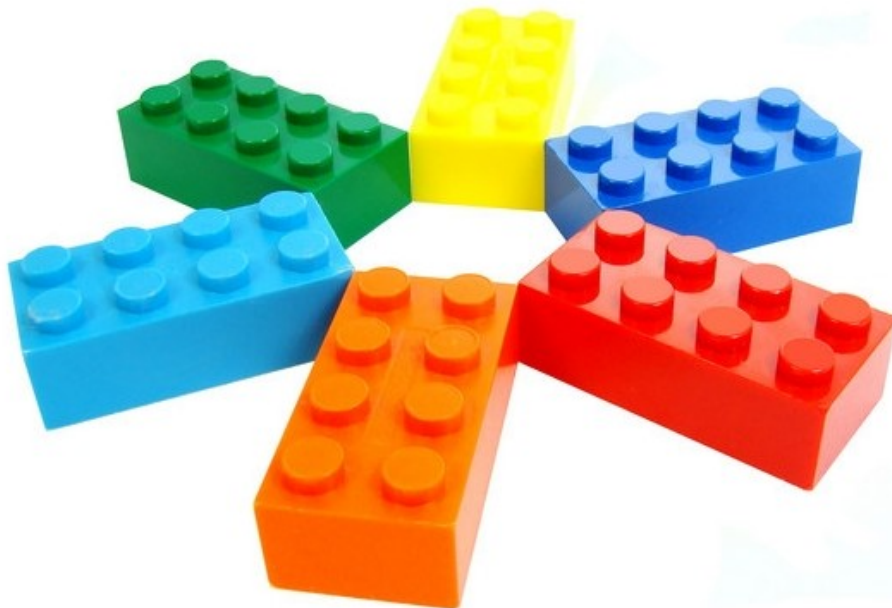


Learning with LEGOs

an independent study

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www.walkingbytheway.com

Please do not hotlink to this document.

Day One ~ LEGO Beginnings



Copywork

"Genius is one percent inspiration and ninety-nine percent perspiration." Thomas Edison



Word of the Day

granule



Explore and Learn

1. Who invented LEGO? [Read the information at this site](#) and Complete activity #1.

2. The inventor was Danish. What country was he from? Denmark! Complete activity #2 by marking Denmark on the world map. The capital of Denmark is Copenhagen. [Watch this video](#) about Copenhagen.

3. Can you build the [flag of Denmark](#) out of LEGO bricks? Give it a try!



Building Challenge

Each day you will have a building challenge! Grab some LEGO bricks and get started on [this Taxi Cab](#). Be sure to take a picture of your completed creation and add it to your lapbook.

Day Two ~ LEGO Business



Copywork

"What would life be like if we had no courage to attempt anything?"
Albert Einstein



Word of the Day

manufacture



Explore and Learn

1. Most companies have a mission statement or a vision. This gives the company focus and helps them plan for the future. What is LEGO Group's vision? [Find out here.](#)

2. The LEGO company makes a lot of LEGO bricks. Approximately 440 billion LEGO pieces have been made since 1949! That's a lot of LEGOs! Learn how the bricks are made by watching this [animated presentation](#). If you want, you can also watch [this video](#) about brick making. Complete activity #3.

3. People make all kinds of things out of LEGOs. Check out [this video](#).



Building Challenge

Today you are going to build a ship without any instructions. [Watch this video](#) for some inspiration and ideas.

Be sure to take a picture of your completed creation and add it to your lapbook.

Day Three ~ LEGO Building



Copywork

"Imagination is more important than knowledge." Albert Einstein



Word of the Day

creative



Explore and Learn

1. In order to make your LEGO creations, the bricks have to stick. Why do they stick? [Read all about it here](#). Be sure to read through both pages. You will also need to click on the links for interference fit and friction. Complete activity #4 and activity #5.

2. There are some amazing LEGO designers and artists in the world. One of these is Sean Kenney. [Take a peek](#) at some of the creations he made for the Philadelphia Zoo.

Another incredible LEGO artist is Nathan Sawaya. [Watch this video](#) about his artwork.

