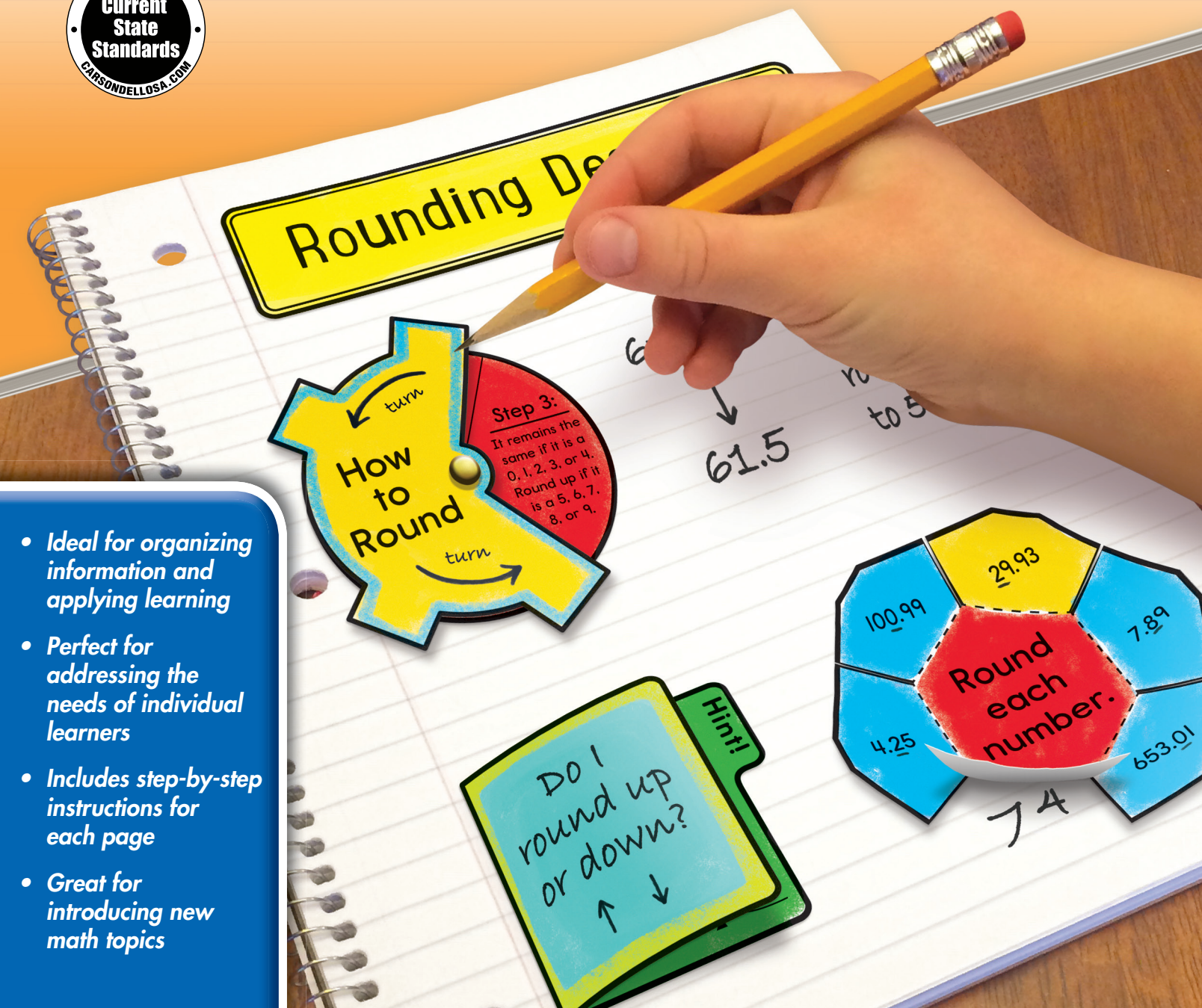
Carson Dellosa Education™
CD-104650

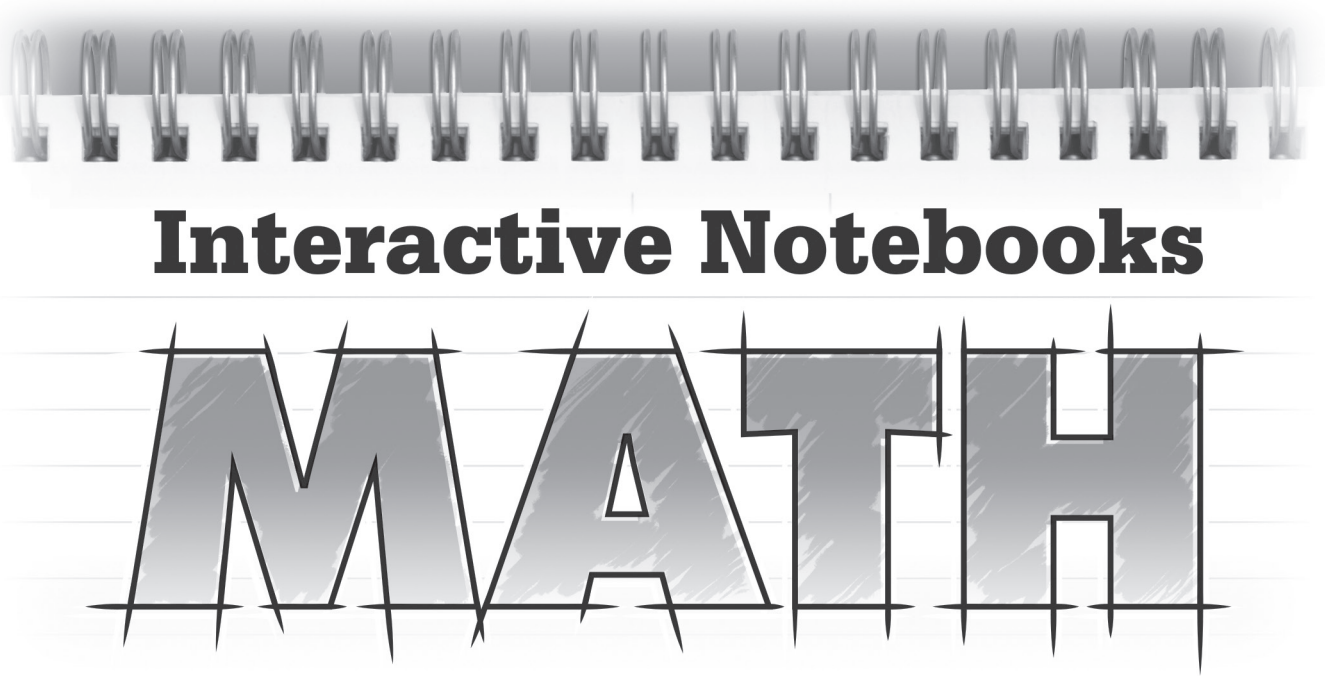
Interactive Notebooks

MATH

Grade 5



- *Ideal for organizing information and applying learning*
- *Perfect for addressing the needs of individual learners*
- *Includes step-by-step instructions for each page*
- *Great for introducing new math topics*



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Credits

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Visit *carsondellosa.com* for correlations to Common Core, state, national, and Canadian provincial standards.

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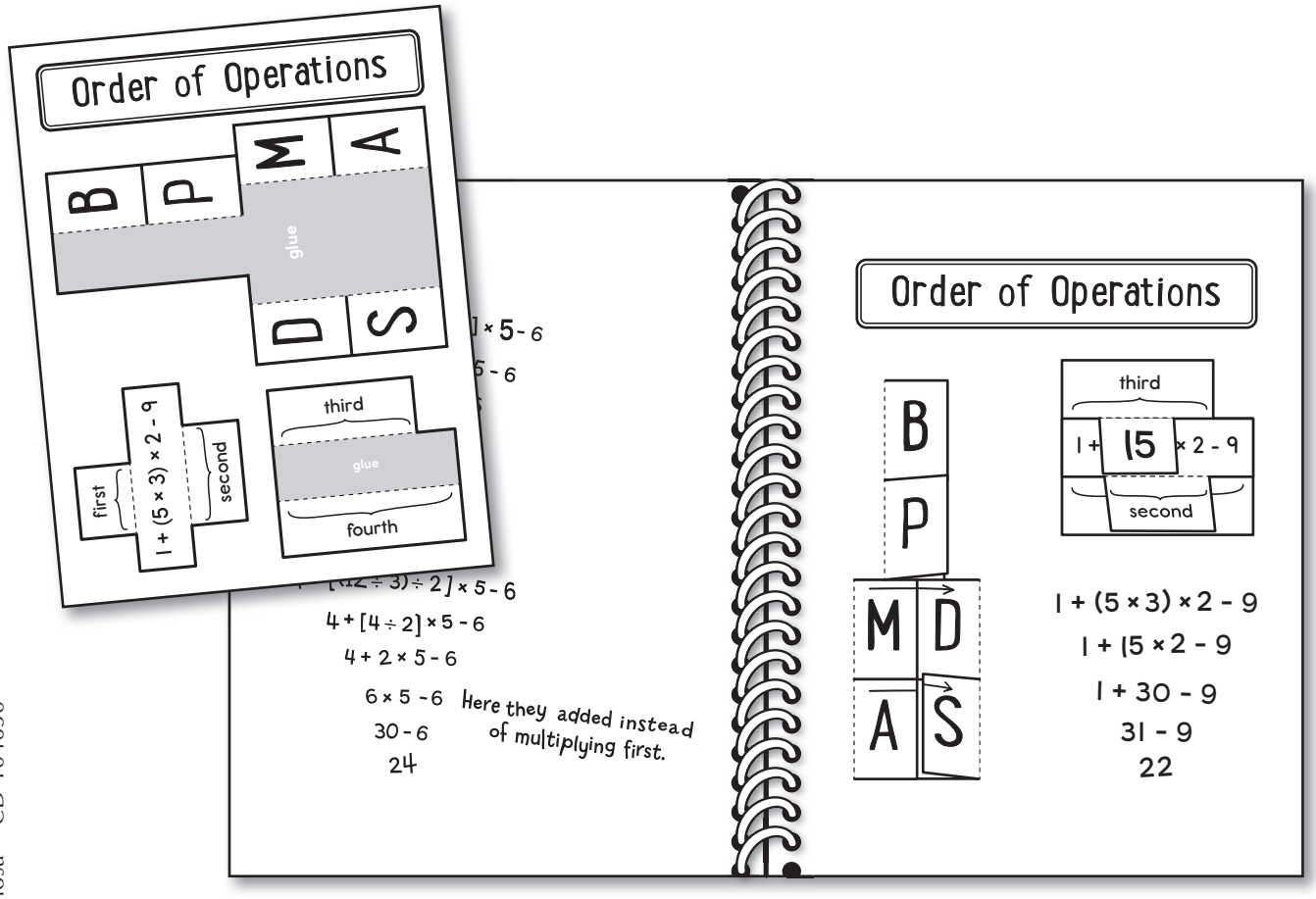
Table of Contents

What Are Interactive Notebooks?

Interactive notebooks are a unique form of note taking. Teachers guide students through creating pages of notes on new topics. Instead of being in the traditional linear, handwritten format, notes are colorful and spread across the pages. Notes also often include drawings, diagrams, and 3-D elements to make the material understandable and relevant. Students are encouraged to complete their notebook pages in ways that make sense to them. With this personalization, no two pages are exactly the same.

Because of their creative nature, interactive notebooks allow students to be active participants in their own learning. Teachers can easily differentiate pages to address the levels and needs of each learner. The notebooks are arranged sequentially, and students can create tables of contents as they create pages, making it simple for students to use their notebooks for reference throughout the year. The interactive, easily personalized format makes interactive notebooks ideal for engaging students in learning new concepts.

Using interactive notebooks can take as much or as little time as you like. Students will initially take longer to create pages but will get faster as they become familiar with the process of creating pages. You may choose to only create a notebook page as a class at the beginning of each unit, or you may choose to create a new page for each topic within a unit. You can decide what works best for your students and schedule.



A student's interactive notebook for order of operations

Getting Started

You can start using interactive notebooks at any point in the school year. Use the following guidelines to help you get started in your classroom. (For more specific details, management ideas, and tips, see page 10.)

1. Plan each notebook.

Use the planning template (page 9) to lay out a general plan for the topics you plan to cover in each notebook for the year.

2. Choose a notebook type.

Interactive notebooks are usually either single-subject, spiral-bound notebooks; composition books; or three-ring binders with loose-leaf paper. Each type presents pros and cons. See page 5 for a more in-depth look at each type of notebook.

3. Allow students to personalize their notebooks.

Have students decorate their notebook covers, as well as add their names and subjects. This provides a sense of ownership and emphasizes the personalized nature of the notebooks.

4. Number the pages and create the table of contents.

Have students number the bottom outside corner of each page, front and back. When completing a new page, adding a table of contents entry will be easy. Have students title the first page of each notebook "Table of Contents." Have them leave several blank pages at the front of each notebook for the table of contents. Refer to your general plan for an idea of about how many entries students will be creating.

5. Start creating pages.

Always begin a new page by adding an entry to the table of contents. Create the first notebook pages along with students to model proper format and expectations.

This book contains individual topics for you to introduce. Use the pages in the order that best fits your curriculum. You may also choose to alter the content presented to better match your school's curriculum. The provided lesson plans often do not instruct students to add color. Students should make their own choices about personalizing the content in ways that make sense to them. Encourage students to highlight and color the pages as they desire while creating them.

After introducing topics, you may choose to add more practice pages. Use the reproducibles (pages 78–96) to easily create new notebook pages for practice or to introduce topics not addressed in this book.

Use the grading rubric (page 11) to grade students' interactive notebooks at various points throughout the year. Provide students with copies of the rubric to glue into their notebooks and refer to as they create pages.

What Type of Notebook Should I Use?

Spiral Notebook

The pages in this book are formatted for a standard one-subject notebook.

Pros

- Notebook can be folded in half.
- Page size is larger.
- It is inexpensive.
- It often comes with pockets for storing materials.

