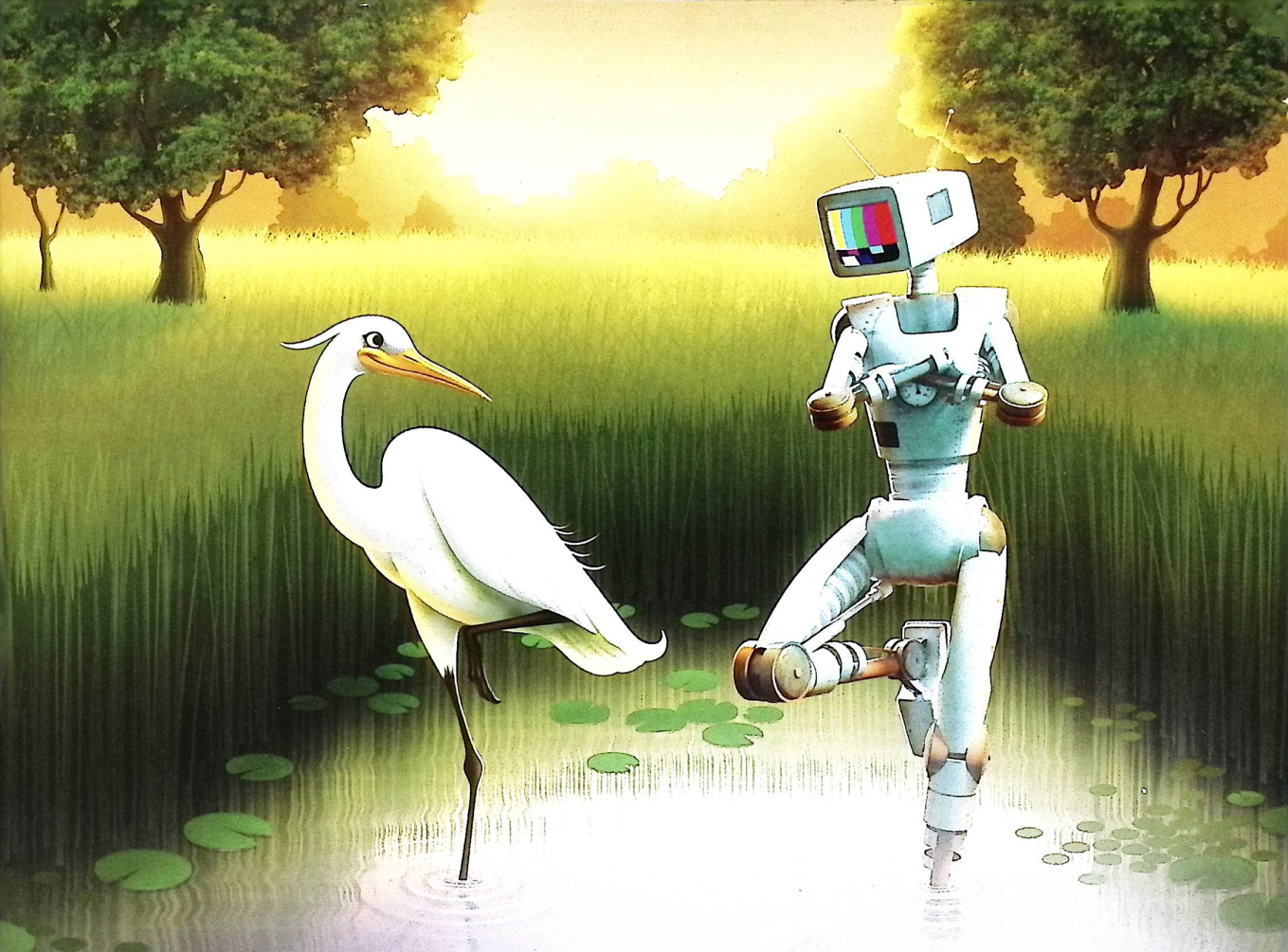


Teacher's Resource Masters

GRADE 5 VOLUME 2

Topics 8-16

enVision® Mathematics

Grade 5
Volume 2: Topics 8–16

Name _____

Home-School Connection
Topic 8

Apply Understanding of Multiplication to Multiply Fractions

Dear Family,

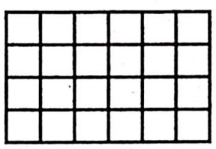
In math class, your student will be learning how to multiply fractions and mixed numbers. Your student may have assumed that multiplying numbers always makes them larger, and dividing always makes a number smaller. He or she may be surprised at first that multiplying a number by a fraction less than 1 gives a product that is less than the original number, not more. Your student will also need to understand that $\frac{1}{3}$ of a number means $\frac{1}{3}$ times that number and is a way of expressing multiplication.