3. Would you like to be a LEGO designer? What do you think it takes to work for the LEGO company? [Write them an email and ask!](#)



Building Challenge

Today you are going to attempt a mosaic. Do you know what a mosaic is? It's a piece of art made by decorating a surface set with small pieces of glass, tile, stone, or some other material. Some people like to make mosaics out of LEGOs! Check out [this video](#). Read through Ed Hall's process of constructing [this mosaic of Starry Night](#). Of course, your mosaic doesn't have to be as complex. You can make whatever you want. Maybe even [Pacman!](#)

Be sure to take a picture of your completed creation and add it to your lapbook.

Day Four ~ LEGO Brick Math



Copywork

"I have not failed. I've just found 10,000 ways that won't work."
Thomas Edison



Word of the Day

ingenuity



Explore and Learn

1. Get a cup of LEGO bricks. Make sure you have five different colors. Dump the bricks and sort them by color. Complete activity #6. For additional graphing fun, take your data [to this site](#) and make a pie graph.

2. Get another cup of LEGO bricks and complete activity #7.

3. Did you know you can practice multiplication with LEGO bricks? Grab a 2x4 brick. Look at it. You have two studs four times. How many studs are on top? 8! Complete activity #8. Ask an adult to show you how to use a calculator if the second set of problems is too difficult for you.

4. Read through the LEGO Fun Facts. Which ones are the most interesting to you?



Building Challenge

Today you are going to try out LEGO Digital Designer. Do you know what digital means? Digital is a word describing computerized technology or something electronic. What do you think LEGO Digital Designer is? That's right! It allows you to build creations on your computer! Ask an adult to help you [install this program](#) on your computer. Have fun building!

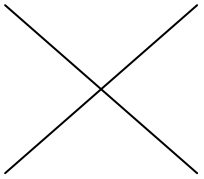
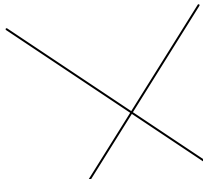
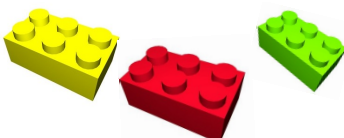
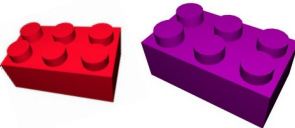
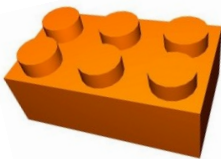
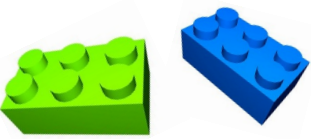
Word of the Day Mini Books

Cut on solid lines. Fold on dotted. Write a definition for the word of the day OR a sentence using the word of the day in each book.