Cons

- Pages can easily fall out.
- Spirals can snag or become misshapen.
- Page count and size vary widely.
- It is not as durable as a binder.

Tips

- Encase the spiral in duct tape to make it more durable.
- Keep the notebooks in a central place to prevent them from getting damaged in desks.

Composition Notebook

Pros

- Pages don't easily fall out.
- Page size and page count are standard.
- It is inexpensive.

Cons

- Notebook cannot be folded in half.
- Page size is smaller.
- It is not as durable as a binder.

Tips

- Copy pages meant for standard-sized notebooks at 85 or 90 percent. Test to see which works better for your notebook.

Binder with Loose-Leaf Paper

Pros

- Pages can be easily added, moved, or removed.
- Pages can be removed individually for grading.
- You can add full-page printed handouts.
- It has durable covers.

Cons

- Pages can easily fall out.
- Pages aren't durable.
- It is more expensive than a notebook.
- Students can easily misplace or lose pages.
- Larger size makes it more difficult to store.

Tips

- Provide hole reinforcers for damaged pages.

How To Organize an Interactive Notebook

You may organize an interactive notebook in many different ways. You may choose to organize it by unit and work sequentially through the book. Or, you may choose to create different sections that you will revisit and add to throughout the year. Choose the format that works best for your students and subject.

An interactive notebook includes different types of pages in addition to the pages students create. Non-content pages you may want to add include the following:

Title Page

This page is useful for quickly identifying notebooks. It is especially helpful in classrooms that use multiple interactive notebooks for different subjects. Have students write the subject (such as "Math") on the title page of each interactive notebook. They should also include their full names. You may choose to have them include other information such as the teacher's name, classroom number, or class period.

Table of Contents

The table of contents is an integral part of the interactive notebook. It makes referencing previously created pages quick and easy for students. Make sure that students leave several pages at the beginning of each notebook for a table of contents.

Expectations and Grading Rubric

It is helpful for each student to have a copy of the expectations for creating interactive notebook pages. You may choose to include a list of expectations for parents and students to sign, as well as a grading rubric (page 11).

Unit Title Pages

Consider using a single page at the beginning of each section to separate it. Title the page with the unit name. Add a tab (page 78) to the edge of the page to make it easy to flip to the unit. Add a table of contents for only the pages in that unit.

Glossary

Reserve a six-page section at the back of the notebook where students can create a glossary. Draw a line to split in half the front and back of each page, creating 24 sections. Combine Q and R and Y and Z to fit the entire alphabet. Have students add an entry as each new vocabulary word is introduced.

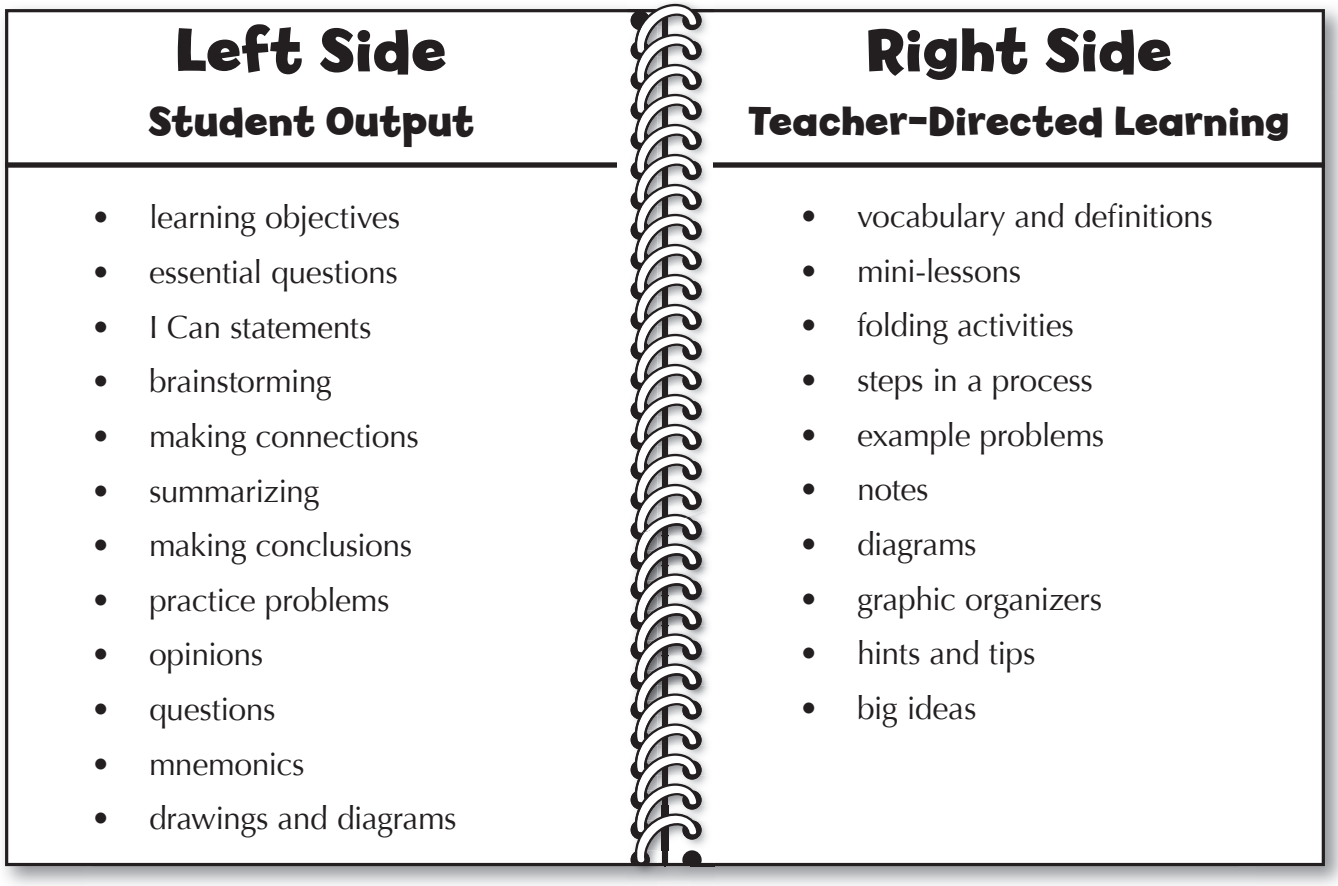
Formatting Student Notebook Pages

The other major consideration for planning an interactive notebook is how to treat the left and right sides of a notebook spread. Interactive journals are usually viewed with the notebook open flat. This creates a left side and a right side. You have several options for how to treat the two sides of the spread.

Traditionally, the right side is used for the teacher-directed part of the lesson, and the left side is used for students to interact with the lesson content. The lessons in this book use this format. However, you may prefer to switch the order for your class so that the teacher-directed learning is on the left and the student input is on the right.

It can also be important to include standards, learning objectives, or essential questions in interactive notebooks. You may choose to write these on the top-left side of each page before completing the teacher-directed page on the right side. You may also choose to have students include the "Introduction" part of each lesson in that same top-left section. This is the *in, through, out* method. Students enter *in* the lesson on the top left of the page, go *through* the lesson on the right page, and exit *out* of the lesson on the bottom left with a reflection activity.

The following chart details different types of items and activities that you could include on each side.



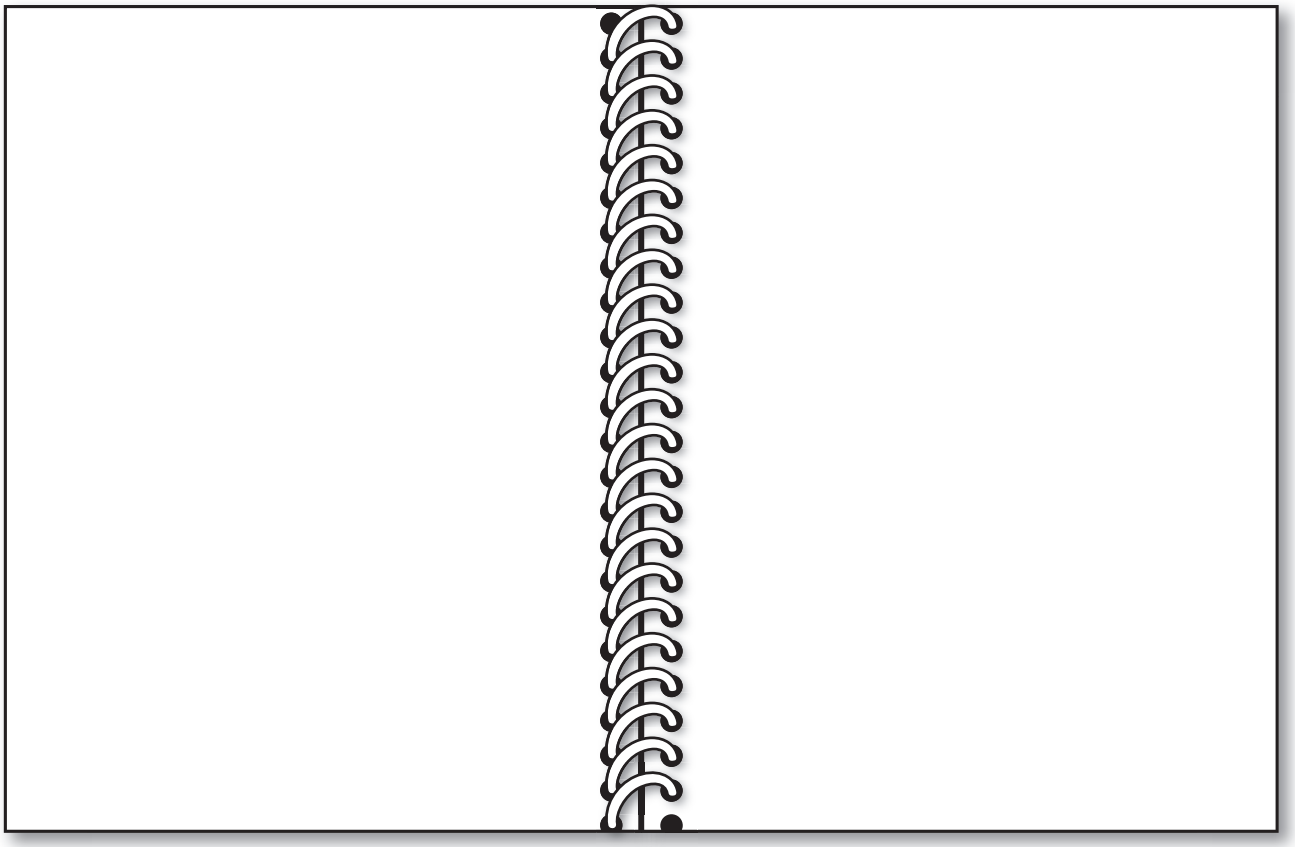
Left Side Student Output	Right Side Teacher-Directed Learning
• learning objectives • essential questions • I Can statements • brainstorming • making connections • summarizing • making conclusions • practice problems • opinions • questions • mnemonics • drawings and diagrams	• vocabulary and definitions • mini-lessons • folding activities • steps in a process • example problems • notes • diagrams • graphic organizers • hints and tips • big ideas

Planning for the Year

Making a general plan for interactive notebooks will help with planning, grading, and testing throughout the year. You do not need to plan every single page, but knowing what topics you will cover and in what order can be helpful in many ways.

Use the Interactive Notebook Plan (page 9) to plan your units and topics and where they should be placed in the notebooks. Remember to include enough pages at the beginning for the non-content pages, such as the title page, table of contents, and grading rubric. You may also want to leave a page at the beginning of each unit to place a mini table of contents for just that section.

In addition, when planning new pages, it can be helpful to sketch the pieces you will need to create. Use the following notebook template and notes to plan new pages.



Left Side **Right Side**

Notes

Interactive Notebook Plan

Page	Topic	Page	Topic
1		51	
2		52	
3		53	
4		54	
5		55	
6		56	
7		57	
8		58	
9		59	
10		60	
11		61	
12		62	
13		63	
14		64	
15		65	
16		66	
17		67	
18		68	
19		69	
20		70	
21		71	
22		72	
23		73	
24		74	
25		75	
26		76	
27		77	
28		78	
29		79	
30		80	
31		81	
32		82	
33		83	
34		84	
35		85	
36		86	
37		87	
38		88	
39		89	
40		90	
41		91	
42		92	
43		93	
44		94	
45		95	
46		96	
47		97	
48		98	
49		99	
50		100	

Managing Interactive Notebooks in the Classroom

Working with Younger Students

- Use your yearly plan to preprogram a table of contents that you can copy and give to students to glue into their notebooks, instead of writing individual entries.
- Have assistants or parent volunteers precut pieces.
- Create glue sponges to make gluing easier. Place large sponges in plastic containers with white glue. The sponges will absorb the glue. Students can wipe the backs of pieces across the sponges to apply the glue with less mess.

Creating Notebook Pages

- For storing loose pieces, add a pocket to the inside back cover. Use the envelope pattern (page 81), an envelope, or a resealable plastic bag. Or, tape the bottom and side edges of the two last pages of the notebook together to create a large pocket.
- When writing under flaps, have students trace the outline of each flap so that they can visualize the writing boundary.
- Where the dashed line will be hidden on the inside of the fold, have students first fold the piece in the opposite direction so that they can see the dashed line. Then, students should fold the piece back the other way along the same fold line to create the fold in the correct direction.
- To avoid losing pieces, have students keep all of their scraps on their desks until they have finished each page.
- To contain paper scraps and avoid multiple trips to the trash can, provide small groups with small buckets or tubs.
- For students who run out of room, keep full and half sheets available. Students can glue these to the bottom of the pages and fold them up when not in use.

Dealing with Absences

- Create a model notebook for absent students to reference when they return to school.
- Have students cut a second set of pieces as they work on their own pages.

Using the Notebook

- To organize sections of the notebook, provide each student with a sheet of tabs (page 78).
- To easily find the next blank page, either cut off the top-right corner of each page as it is used or attach a long piece of yarn or ribbon to the back cover to be used as a bookmark.