Here is an activity you can use to acquaint your student with the concept of finding a fraction of a fraction.

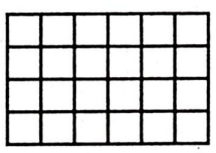
Taking a Part Apart

Each of the figures below represents the number 1 divided into fractional parts. Ask your child to shade a part of each figure on the left to represent the fraction above it. In the figure on the right, ask your child to shade only a part of the area he or she shaded before, so as to represent the fraction of a fraction above it.

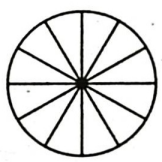
1. one-sixth



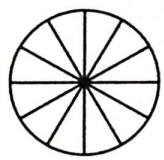
one-fourth of one-sixth



2. one-half



one-third of one-half



Observe Your Child

Ask your child to use the figures to describe how the shading changed from the left to right figure. Have him or her write a new fraction for the figure on the right.

Nombre _____

De la escuela al hogar (en español)
Tema 8

Usar la multiplicación para multiplicar fracciones

Estimada familia:

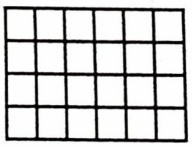
En la clase de matemáticas, su niño(a) aprenderá a multiplicar fracciones y números mixtos. Es posible que el niño(a) piense que al multiplicar números siempre se obtienen números más grandes y que al dividir siempre se obtienen números más pequeños. Es probable que al principio le sorprenda que al multiplicar un número por una fracción menor que 1 el producto sea menor y no mayor que el número original. Su niño(a) también debe entender que $\frac{1}{3}$ de un número significa $\frac{1}{3}$ por ese número y que esta es una forma de expresar una multiplicación.

Haga la siguiente actividad con su niño(a) para que se familiarice con el concepto de hallar una fracción de una fracción.

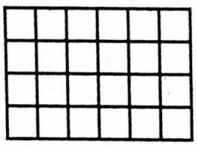
Separar una parte

Cada una de las siguientes figuras representa el número 1 dividido en partes fraccionarias. Pida a su niño(a) que sombree una parte de la figura de la izquierda en cada ejercicio para representar la fracción que está escrita arriba de la figura. En las figuras que están a la derecha de cada figura, pídale que sombree solo una parte del área que sombreó antes, de modo que represente la fracción de la fracción escrita arriba de la figura.

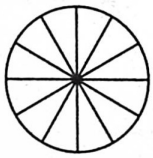
1. un sexto



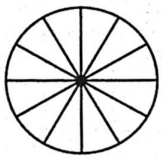
un cuarto de un sexto



2. un medio



un tercio de un medio



Observe a su niño(a)

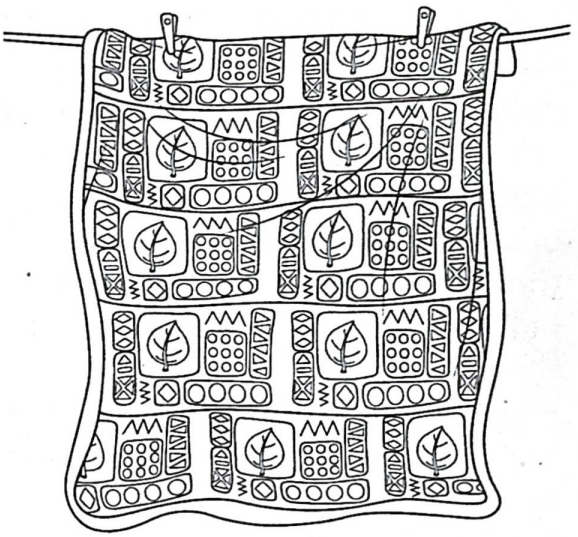
Pídale que use las figuras para describir cómo cambió el sombreado entre la figura de la izquierda y la de la derecha. Pídale que escriba una nueva fracción para la figura de la derecha.