granule	manufacture
ingenuity	creative

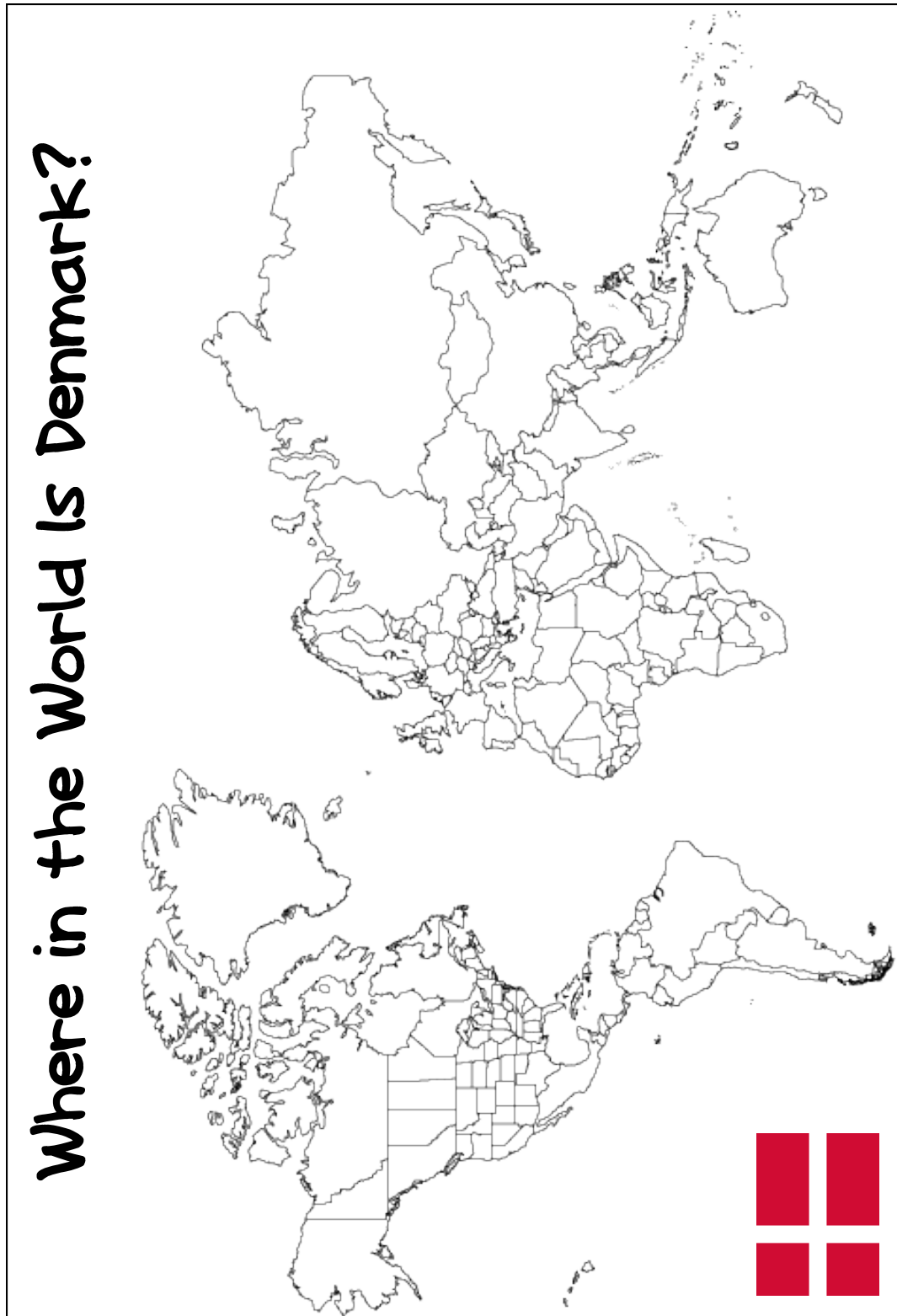
Activity #1

Cut on solid. Fold side flaps forward and top flap down using dotted lines as your guide. Write answers under each flap.

 <p>CUT AWAY</p>	<h1>LEGO Basics</h1> <hr/> <p>Activity #1</p> <p>Glue this side to your lapbook.</p>	 <p>CUT AWAY</p>
<p>When were the first LEGO sets sold in the USA?</p>		<p>Who invented LEGOs?</p> 
<p>When were DUPLO introduced?</p> 		<p>What material were LEGO bricks made of at first?</p>
<p>What does LEGO mean in Latin?</p> 		<p>What does LEGO mean in Danish?</p> 

Activity #2

Denmark is on the continent of Europe. Use a map or globe to help you locate Denmark. Mark it on the world map below.



Activity #3

Cut on solid. Fold on dotted. Paste the brick manufacturing information in the correct sequence. The manufacturing information is found on the next page.

Activity #3

Glue this
side to your
lapbook.

Step One:
Granules

Step Two:
Molding

Step Three:
Transport

Step Four:
Decorating
and
Assembly

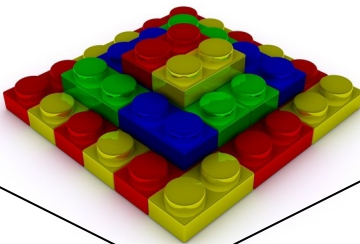
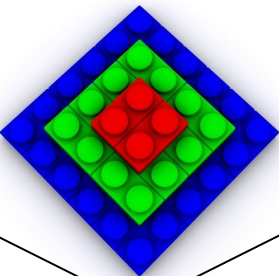
Step Five:
Packaging