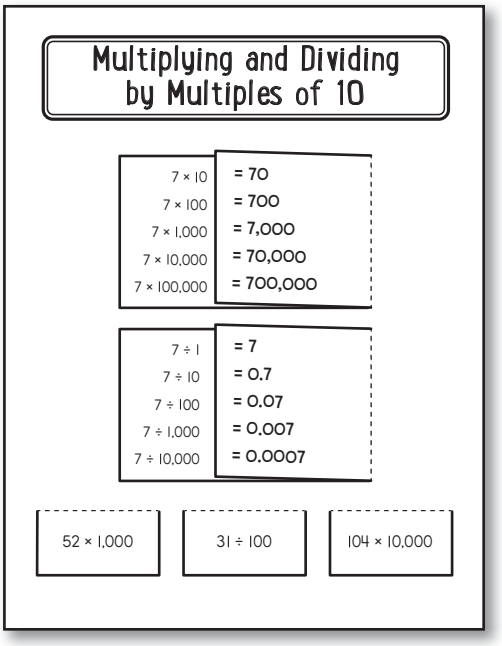
Interactive Notebook Grading Rubric

4	_____ Table of contents is complete. _____ All notebook pages are included. _____ All notebook pages are complete. _____ Notebook pages are neat and organized. _____ Information is correct. _____ Pages show personalization, evidence of learning, and original ideas.
3	_____ Table of contents is mostly complete. _____ One notebook page is missing. _____ Notebook pages are mostly complete. _____ Notebook pages are mostly neat and organized. _____ Information is mostly correct. _____ Pages show some personalization, evidence of learning, and original ideas.
2	_____ Table of contents is missing a few entries. _____ A few notebook pages are missing. _____ A few notebook pages are incomplete. _____ Notebook pages are somewhat messy and unorganized. _____ Information has several errors. _____ Pages show little personalization, evidence of learning, or original ideas.
1	_____ Table of contents is incomplete. _____ Many notebook pages are missing. _____ Many notebook pages are incomplete. _____ Notebook pages are too messy and unorganized to use. _____ Information is incorrect. _____ Pages show no personalization, evidence of learning, or original ideas.

Multiplying and Dividing by Multiples of 10

Introduction

Review place value. Write a six-digit number on the board, with the same numeral for each digit, such as *333,333*. Ask students to give the value of each digit. Then, have students discuss patterns they notice with a partner.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Multiplying and Dividing by Multiples of 10 pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the multiplication rectangle. Fold the right side in on the dashed line. Apply glue to the back of the large section and attach it to the page.
4. With the flap folded in, complete each multiplication sentence by writing an equal sign and the answer on the flap. Look at the patterns in the products. Open the flap and write the patterns on the underside of the flap.
5. Repeat steps 3 and 4 for the division rectangle.
6. Cut out the three multiplication and division problem pieces. Fold each piece on the dashed line. Apply glue to the gray glue sections and attach each piece to the bottom of the page.
7. Solve each problem and write the answer under the flap.

Reflect on Learning

To complete the left-hand page, have students develop a rule for multiplying by multiples of 10 and for dividing by multiples of 10. Students should support their rule by providing several examples.

Answer Key
52,000; 0.31; 1,040,000

Multiplying and Dividing by Multiples of 10

7 × 10
7 × 100
7 × 1,000
7 × 10,000
7 × 100,000

Patterns I Noticed

7 ÷ 1
7 ÷ 10
7 ÷ 100
7 ÷ 1,000
7 ÷ 10,000

Patterns I Noticed

glue

52 × 1,000

glue

31 ÷ 100

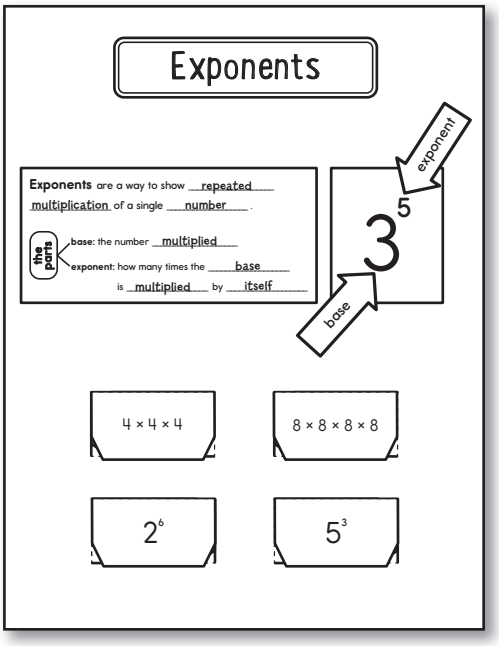
glue

104 × 10,000

Exponents

Introduction

Write several long repeated addition sentences on the board, such as *4 + 4 + 4 + 4 + 4*. Have students approach the board and rewrite each problem in a simpler way. Discuss how multiplication is repeated addition. Then, write a long repeated multiplication sentence on the board, such as *2 × 2 × 2 × 2 × 2 × 2*. Explain that exponents are a simpler way to show repeated multiplication.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Exponents pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the definition piece and glue it to the top left side of the page.
4. Complete the definition. (Exponents are a way to show **repeated multiplication** of a single **number**.)
5. Cut out the 3^5 piece. Glue it to the right of the definition.
6. Cut out the *base* and *exponent* arrows. Discuss the two parts of exponential notation. Glue the arrows to the 3^5 piece to label the parts.
7. Return to the definition piece and complete the definitions of *base* (the number **multiplied**) and *exponent* (how many times the **base** is **multiplied** by **itself**).
8. Cut out the four L-shaped pieces. Place each piece with the text face down and fold in the blank side. Then, fold down the top flap with the text. Apply glue to the gray glue sections and attach them to the bottom of the page.
9. To complete each piece, flip up the top flap and write the related exponent or repeated multiplication sentence on the blank flap. Then, flip out that flap and write the answer on the bottom rectangle.

Reflect on Learning

To complete the left-hand page, have students solve exponents for several powers of 10, such as 10^2, 10^3, 10^4, etc. Students should then describe patterns they see in powers of 10.

Answer Key
4^3, 64; 84, 4,096; 2 × 2 × 2 × 2 × 2 × 2, 64; 5 × 5 × 5, 125

Exponents

Exponents are a way to show _____ of a single _____.

base: the number _____

exponent: how many times the _____ is _____ by _____

the parts

$8 \times 8 \times 8 \times 8$

glue

$4 \times 4 \times 4$

glue

3^5

glue

2^6

5^3

glue

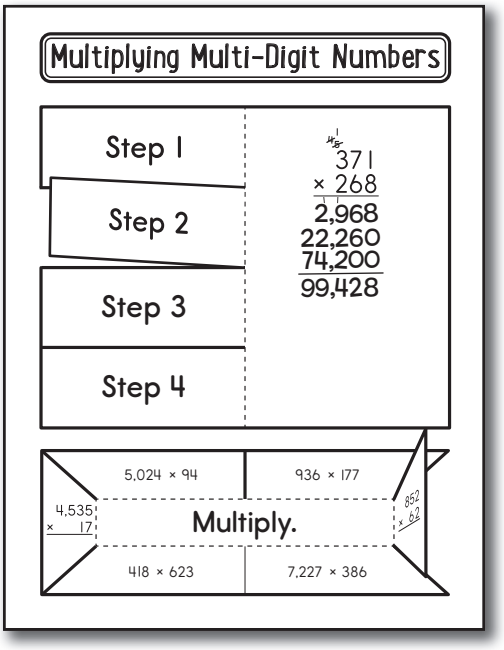
base

exponent

Multiplying Multi-Digit Numbers

Introduction

Review multiplication by writing a 3-digit by 1-digit problem and a 2-digit by 2-digit problem on the board. Have students solve each problem. Discuss strategies used to solve each problem, emphasizing the traditional algorithm.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Multiplying Multi-Digit Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the large rectangle with the four steps and example problem. Cut on the solid lines to create four flaps. Apply glue to the back of the right-hand flap of the large rectangle and attach it to the top of the page.
4. Under each flap, write a description of the step. (1. Multiply the top number by the ones place of the bottom number from right to left. 2. Multiply the top number by the tens place from right to left. Add a zero in the ones place of the answer. 3. Continue multiplying the top number by each place value, from right to left. 4. Add the numbers to get the final product.)
5. Color each flap a different color. Then, solve the example problem. Color code each step of the process to match the flaps.
6. Cut out the *Multiply* piece. Cut along the solid lines to create six flaps. Apply glue to the back of the rectangular section to attach it to the bottom of the page.
7. Solve each multiplication problem. Write the product under the flap.

Reflect on Learning

To complete the left-hand page, have students create a 3- or 4-digit number from their birth date. For example, March 3 would be 303, and November 19 would be 1,119. Then, have students record 3 or 4 other students' numbers. From these numbers, student should create several different multiplication problems and solve them.

Answer Key
Clockwise from top left: 472,256; 165,672; 52,824; 2,789,622; 260,414; 77,095

Multiplying Multi-Digit Numbers

Step 1	371 × 268
Step 2	
Step 3	
Step 4	

Multiply.

5,024 × 94

936 × 177

4,535
× 17

852
× 62

418 × 623

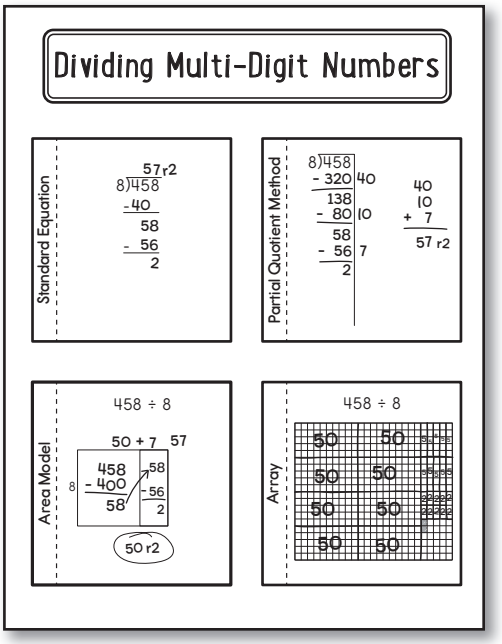
7,227 × 386

Dividing Multi-Digit Numbers

This lesson is designed to introduce one or more strategies at a time and can be taught during a period of days or weeks. If desired, each strategy may be placed on a separate page.

Introduction

Review simple division facts. Have students solve several problems with a partner. Then, have students solve one of the same problems, but with the dividend replaced by a multiple of 10. For example, if students previously solved *76 ÷ 4*, have them solve *760 ÷ 4*. Then, briefly discuss strategies they used to find the new quotient.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Dividing Multi-Digit Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out each rectangle. Apply glue to the back of the title sections to attach each rectangle to the page.
4. Work through each example step-by-step to complete the front of each flap. You may choose to use different colors to show the separate steps of each method. As you work through each method, write notes and helpful tips under the flap. For example, you may want to add a note about how to handle a zero in a dividend in the standard equation, or a hint about starting with multiples of 10 in the Partial Quotient Method.

Reflect on Learning

To complete the left-hand page, have students divide the school's zip code by the school's street address (or vice versa if the street address is larger than the zip code). Then, have students divide the school's seven-digit phone number by the school's area code. They may use any method or methods of their choosing.

Dividing Multi-Digit Numbers

Standard Equation

$8\overline{)458}$

$-$ _____

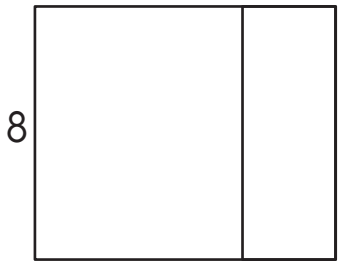
$-$ _____

Partial Quotient Method

$8\overline{)458}$

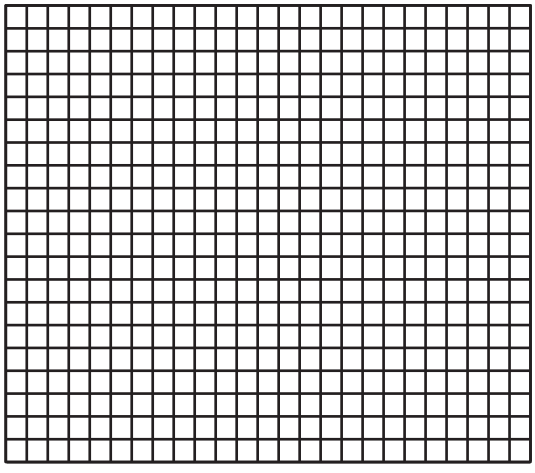
Area Model

458 ÷ 8



Array

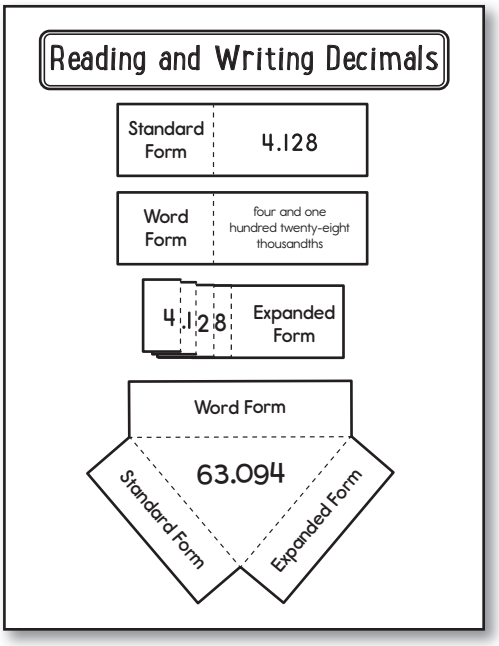
458 ÷ 8



Reading and Writing Decimals

Introduction

Write a six- or seven-digit number on the board. Ask students to write the number in word form and expanded form. Then, repeat with a number written in word form, and a number written in expanded form, having students rewrite it in the other two forms.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Reading and Writing Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Next, cut out the *Standard Form*, *Word Form*, and *Expanded Form* rectangles. Fold each piece on the dashed line near the title. Apply glue under the title section of each rectangle and attach it to the page below the title.
4. To complete the *Expanded Form* piece, place the dashed line after the 2 right before the 8 in 0.008. Press down to flatten. Repeat with the dashed lines after the 1 and the 4, flattening as you go. When complete, it should show the number 4.128 when folded, and 4 + 0.1 + 0.02 + 0.008 when unfolded.
5. Write a short explanation of or helpful hint for each form under the flap made by each rectangle.
6. Finally, cut out the triangle piece with the three flaps. Fold on the dashed lines. Apply glue to the back of the triangle to attach it to the page. Write any decimal on the triangle. You may choose to have all students write the same number, or allow them to choose their own number. Then, write the different forms for that decimal under each corresponding flap.