Name _____

Pick a Project

Project 8A

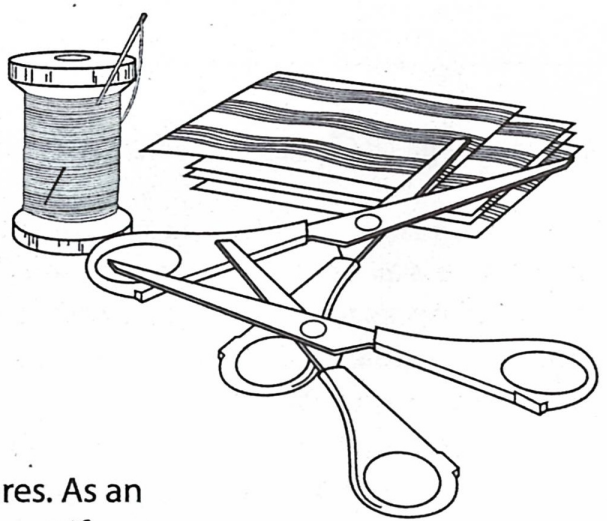
Patchwork Quilts



Back in the day, people used patchwork quilts as bed coverings during winter. The patchwork was a practical way of making bedding because they just needed to sew together layers of fabric from old clothes and blankets. As the years went by, quilting has been recognized as a form of artistic work. People now use quilts not only to stay warm, but also as decorative pieces or precious gifts for loved ones.

Many quilts have been preserved and honored in homes and museums across the country. As quilts were passed on from generation to generation, they became a powerful reminder of our heritage. That's why if you study the history of early quilts, you can also get a glimpse of our nation's history.

Your Project Design a Quilt



On a sheet of paper, make a plan for a rectangular quilt. The quilt should be made up of 20 pieces of square fabric, with each piece measuring $3\frac{1}{2}$ by $3\frac{1}{2}$ inches. Determine the length and width (in inches) of your quilt, as well as its area (in square inches), using multiplication. Show your plan, including your calculations, on a sheet of paper.

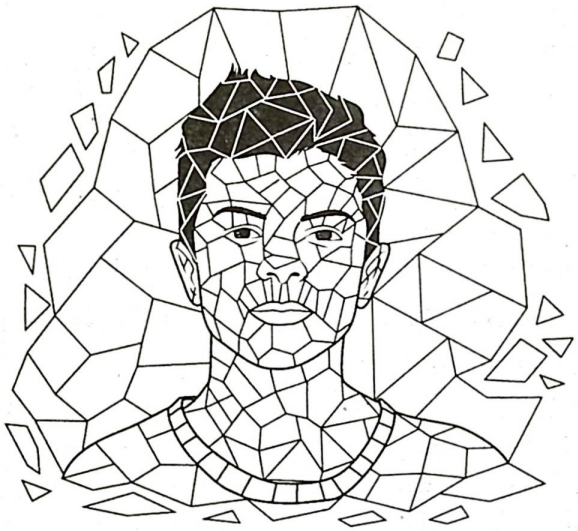
Once you have a plan, cut out the 20 fabric squares. As an alternative, you may also use square sheets of paper if you don't have any fabric. Research an important date or event that you remember. It may be personal or it may come from history. Design each square of fabric or paper based on a symbol or icon. You may use different art materials. Connect your square pieces using any method that you can think of. Present your finished quilt in class.

Name _____

Pick a Project

Project 8B

A Sticky-Note Mosaic

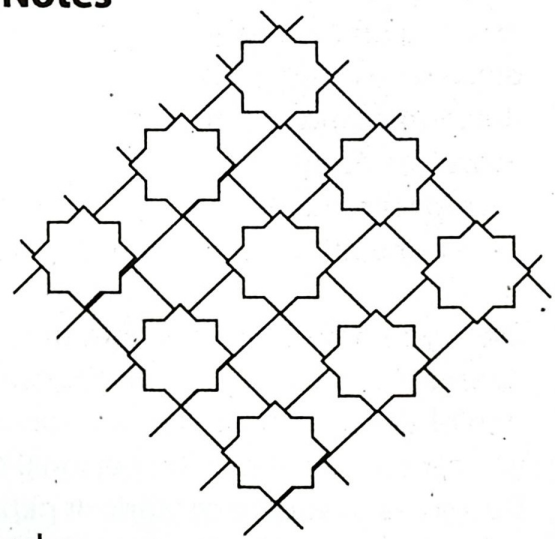


A mosaic is a picture or a pattern that is made up of smaller pieces or images. Usually those pieces are made from bits of stone, glass, or tiles. Many modern mosaics are made from digital images that are reduced to the size of a few pixels. Mosaics have been made for thousands of years, and decorate ancient buildings, churches, castles, and fountains.