Activity #3

<p>Finished bricks roll down conveyor belts into boxes. Once a box is full, a robot picks it up and dumps it on to another conveyor belt.</p>	<p>Once in the molding machines, the granules are heated to 450 degrees F. The melted plastic is then put into metal molds. After the bricks are made and cooled, they are ejected from the molds.</p>	<p>Lego kits are put together.</p>
<p>Trucks filled with granules drive up to the factory. Giant hoses suck them out of the trucks and they are fed down pipes to the molding machines.</p>	<p>Details are printed on the LEGOs by a giant printer and multi-piece parts like mini-figures are put together by a machine.</p>	

Activity #4

Cut out book on solid lines. Fold on dotted. Paste the correct information under each flap.

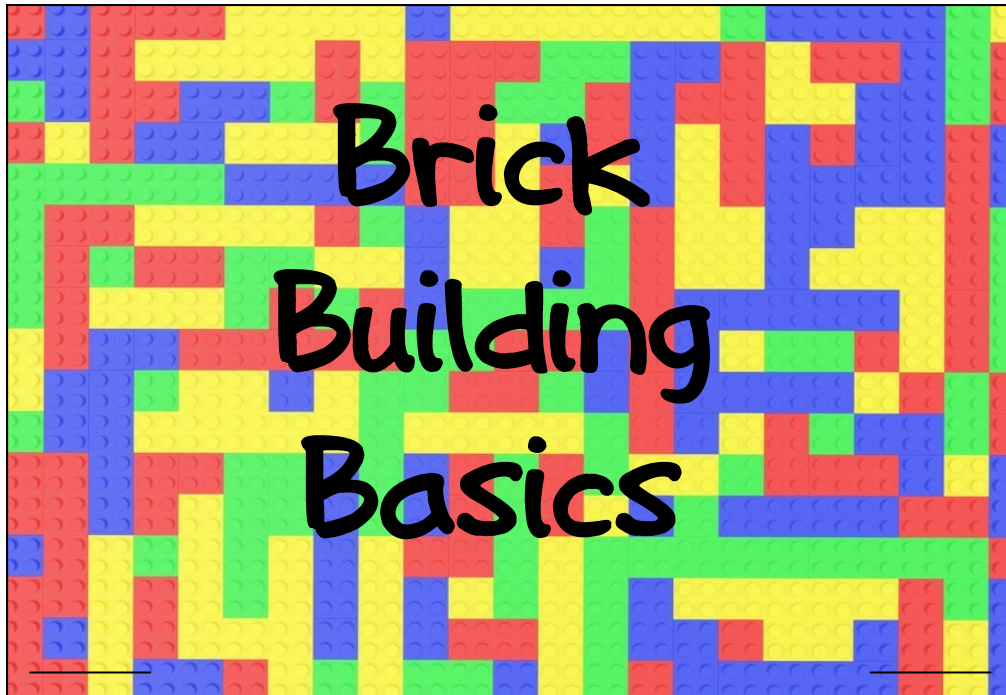
<h3>What Is Interference Fit?</h3> 	<h3>What Is Friction?</h3> 

refers to the match between the size and shape of two parts where one is slightly larger than the other and so force is required to assemble the parts

the resistance of two surfaces to slide past each other; it's what makes your computer stay on the table and what allows you to walk across the room without sliding