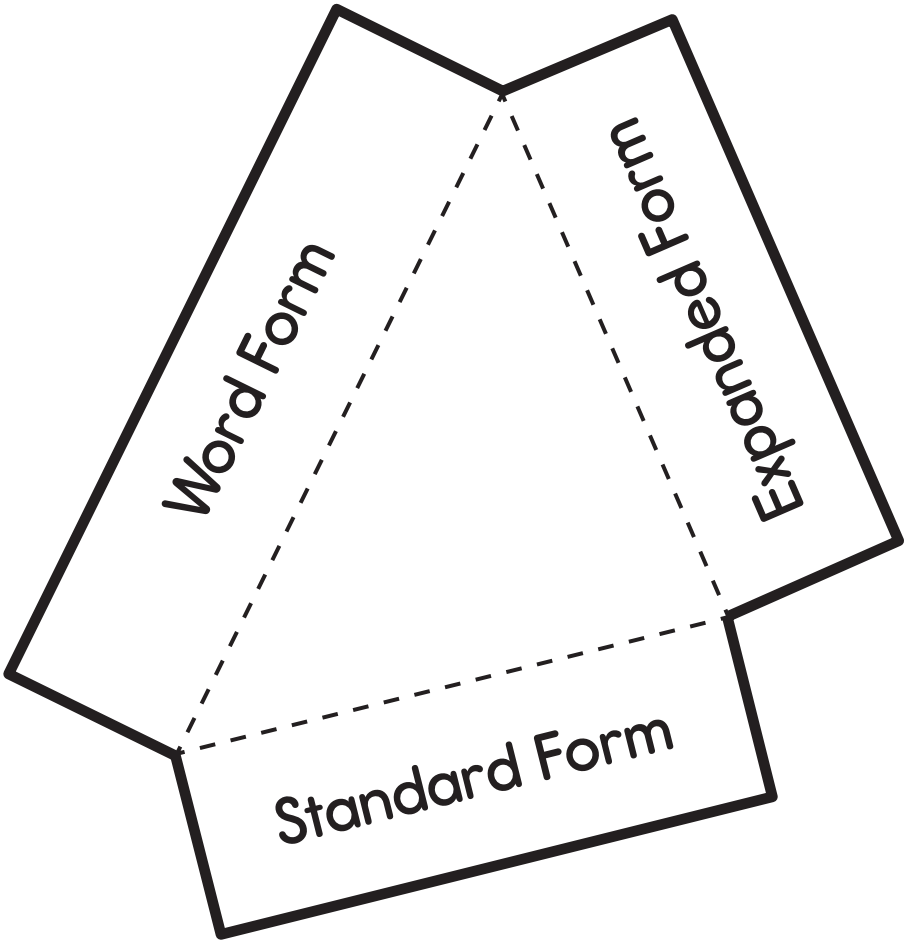
Reflect on Learning

To complete the left-hand page, have students write the three forms for the number 57.063 as you say it aloud. Have students write in their own words how they chose to handle the "missing" number in the tenths place.

Reading and Writing Decimals

Standard Form	4.128

Word Form	four and one hundred twenty-eight thousandths

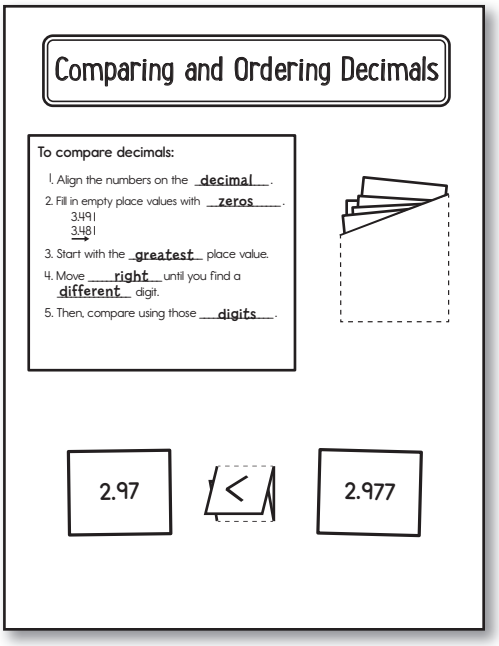


Expanded Form
4
+ 0.1
+ 0.02
+ 0.008

Comparing and Ordering Decimals

Introduction

Review comparing and ordering whole numbers. Write large numbers on index cards. Hand an index card to each student. Have pairs of students compare their numbers. Then, call on groups of three or more students to order their numbers from least to greatest or greatest to least.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Comparing and Ordering Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *To compare decimals* piece and glue it to the top left side of the page.
4. Complete the steps by filling in the blanks. (1. Align the numbers on the **decimal**. 2. Fill in empty place values with **zeros**. 3. Start with the **greatest** place value. 4. Move **right** until you find a **different** digit. 5. Then, compare using those **digits**.)
5. Cut out the piece with the equal sign. Fold the top and bottom flaps in over the equal sign. Apply glue to the back of the middle section. Place it in the center of the bottom half of the page so that the flaps open up and down.
6. Draw a less than symbol (<) on the top flap. Flip it up and draw a greater than symbol (>) on the remaining flap.
7. Cut out the pocket. Fold it in half. Apply glue to the back of the tabs, then fold the tabs around the back to create a pocket. Apply glue to the back of the pocket, then attach it to the page beside the *To compare decimals* piece.
8. Cut out the number cards. Place one card on each side of the comparison piece. Unfold the flaps to create a true number comparison. Or, choose three or more cards to place in order from least to greatest or greatest to least. For more practice, write additional decimals on the backs of the cards. Store the cards in the pocket.

Reflect on Learning

To complete the left-hand page, have students compare and contrast the processes of comparing and ordering whole numbers, fractions, and decimals. Students should include examples to support their explanations.

Comparing and Ordering Decimals

2.97	2.977	25.001	=
3.547	8.462	30.45	

To compare decimals:

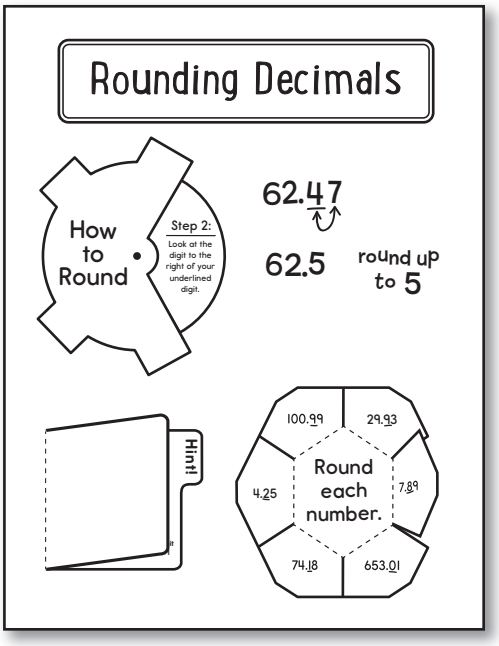
1. Align the numbers on the _____.
2. Fill in empty place values with _____.
   3.491
   3.481
3. Start with the _____ place value.
4. Move _____ until you find a _____ digit.
5. Then, compare using those _____.

Rounding Decimals

Each student will need a brass paper fastener to complete this page.

Introduction

Review rounding whole numbers. Write several large numbers on the board. Challenge students to round each number to every place value.



Creating the Notebook Page

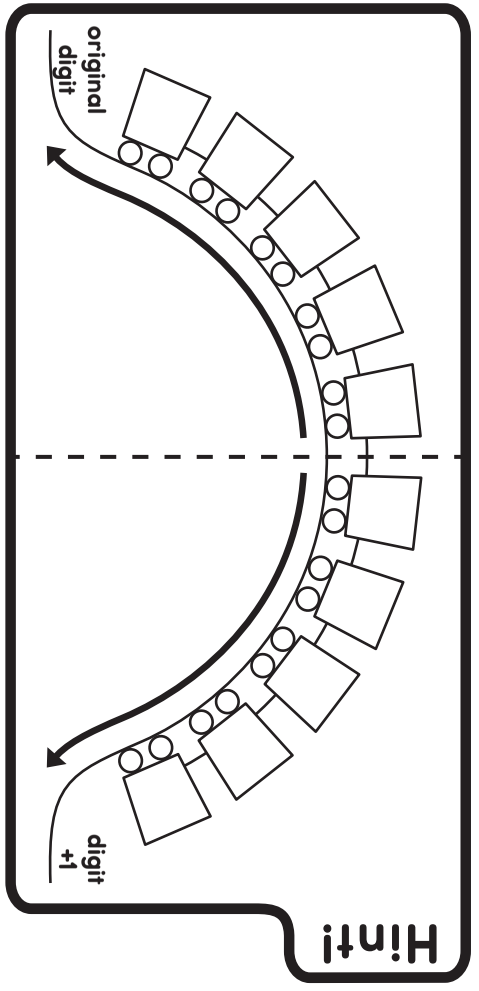
Guide students through the following steps to complete the right-hand page in their notebooks.

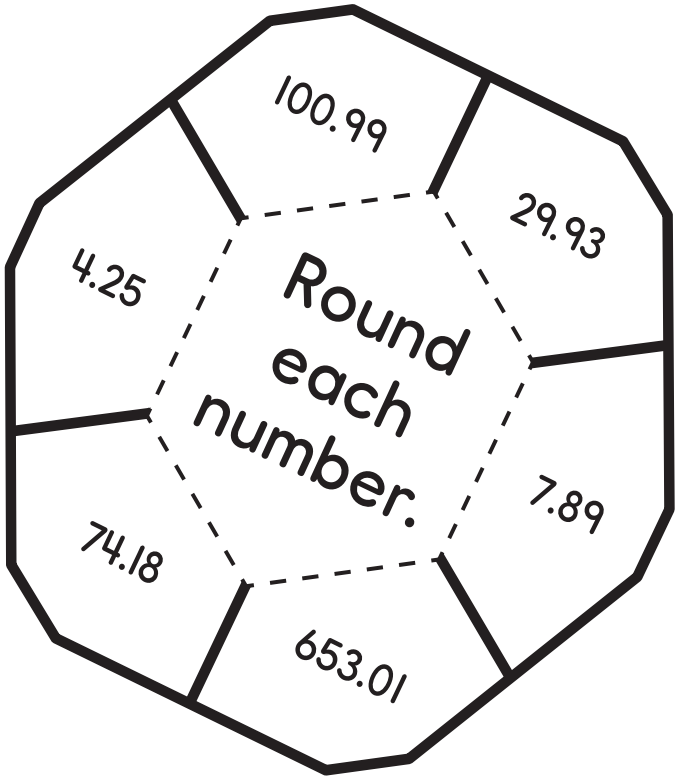
1. Add a Table of Contents entry for the Rounding Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the circular shapes. Place the *How to Round* piece on top of the circle with step-by-step directions. Push a brass paper fastener through the center dots of the circles to attach them. It may be helpful to create the hole in each piece separately first. Apply glue to the back of the *How to Round* piece tabs and attach it to the left side of the notebook page below the title. The brass paper fastener should not go through the page, and the step-by-step circle should spin freely.
4. Walk through the steps. Write an example to the right of the spinner to show each step.
5. Cut out the *Hint!* mini file folder. Fold it in half on the dashed line. Apply glue to the back and attach it below the *How to Round* spinner so it opens to the left.
6. Fill in the roller coaster cars inside the folder with the numbers 0–9.
7. Cut out the six-flap petal piece. Apply glue to the back of the hexagon-shaped center and attach it to the right of the *Hint!* folder.
8. Choose a place value to round to for each petal. Underline the digit. Then, write the rounded number under the petal.