Eisenhower Junior High School in Taylorsville, Utah, is a school that likes to break records. The school has held several Guinness World Records. Students have made the world's longest paper- clip chain and had the world's largest marshmallow fight. They have also held the record for making the world's largest mosaic made out of sticky notes.

The mosaic at the school was 60 feet by 40 feet, and used 38,400 sticky notes. After they broke the record, the sticky-note paper was recycled.

Your Project: Create a Mosaic with Sticky Notes



Use sticky notes to create a pattern or picture mosaic on a wall or construction paper. Use any number of notes for length and width, except numbers divisible by 4. Your mosaic should have a length and width that are fractional amounts when measured in feet. Sticky notes are squares with sides of 3 inches. A mosaic with a length of 7 sticky notes and a width of 9 sticky notes will have the dimensions of 21 inches × 27 inches, or $1\frac{3}{4}$ feet by $2\frac{1}{4}$ feet.

Now, design a beautiful mosaic! When you have finished, find its area in feet. Show your work (on a sticky note, of course!). Display your mosaic and your work on a sticky note in your classroom.

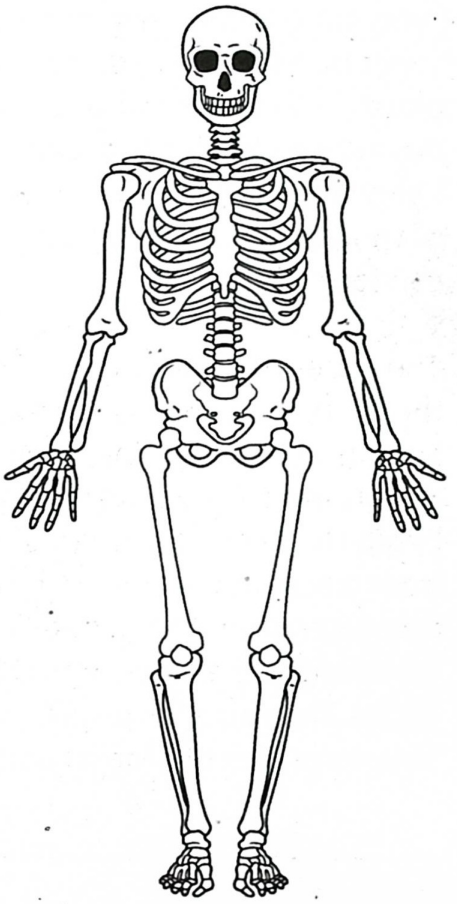
Name _____

Pick a Project

Project 8C

Calcium in the Human Body

Calcium is the most abundant mineral in the human body. It is a very important mineral because it helps build healthy bones and teeth.



The tables below show the approximate calcium content of 1 cup of each given food item:

Food Item	Calcium (in grams)
milk	$\frac{3}{10}$
ice cream	$\frac{1}{5}$
sour cream	$\frac{1}{4}$
yogurt	$\frac{9}{20}$
soy milk	$\frac{2}{5}$

Food Item	Calcium (in grams)
figs	$\frac{3}{10}$
broccoli	$\frac{9}{50}$
arugula	$\frac{1}{8}$
spinach	$\frac{6}{25}$
okra	$\frac{1}{10}$

Based on the recommended calcium intake of the Food and Nutrition Board (FNB), fifth graders need to consume about $1\frac{3}{10}$ grams of calcium every day. You can use this value to plan healthy meals.

Your Project: Analyze Menus for Calcium-Rich Foods

How do your favorite restaurants measure up with calcium-rich foods on the menu? Research menus of local restaurants for breakfast, lunch, and dinner foods that offer calcium-rich foods for children. Many restaurant menus can be found online, which may be easier for doing your analysis work. List the amount of calcium in 1 cup of different foods served at restaurants as a fraction. Present your analysis in a report to share with the class.