Activity #5

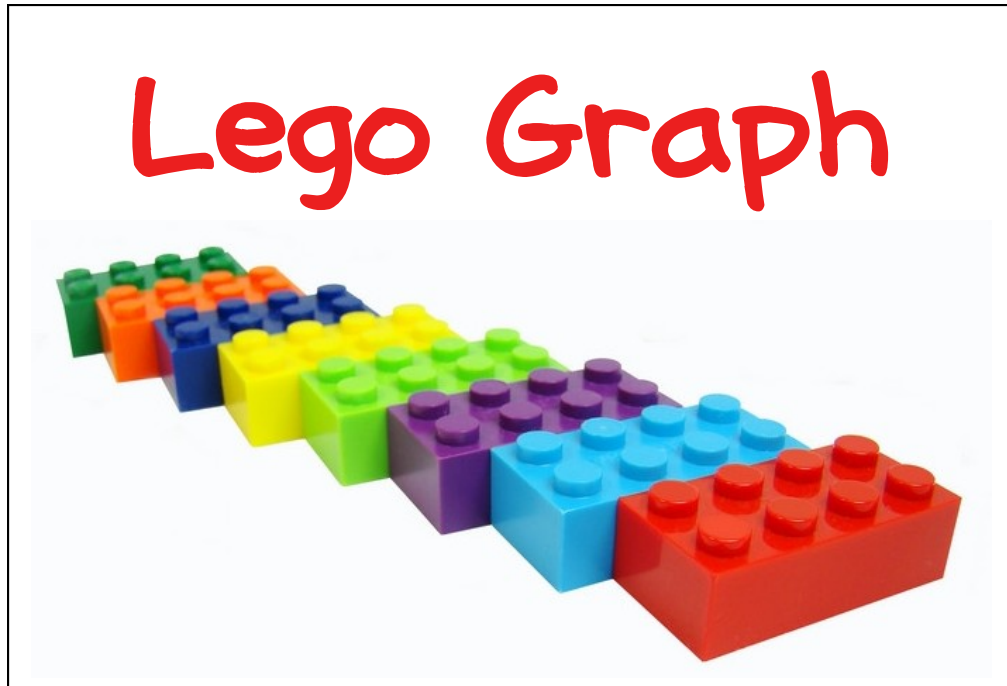
Cut pages out. Stack together with cover on top and staple on the bottom. Write definitions for the words on the pages.



Studs

Activity #6

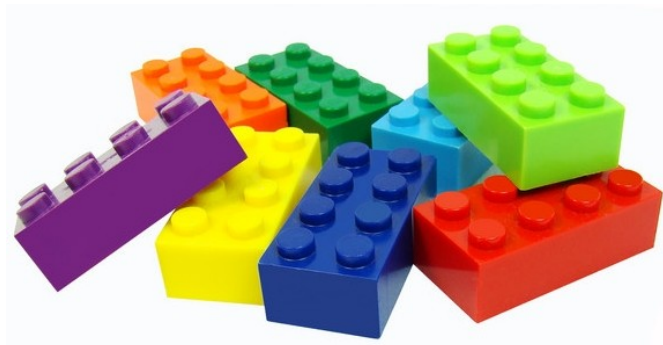
Cut out title piece below. Fold graph in half and paste title piece to the front. Complete the questions.



Look at your graph and answer the following questions.

How many bricks do you have of each color?

1. _____
2. _____
3. _____
4. _____
5. _____



How many bricks do you have total? _____

Which color has the most? _____

Which color has the least? _____

Choose five colors of bricks to use for your graph.
Write the names of the colors at the bottom of the page.

20					
19					
18					
17					
16					
15					
14					
13					
12					
11					
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

Activity #7

Do you know what estimation is? To estimate is to judge the approximate value, size, or cost of something. Can you guess how many bricks you have in your cup? Complete this exercise twice using the forms below.

How many bricks do you
THINK you have? _____

Dump them out and count them.

How many bricks do you
actually have? _____

What's the difference?

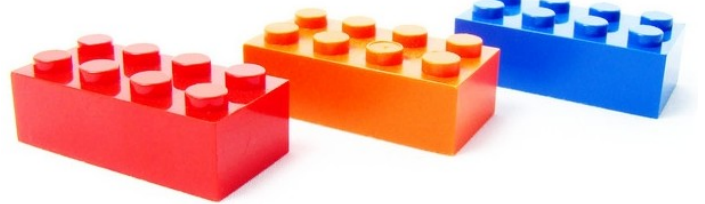
How many bricks do you
THINK you have? _____

Dump them out and count them.

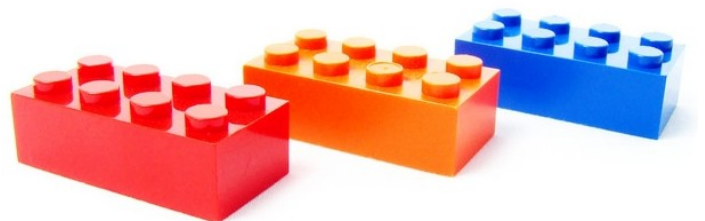
How many bricks do you
actually have? _____

What's the difference?