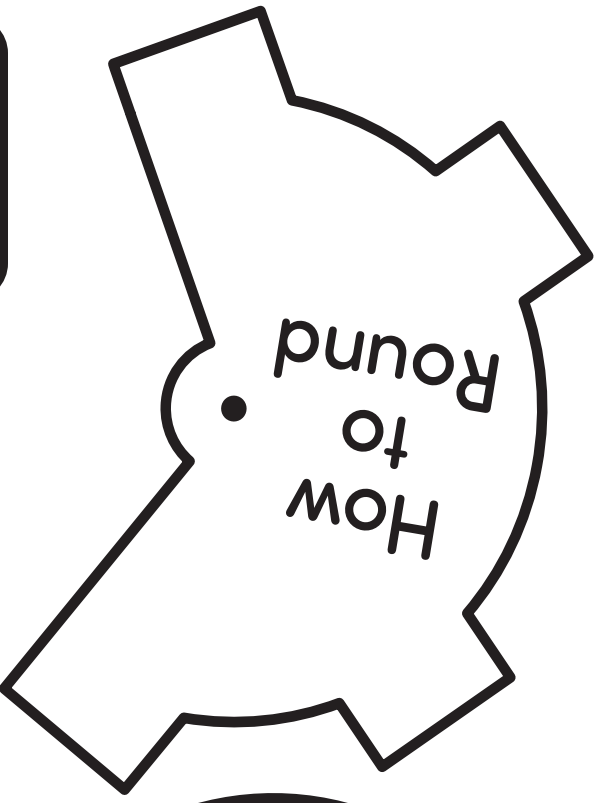
Reflect on Learning

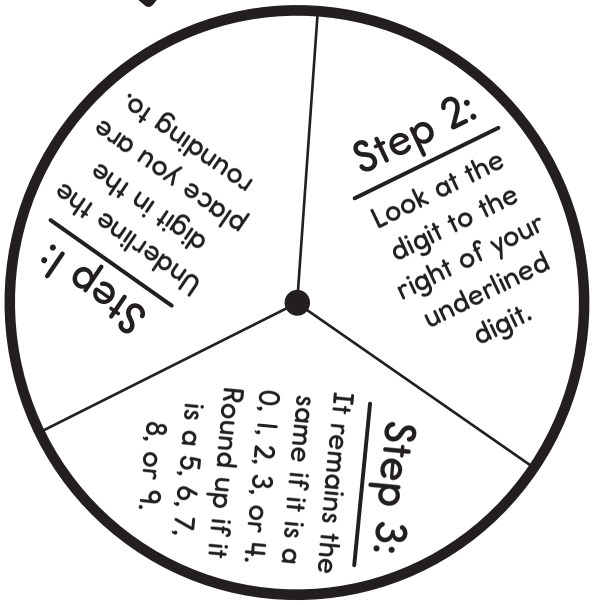
To complete the left-hand page, have each student write a decimal of their choosing. Decimals should have a three-digit whole number and digits through the hundredths or thousandths place. Then, have students round it to each place value. Finally, students should reflect on what they noticed about each rounded number.

Rounding Decimals





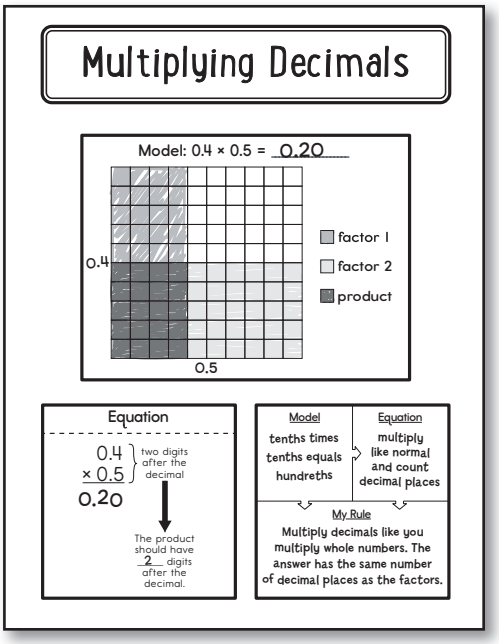




Multiplying Decimals

Introduction

Review multiplication models. Write a 2-digit by 2-digit multiplication problem on the board for students to solve. Then, have students share different methods for solving the problem.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

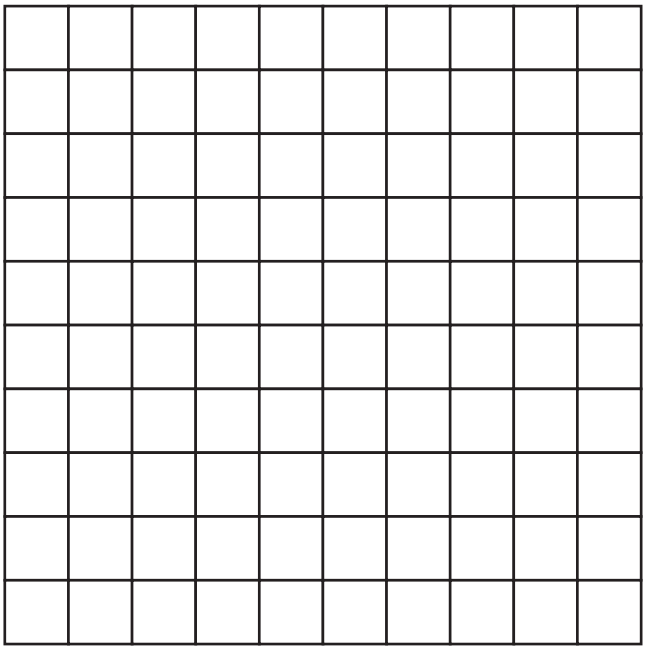
1. Add a Table of Contents entry for the Multiplying Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the model piece. Glue it to the page below the title.
4. Choose two colors that form a new color when they overlap, such as red and yellow, red and blue, or yellow and blue. Color the box beside *factor 1* with one color, and color the box beside *factor 2* with the other color. Label the left side of the model with 0.4 in the first color. Then, color in four vertical tenths. Label the bottom of the model with 0.5 in the second color. Then, color in five horizontal tenths. Fill in the box beside *product* with the color they make when combined (orange, purple, or green). Observe how many squares are in that overlapping section. Write the product in the answer space.
5. Cut out the *Equation* piece. Apply glue under the title section and attach it to the bottom left side of the page.
6. Solve the problem as if it were a normal multiplication problem. Then, discuss the placement of the decimal in the product. Fill in the sentence. (The product should have **2** digits after the decimal.) Under the flap, write what you notice about the multiplication problem.
7. Cut out the puzzle rectangle. Glue it to the bottom right side of the page.
8. Use the similarities between the model, the equation, and any patterns you noticed to develop a rule for multiplying decimals. Write them in each of the spaces on the puzzle piece.

Reflect on Learning

To complete the left-hand page, have students draw a model for 1.2 × 2.3 and solve it using an equation and the rule they created. Have students revise their rules as needed.

Multiplying Decimals

Model: 0.4 × 0.5 = _____



☐ factor 1

☐ factor 2

☐ product

Equation

$$\begin{array}{r} 0.4 \\ \times\ 0.5 \\ \hline \end{array}$$ two digits after the decimal

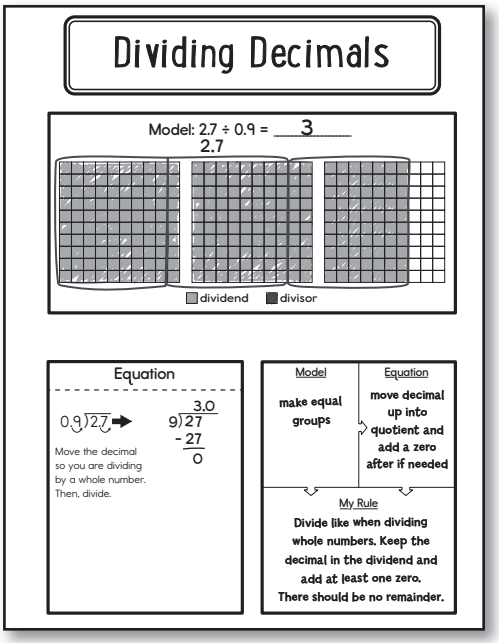
The product should have _____ digits after the decimal.

Model → Equation → My Rule

Dividing Decimals

Introduction

Review division models. Write a 4-digit number divided by 1-digit number problem on the board for students to solve. Then, have students share different methods for solving the problem.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

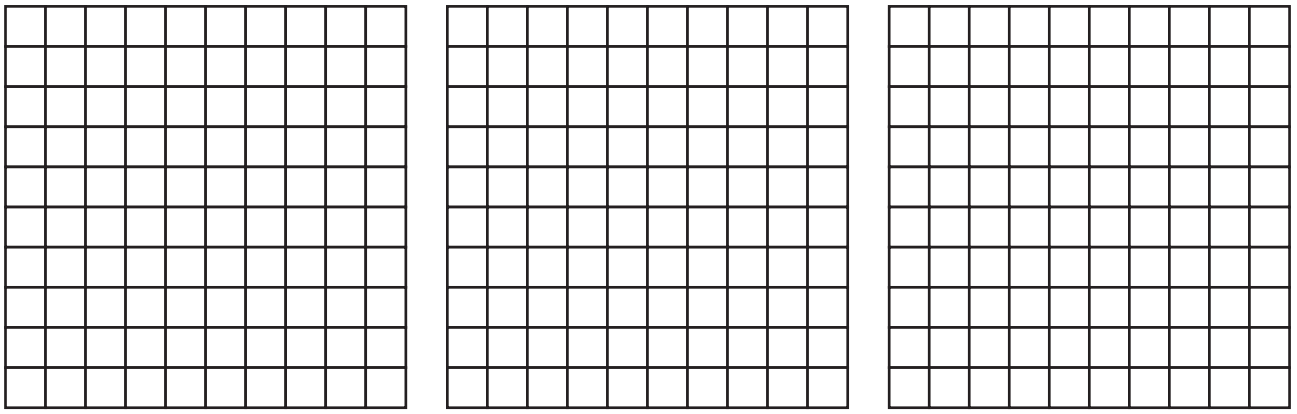
1. Add a Table of Contents entry for the Dividing Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the model piece. Glue it to the page below the title.
4. Choose two different colors. Color the box beside *dividend* with one color, and color the box beside *divisor* with the other color. Label the top of the model with 2.7 in the first color. Then, color in 2.7 on the model. Use the other color to circle groups of 0.9. Observe how many groups are made. Write the quotient in the answer space.
5. Cut out the *Equation* piece. Apply glue under the title section and attach it to the bottom left side of the page.
6. Discuss why you have to change the divisor to a whole number when dividing decimals and how to do so. Rewrite the problem to the right. Solve the problem as if it were a normal division problem. The decimal should move directly up from the dividend into the quotient. Under the flap, write what you notice about the division problem.
7. Cut out the puzzle rectangle. Glue it to the bottom right side of the page.
8. Use the similarities between the model, the equation, and any patterns you noticed to develop a rule for dividing decimals. Write them in each of the spaces on the puzzle piece.

Reflect on Learning

To complete the left-hand page, have students draw a model for 2.4 × 4 and solve it using an equation and the rule they created. Have students revise their rule as needed.

Dividing Decimals

Model: 2.7 ÷ 0.9 = _____

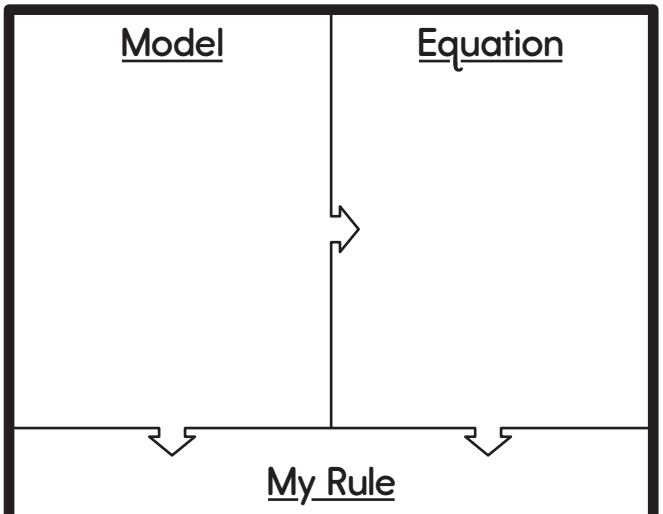


☐ dividend ☐ divisor

Equation

0.9)2.7 ➡)

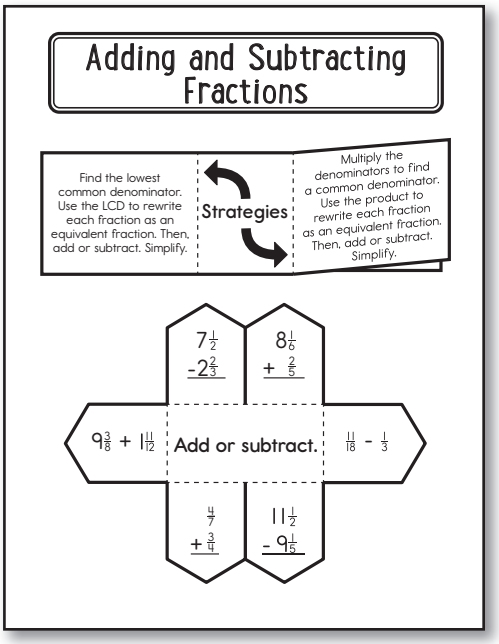
Move the decimal so you are dividing by a whole number. Then, divide.



Adding and Subtracting Fractions

Introduction

Draw two squares on the board. Divide one into fourths and the other into eighths. Shade in $\frac{1}{4}$ and $\frac{5}{8}$, respectively. Discuss how to add the two fractions to find the total amount shaded. Lead students to identify that the square divided into fourths can be further divided into eighths. Then, the parts can be added. Lead students to understand that all fractions can be added by finding a common denominator, even if they don't start out with the same denominator.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Adding and Subtracting Fractions pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Strategies* flap book. Apply glue to the back of the Strategies section only. Attach it to the page below the title.
4. Cut out the two rectangles with the fraction addition problems. Glue the correct rectangle under each strategy flap.
5. Complete each example problem using the strategy presented on the flap. ($\frac{3}{12} + \frac{4}{12} = \frac{7}{12}$) ($\frac{6}{24} + \frac{8}{24} = \frac{14}{24} = \frac{7}{12}$)
6. Cut out the *Add or subtract* flap book. Cut on the solid lines to create six flaps. Apply glue to the back of the center section and attach it to the bottom of the page.
7. Solve each problem using either strategy and write the answer under the flap.

Reflect on Learning

To complete the left-hand page, have students record the problem $6\frac{1}{3} - 2\frac{4}{6}$. Students should draw a picture to show how you can "borrow" from the whole when subtracting.

Answer Key
Clockwise from top left: $4\frac{5}{6}$; $8\frac{17}{30}$; $\frac{5}{18}$; $2\frac{3}{10}$; $1\frac{9}{28}$; $11\frac{7}{24}$

Adding and Subtracting Fractions

Find the lowest common denominator. Use the LCD to rewrite each fraction as an equivalent fraction. Then, add or subtract. Simplify.

Strategies

Multiply the denominators to find a common denominator. Use the product to rewrite each fraction as an equivalent fraction. Then, add or subtract. Simplify.