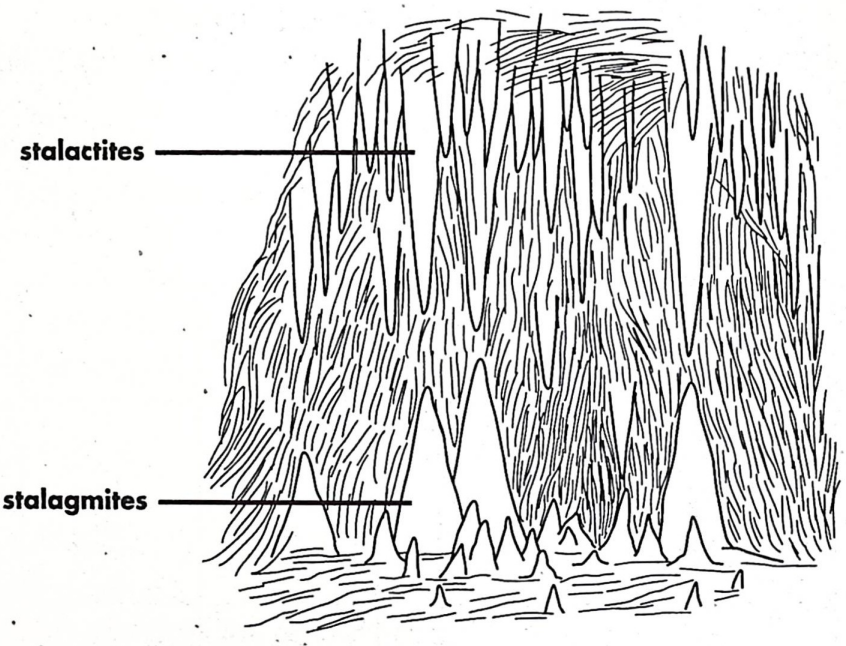
Name _____

Pick a Project

Project 8D

Caverns

Every time it rains, rain water seeps into the ground. In some places, that water can break down and dissolve the rock below the surface. Over tens of thousands of years, a cavern can form.



The water running through the ground breaks up the rock and dissolves the minerals in the ground. Once a cavern begins forming, water drips from cracks in the ceiling. As the water drips, the minerals dissolved in the water form hanging structures called stalactites that look like icicles. They also form stalagmites on the cavern floor. After a long time, the structures meet to form columns.

Your Project Create a Scale Model of a Cave

Suppose that Michelle, a fifth grader, is $4\frac{1}{4}$ feet tall.

Create scale models of Michelle, a stalactite, and a stalagmite. You may use clay or any material you choose. Apply a scale of 1 foot : 1 inch. This scale means that if a girl is 4 feet tall, the model of the girl should be 4 inches tall. Make the models as accurate in size as possible. Display them on poster board, in a diorama, or however you like. Label each object with the size of the actual object, the size of the model, and your calculations.

Name _____

enVision® STEM Activity 8-3

Banquet Preparations

Did You Know? When you mix sugar and water, the physical properties of the sugar and the water do not change. Instead, they form a mixture. A mixture contains two or more substances that are not chemically combined. Sugar, for example, is soluble in water. This means that it dissolves when mixed with water. But you can evaporate the water from the mixture and a small pile of sugar remains. Solubility is only one physical property that can describe a substance. Other physical properties include shape, color, state of matter (liquid, gas, solid), density, odor, and boiling and melting points. You can separate the ingredients of a mixture because substances in a mixture maintain their physical properties.

Banquet Tickets Sold	
Students	$\frac{5}{12}$
Teachers	$\frac{1}{4}$
Parents	?

A cooking class is preparing all the food and beverages for an awards banquet. Your job is to monitor all the preparations.

1. Karyn has 360 strawberries. She covers $\frac{4}{9}$ of the strawberries with melted chocolate. She uses another $\frac{1}{3}$ of the strawberries for a fruit salad. The rest of the strawberries are for pie filling. How many strawberries will become pie filling? Show your work.

2. To make the award banner, the class uses $\frac{5}{7}$ of a 42-yard-long piece of satin. How many yards will they use?

3. **Extension** So far, the class has sold 216 tickets to the banquet. The portion of tickets sold, so far, to students, teachers, and parents is shown in the table. How many banquet tickets have parents bought so far? Show your work.