Cut on solid. Fold on dotted. Glue forms inside book.



LEGO
Estimation



Activity #8

Complete the multiplication facts.

Use your LEGO bricks if you need hints!

How many studs are on
each kind of brick?

$1 \times 1 =$

$1 \times 6 =$

$2 \times 3 =$

$1 \times 2 =$

$1 \times 8 =$

$2 \times 4 =$

$1 \times 3 =$

$2 \times 1 =$

$2 \times 6 =$

$1 \times 4 =$

$2 \times 2 =$

$2 \times 8 =$

How many studs are on
these building plates?

$4 \times 4 =$

$4 \times 12 =$

$6 \times 14 =$

$4 \times 6 =$

$6 \times 6 =$

$8 \times 8 =$

$4 \times 8 =$

$6 \times 10 =$

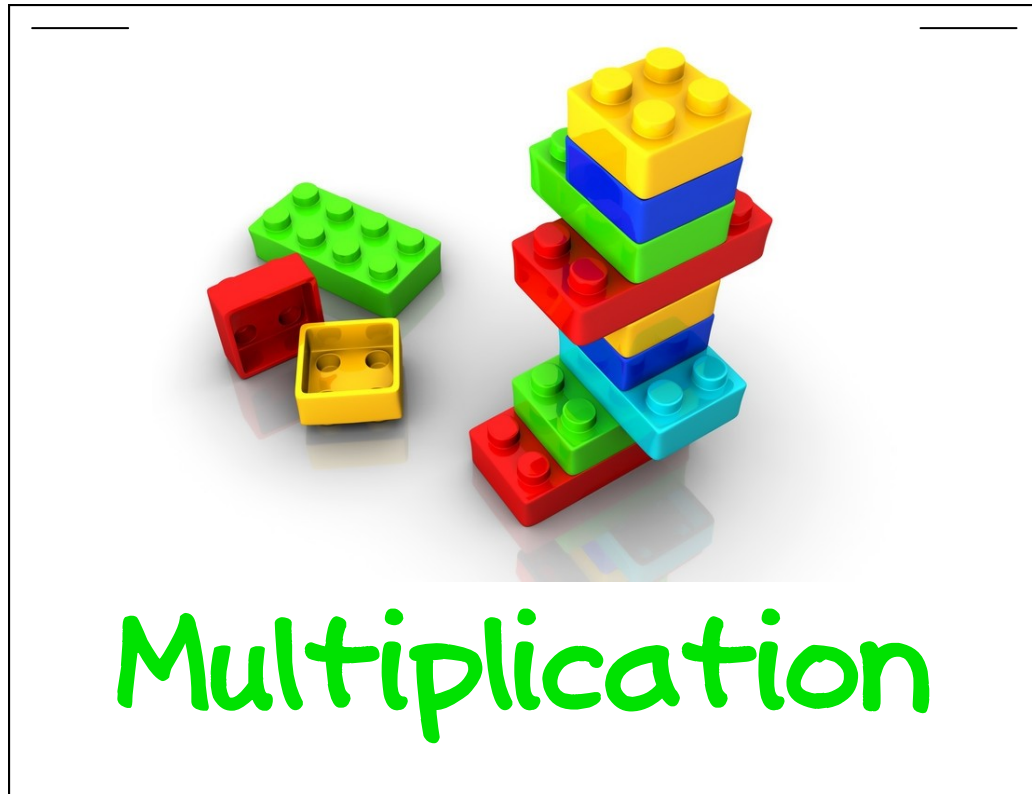
$10 \times 10 =$

$4 \times 10 =$

$6 \times 12 =$

$32 \times 32 =$

Cut out the multiplication pages and cut out this cover. Stack together and staple.



LEGO Fun Facts



If you built a column of 40,000,000,000 LEGO bricks, it would reach the moon!



Laid end to end, the number of LEGO bricks sold in one year would reach more than five times around the world!



The world's children spend 5 billion hours each year playing with LEGO bricks!



On average there are 62 LEGO bricks for every person on earth!



Approximately seven LEGO sets are sold every second!



You can buy LEGO products in 130 different countries!