$2\frac{1}{6} + 1\frac{1}{4}$

$7\frac{1}{2} - 2\frac{2}{3}$

$8\frac{1}{6} + \frac{2}{5}$

$2\frac{1}{6} + 1\frac{1}{4}$

$9\frac{3}{8} + 1\frac{11}{12}$

Add or subtract.

$\frac{11}{18} - \frac{1}{3}$

$\frac{4}{7} + \frac{3}{4}$

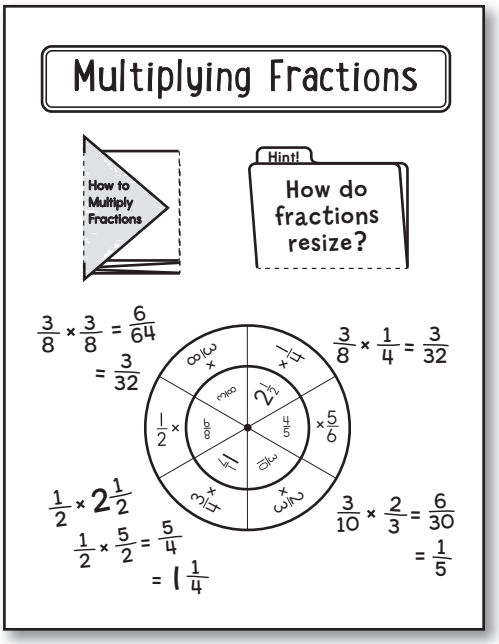
$11\frac{1}{2} - 9\frac{1}{5}$

Multiplying Fractions

Each student will need a brass paper fastener to complete this page.

Introduction

Review multiplying fractions by whole numbers. On index cards, write a whole number on the front and a fraction on the back. Have students find a partner and use their index cards to form and solve several different multiplication problems with a whole number and a fraction.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Multiplying Fractions pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the arrow accordion fold piece. Starting with the arrow end, fold the pieces back and forth to create an accordion with the arrow on top. Apply glue to the back of the last flap. Attach it to the top left side of the page.
4. Unfold the accordion. Shade the triangle a different color so it stands out from the pieces behind it. Choose a fraction and a whole number to multiply. Write the multiplication sentence on the blank section on the far left. Then, use that problem to complete an example below each of the three steps.
5. Cut out the *Hint!* mini file folder. Fold it in half on the dashed line. Apply glue to the back and attach it next to the accordion arrow so the flap opens down. Write *How do fractions resize?* on the front of the folder.
6. Open the folder. Complete the sentences by describing how the size of the product changes.
7. Cut out the circles and place the smaller circle on top. Push a brass paper fastener through the center dots of the circles to attach them. It may be helpful to create the hole in each piece separately first. Apply glue to the back of the large circle. Attach it to the bottom of the page with $\frac{1}{4}$ at the top. Do not press the brass fastener through the page.
8. Spin the smaller circle around to create a variety of fraction multiplication sentences. Solve. Write the problems and answers around the spinner.

Reflect on Learning

To complete the left-hand page, have students choose one of the problems created by the spinner. Challenge students to draw a picture that proves why the multiplication works.

Multiplying Fractions

Hint!

Compare the sizes of the fractions to check if an answer is reasonable.

- If multiplying by a number less than 1,

- If multiplying by a number greater than 1,

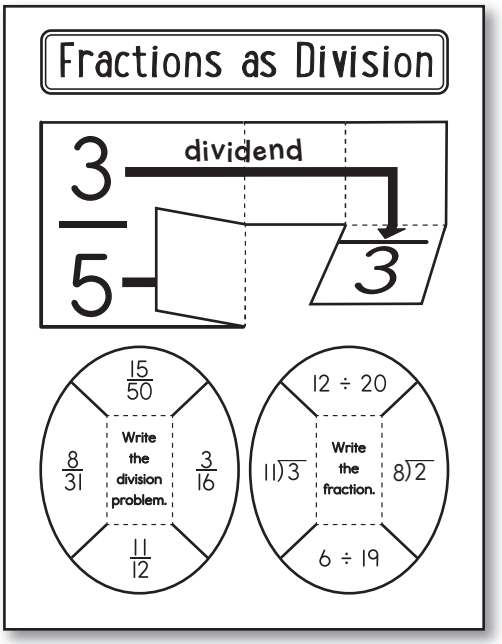
How to Multiply Fractions

1. Rename any mixed numbers as improper fractions.
2. Multiply the numerators.
3. Multiply the denominators. Simplify if needed.

Fractions as Division

Introduction

Write a simple fraction on the board, such as $\frac{3}{4}$. Ask students to represent the fraction at least three different ways. Allow students to share their representations with the class. Keep a list of all of the different representations on the board. Then, have students write a sentence describing a situation where that fraction might be used, such as *A mouse ate 3 out of the 4 pieces of cheese.*



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

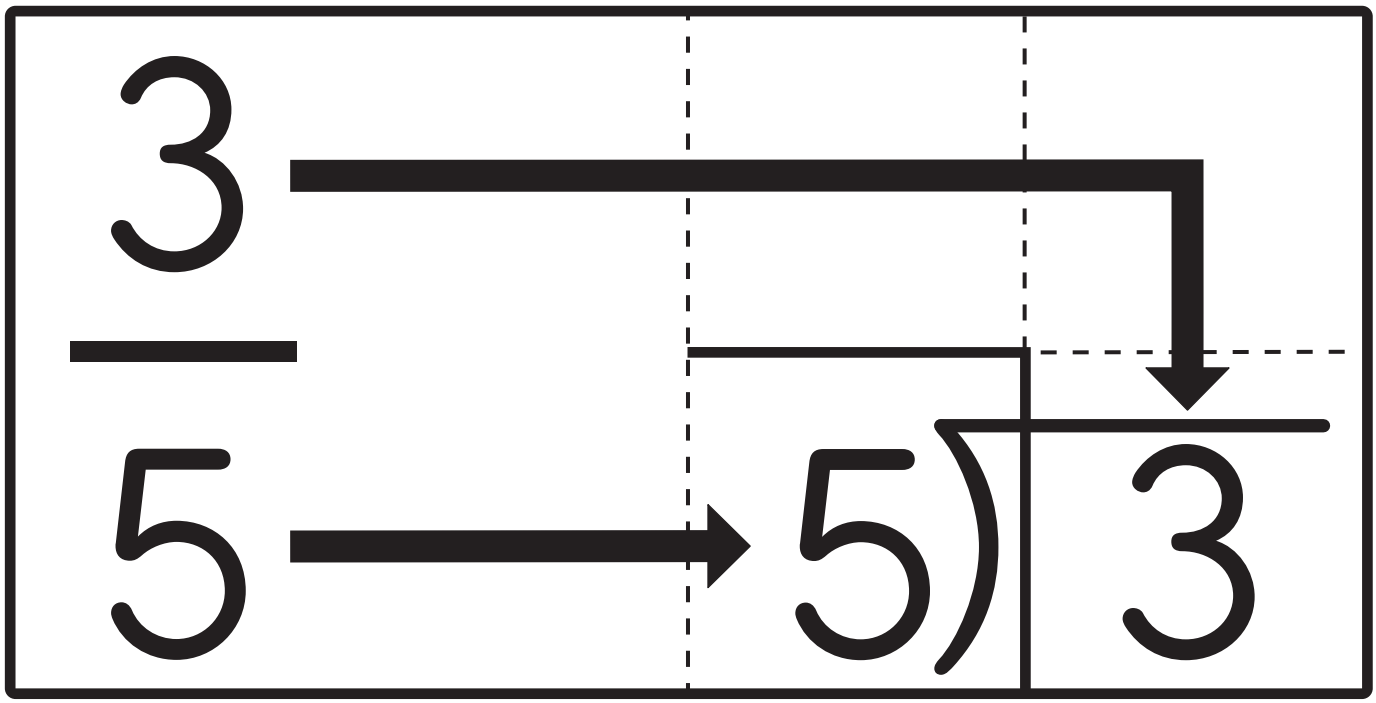
1. Add a Table of Contents entry for the Fractions as Division pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the rectangular fraction piece. Cut on the solid line to create two flaps. Apply glue to the back of the left section and attach it to the top left side of the page below the title. Fold the *3* flap up on the horizontal dashed line, then left on the vertical dashed lines twice. Fold the *5* flap left on the dashed line.
4. Unfold the pieces and follow the arrows to see how a fraction becomes a division problem. Label the 5 arrow *divisor* and the 3 arrow *dividend*. Discuss what this means by providing several real-world examples, such as *3 bags of popcorn divided by 5 friends*.
5. Cut out the oval flap books. Cut each oval on the solid lines to create four flaps. Apply glue to the backs of the rectangular centers and attach them to the bottom of the page.
6. Under each flap, write the corresponding fraction or division problem for the expression on the front of the flap.

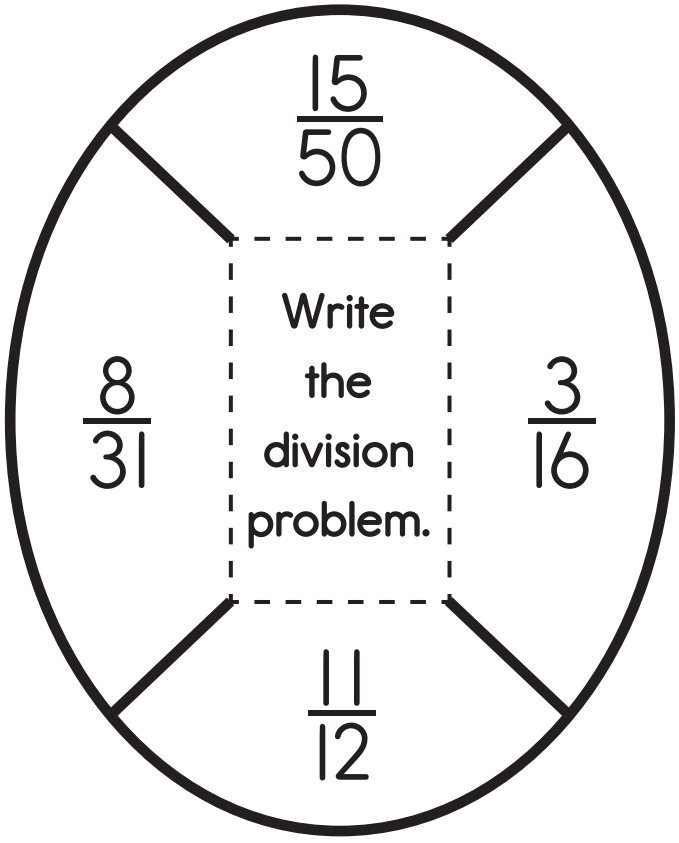
Reflect on Learning

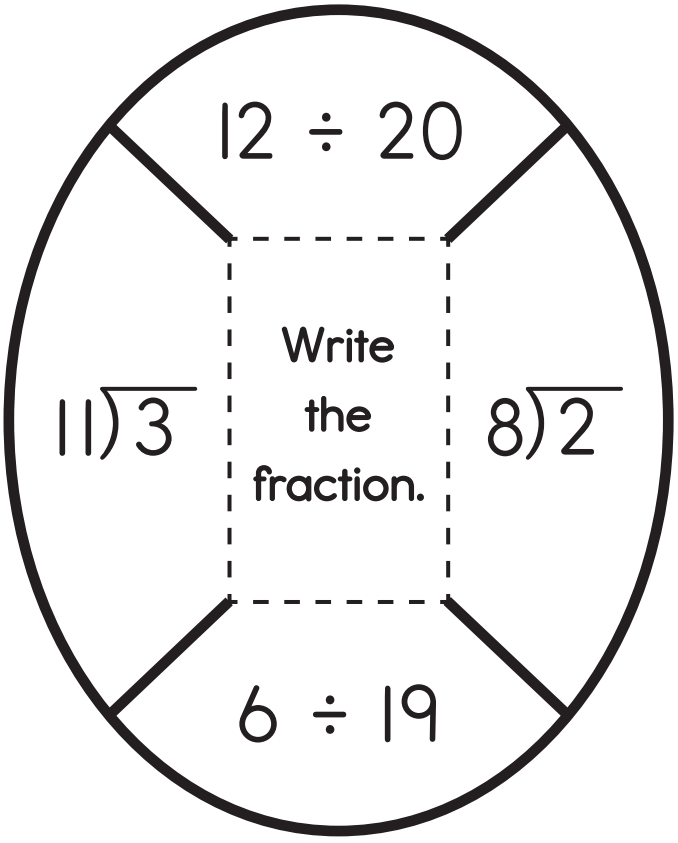
To complete the left-hand page, have students choose one of the practice problems at the bottom of the right-hand page. Then, students should draw a visual, solve, and write a description to support the answer.

Answer Key
Clockwise from the top: $15 \div 50$, $3 \div 16$, $11 \div 12$, $8 \div 31$, $\frac{12}{20}$, $\frac{2}{8}$, $\frac{6}{19}$, $\frac{3}{11}$

Fractions as Division



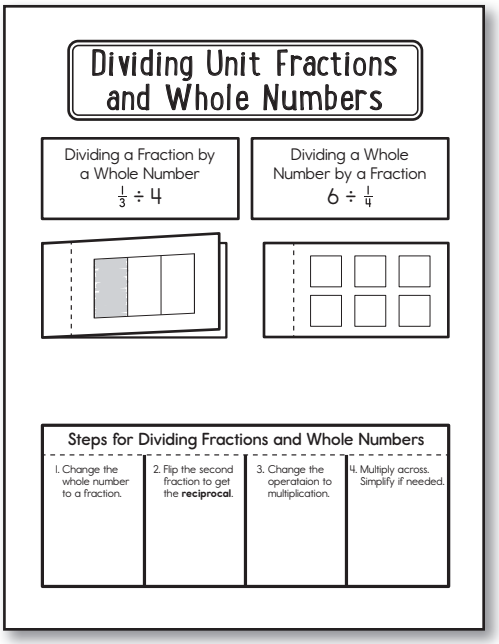




Dividing Unit Fractions and Whole Numbers

Introduction

Have students work with a partner to define *division*. Have each pair share their definitions with the class. Then, create a class definition. Ask students to predict how the definition applies to dividing fractions.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Dividing Unit Fractions and Whole Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Dividing a…* rectangles. Glue them below the title.
4. Cut out the two flap pieces with rectangular models. Apply glue to the gray glue section and attach the other rectangle directly on top of it. Apply glue to the back of the narrow left section to attach the flap book below the *Dividing a Fraction by a Whole Number* piece.
5. Shade in the fraction on the top flap to match the sample problem $\frac{1}{3}$. Then, lightly shade in the same section on the bottom flap. Discuss how the bottom flap shows $\frac{1}{3}$ being divided into 4 pieces. Then, color the answer (**one** of the four pieces) in a darker color and write it under the bottom flap ($\frac{1}{12}$).
6. Repeat step 4 with the two flap pieces showing six squares. Attach it below the *Dividing a Whole Number by a Fraction* piece.
7. Discuss how the top flap shows the whole (6). Then, on the bottom flap, divide each whole into fourths to show the division. Count the total number of sections, and write the answer under the bottom flap (24).
8. Cut out the *Steps for Dividing…* flap book. Cut on the solid lines to create four flaps. Apply glue to the back of the title section and attach it to the bottom of the page.
9. Read each step. Then, solve each of the sample problems at the top of the page, writing each step under the correct flap.

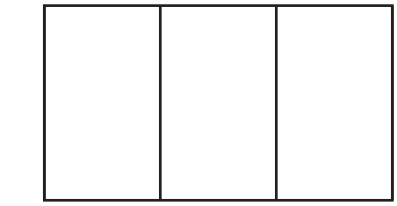
Reflect on Learning

To complete the left-hand page, have students look for patterns in the problems on the right-hand page and write down what they notice. Then, have them identify a shortcut for dividing fractions and whole numbers based on their observations. Students should prove their shortcut works with several problems.

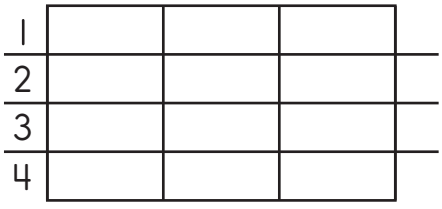
Dividing Unit Fractions and Whole Numbers

Dividing a Fraction by a Whole Number

$\frac{1}{3} \div 4$

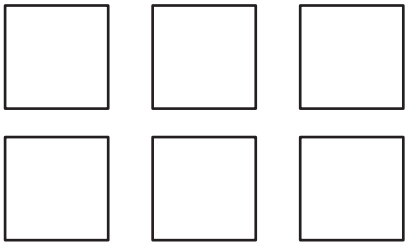


glue

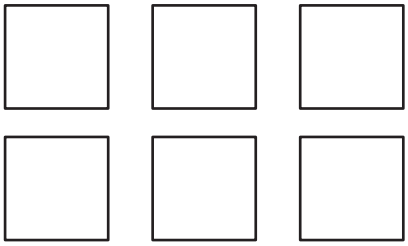


Dividing a Whole Number by a Fraction

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



glue



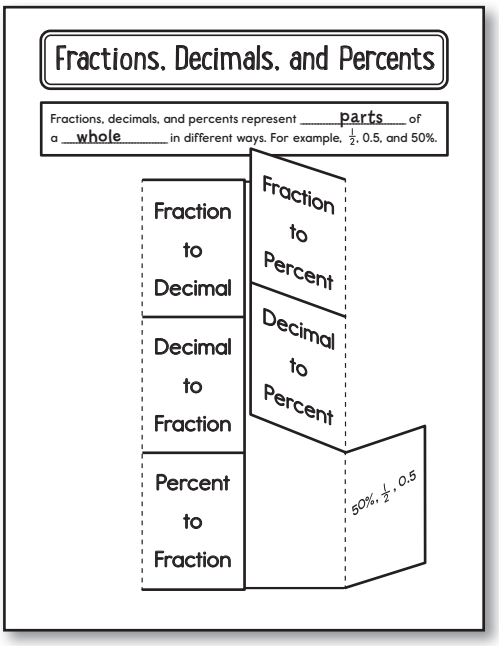
Steps for Dividing Fractions and Whole Numbers

1. Change the whole number to a fraction.
2. Flip the second fraction to get the **reciprocal**.
3. Change the operataion to multiplication.
4. Multiply across. Simplify if needed.

Fractions, Decimals, and Percents

Introduction

Show students sales flyers for local stores. Have small groups create collages of percentages they find. Then, have students observe what is similar about the percents. For example, *They are always between 1 and 99*. Discuss how percents represent a part of a whole, using a percent-off sale as an example.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Fractions, Decimals, and Percents pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the explanation piece and glue it below the title.
4. Complete the explanation. (Fractions, decimals, and percents represent **parts** of a **whole** in different ways.) Discuss how the example given can refer to the same part of the same whole.
5. Cut out the shutter fold piece. Cut on the solid lines to create six flaps. Flip over the piece so the blank side is face up. Fold each flap in on the dashed lines. Flip the piece back over and apply glue to the gray glue section. Attach the shutter fold to the page.
6. Under each flap, describe how to make the conversion and provide an example.
   - Fraction to Percent: Convert to an equivalent fraction with a denominator of 100. Rewrite the numerator as a whole number with the percent sign.
   - Fraction to Decimal: Convert to an equivalent fraction with a denominator of 100. Rewrite the numerator as a decimal to the hundredths.
   - Decimal to Percent: Multiply by 100, and add the percent sign.
   - Decimal to Fraction: Rewrite as a number over 100. Simplify.
   - Percent to Decimal: Divide by 100.
   - Percent to Fraction: Rewrite as a number over 100. Simplify.

Reflect on Learning

To complete the left-hand page, have students record situations where it would be useful to be able to convert between fractions, decimals, and percents. For example, quickly finding the discount on a sale item with a certain percent off.

Fractions, Decimals, and Percents

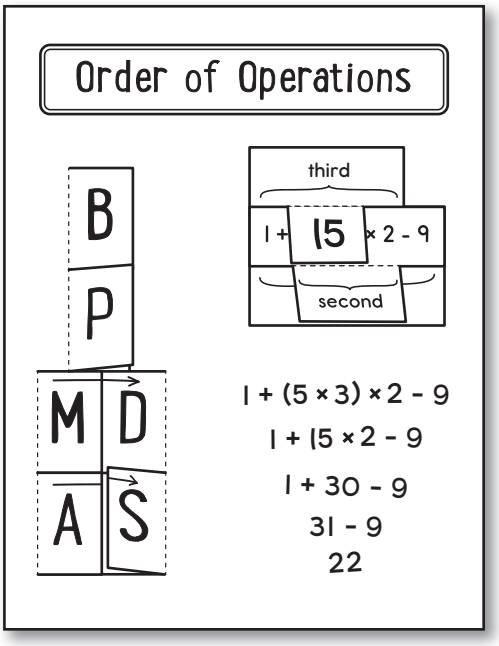
Fractions, decimals, and percents represent _____ of a _____ in different ways. For example, $\frac{1}{2}$, 0.5, and 50%.

Fraction to Percent	glue	Fraction to Decimal
Decimal to Percent		Decimal to Fraction
Percent to Decimal		Percent to Fraction

Order of Operations

Introduction

As a class, discuss whether a math problem can have two correct answers. Write a multi-step problem on the board, such as $4 + 2 \times 6$. Have students solve the problem. Discuss how students who got 48 and 16 both did the calculations correctly, but only 16 is the correct answer because problems should be solved in a certain order.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Order of Operations pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the piece with the capital letters. Cut on the solid lines to create six flaps. Flip over the piece so the blank side is face up. Fold each flap in on the dashed lines. Flip the piece back over and apply glue to the gray glue section. Attach it to the left side of the page.
4. Under each flap, write the name for each step (Braces, then Brackets; Parentheses; Addition; Subtraction; Multiplication; Division). Discuss how the side-by-side steps should by completed from left to right in the problem. Draw an arrow across each pair of flaps to show solving from left to right.
5. Cut out the *first*, *second* and the *third*, *fourth* pieces. Apply glue to the gray glue section. Attach the problem section of the *first*, *second* piece directly on top of the glue section. Fold the *first* flap down over the problem. Then, fold the *second* flap up. Continue with the other piece, folding the *third* flap down and then the *fourth* flap up. Apply glue to the back of the problem section, and attach it to the top right side of the page.
6. Unfold all of the flaps. Discuss what part should be solved first. Fold the *first* flap down and write the answer to that section on the top of the flap. Repeat with the remaining three steps, until the problem is solved. Rewrite each step of the problem under the piece to show the problem solved in its entirety.

Reflect on Learning

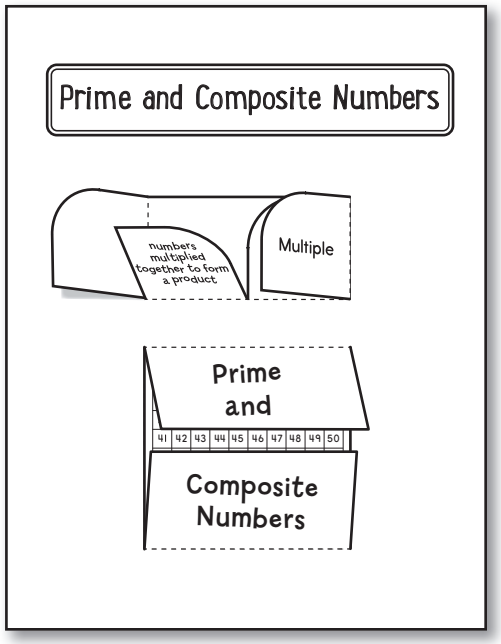
To complete the left-hand page, provide students with a multi-step problem using parentheses and brackets. Have students solve it correctly. Then, have students solve it incorrectly to show how it might be solved if the order of operations aren't followed correctly.

Order of Operations

Prime and Composite Numbers

Introduction

Review factors and multiples. Write several numbers on the board, such as *10*, *12*, *19*, *30*, and *31*. Have students find the factors of each one. Then, write several numbers on the board, such as *2*, *8*, and *12*. Have students find the first 5 multiples of each number.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Prime and Composite Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Multiple* piece. Cut on the solid line to create two flaps. Flip over the piece so the blank side is face up. Fold each flap in on the dashed line, beginning with the blank flaps so the title flaps are on top. Flip the piece back over and apply glue to the gray glue section. Attach the piece to the top of the page.
4. Open each flap. Write a definition of the term on the first flap. Open the second flap and write an example.
5. Cut out the *Prime Number* piece. Fold each flap in on the dashed lines. Apply glue to the back of the piece and attach it to the bottom of the page.
6. On the top of the flaps, write *Prime and Composite Numbers*. Open each flap and shade the underside a different color. For example, shade the *Prime Number* flap red and the *Composite Number* flap blue. Write an explanation for each term on the flap. Then, using the chosen colors, shade the corresponding numbers on the hundred chart. For example, *2*, *3*, and *5* would be shaded red, and *4*, *6*, and *8* would be shaded blue. Leave *1* blank since it is neither a prime nor composite number.

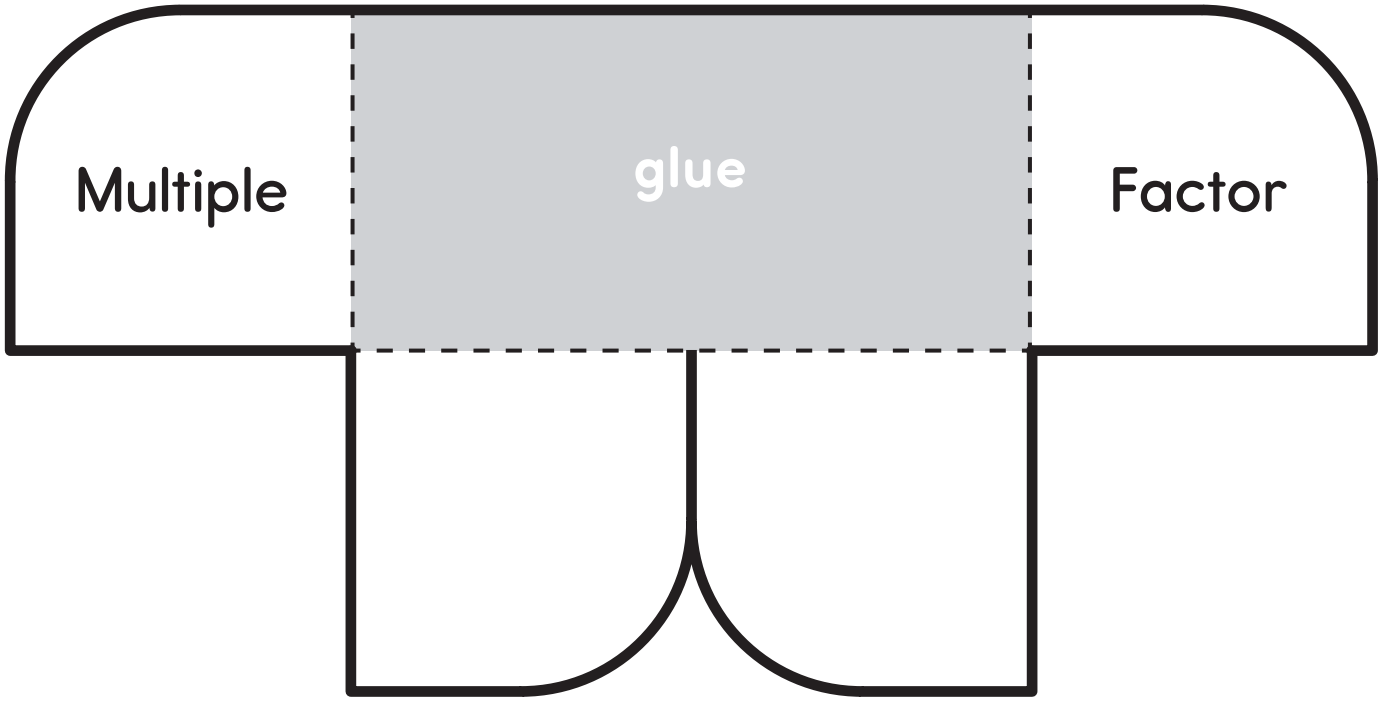
Reflect on Learning

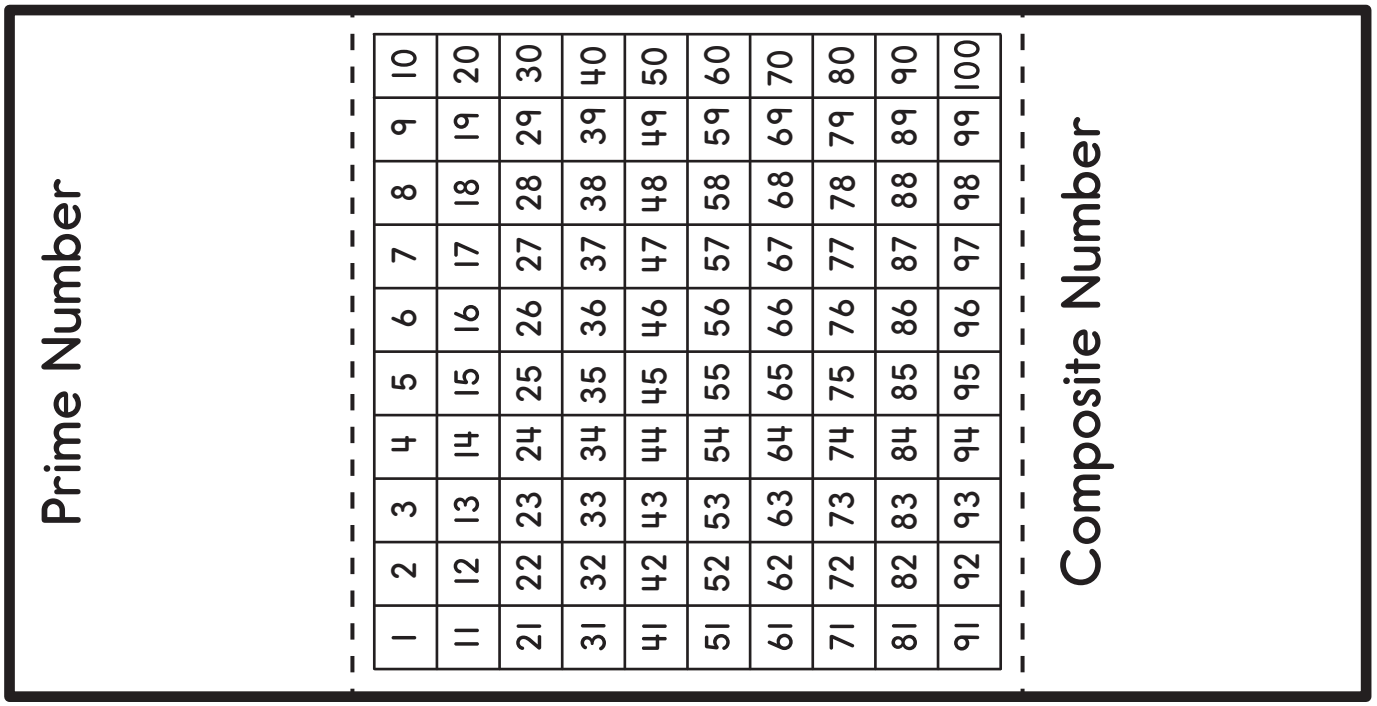
To complete the left-hand page, have students describe in their own words how factors and multiples are related to prime and composite numbers. Then, have students find a method to determine whether a large number is prime or composite.

Answer Key

Prime Numbers: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97; All other numbers greater than 1 are composite.

Prime and Composite Numbers



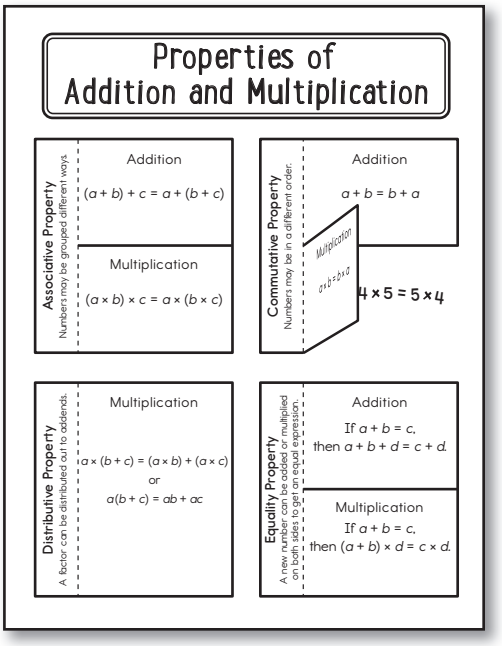


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Properties of Addition and Multiplication

Introduction

Review the Identity Property of both addition and multiplication. Provide students with several addition problems with 0 as an addend, and several multiplication problems with 1 as a factor. Have students solve each problem. Then, discuss the patterns they notice, and create a definition for each property as a class.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Properties of Addition and Multiplication pages.
2. Cut out the title and glue it to the top of the page.
3 Cut out each property flap book. Cut on the solid lines to create two flaps for each book. Apply glue to the back of the title section for each flap book and attach them to the page.
4. Discuss each property name and description. Then, discuss how the addition and multiplication flaps are related. Under each flap, write an example problem.

Reflect on Learning

To complete the left-hand page, have students create a memory device, or mnemonic, to help remember each property. It may be helpful for students to use the root word in each property name. For example: *Commutative is like commute, which means to travel. So, the numbers travel to different spots.*

Properties of Addition and Multiplication

Associative Property
Numbers may be grouped different ways.

Addition

$(a + b) + c = a + (b + c)$

Multiplication

$(a \times b) \times c = a \times (b \times c)$

Commutative Property
Numbers may be in a different order.

Addition

$a + b = b + a$

Multiplication

$a \times b = b \times a$

Distributive Property
A factor can be distributed out to addends.

Multiplication

$a \times (b + c) = (a \times b) + (a \times c)$

or

$a(b + c) = ab + ac$

Equality Property
A new number can be added or multiplied on both sides to get an equal expression.

Addition

If $a + b = c$,
then $a + b + d = c + d$.

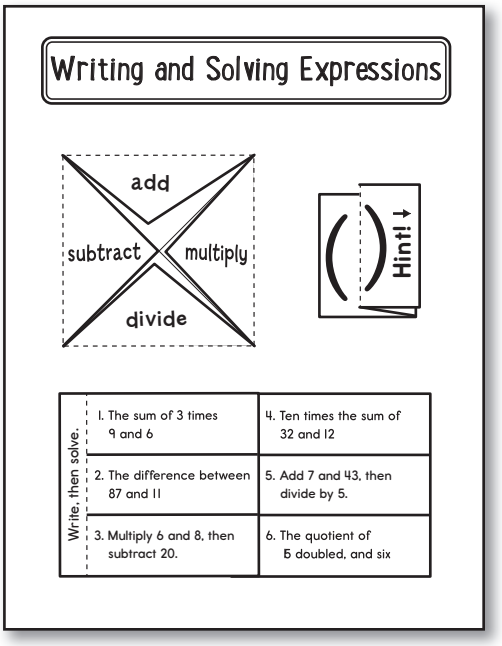
Multiplication

If $a + b = c$,
then $(a + b) \times d = c \times d$.

Writing and Solving Expressions

Introduction

Have students work in small groups to make a list of key words to look out for in word problems. Groups should categorize the terms by operation or use. As a class, create a master list on the board.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Writing and Solving Expressions pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the large square. Fold each corner in on the dashed lines to create four triangular flaps. Apply glue to the back of the piece and attach it to the top left side of the page below the title, oriented as a square.
4. On the top of each flap, write the operations: *add*, *subtract*, *multiply*, and *divide*. Under each flap, write key words associated with each operation. You may wish to refer to the list made in the lesson introduction.
5. Cut out the *Hint!* piece. Fold the *Hint!* section behind on the dashed line, then unfold. Bring the dashed line to the left so the parentheses meet and the text can't be seen. Press down to flatten. Apply glue to the back of the left section to attach it beside the square.
6. Discuss how the order of operations and expressions are related and how using parentheses and brackets (and braces) can help force a specific order when writing an expression.
7. Cut out the problem flap books. Cut on the solid lines to create three flaps on each piece. Apply glue to the back of each left-hand section. Attach the 4–6 piece to the bottom right of the page. Then, attach the 1–3 piece to the bottom left of the page, so the left-hand section of the 4–6 piece is hidden under the flaps.
8. Under each flap, write each expression in numerals and symbols. Then, solve.

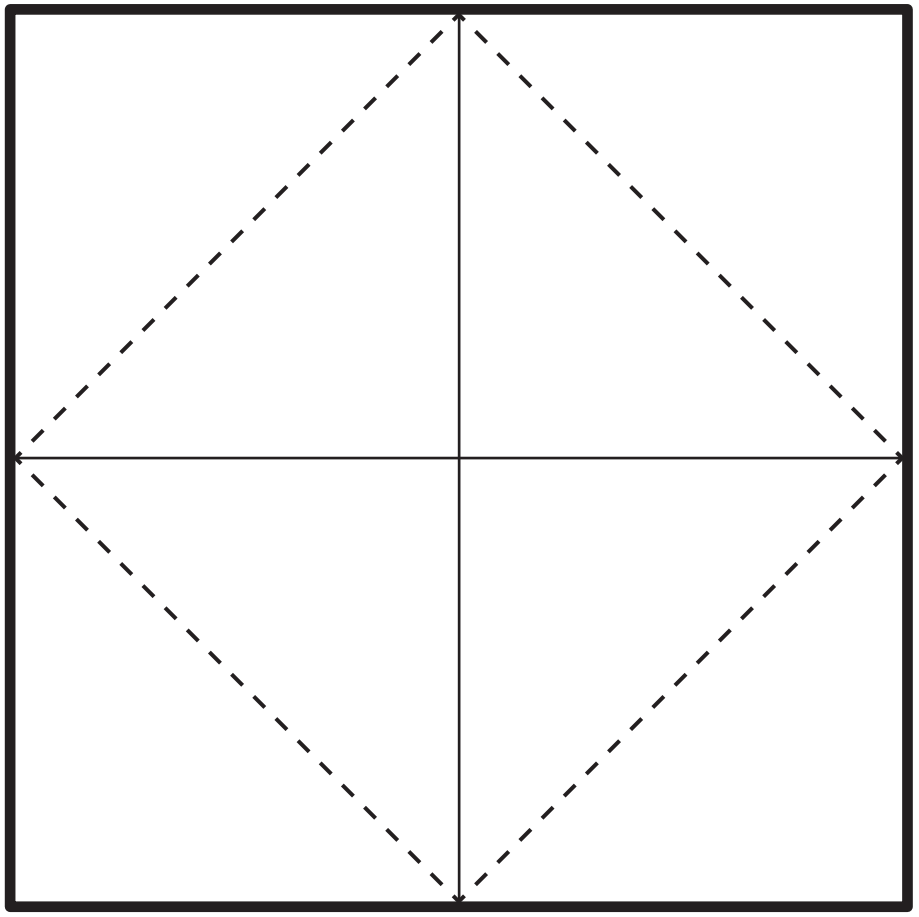
Reflect on Learning

To complete the left-hand page, write *The sum of a number and 15 is 30*. Have students copy the phrase, and then write an expression to represent it. Students should reflect on how to represent each part of an expression where a number is not known. Then, have students solve the expression (15).

Answer Key

1. $(3 \times 9) + 6 = 33$; 2. $87 - 11 = 76$; 3. $(6 \times 8) - 20 = 28$; 4. $10 \times (32 + 12) = 440$; 5. $(7 + 43) \div 5 = 10$; 6. $(15 \times 2) \div 6 = 5$

Writing and Solving Expressions



Hint!

Use parentheses and brackets to write expressions where order matters.

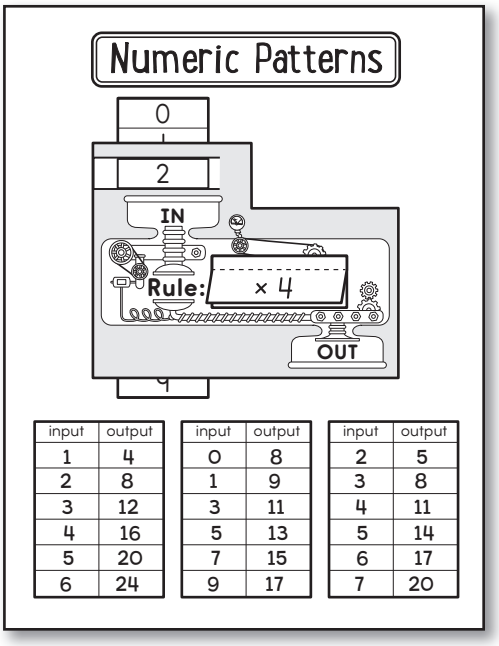
Write, then solve.

1. The sum of 3 times 9 and 6
2. The difference between 87 and 11
3. Multiply 6 and 8, then subtract 20.
4. Ten times the sum of 32 and 12
5. Add 7 and 43, then divide by 5.
6. The quotient of 15 doubled, and six

Numeric Patterns

Introduction

Review numeric patterns with single values. Give students a rule, such as × *3*, – *3*. Write a starting number on the board, such as *2*, and have students find the next 5 terms (3, 6, 15, 42, 123). Then, write a numeric pattern with at least 6 terms on the board, such as *4*, *40*, *20*, *200*, *100*, *1,000*, and have students find the rule (× 10, ÷ 2).



input	output
1	4
2	8
3	12
4	16
5	20
6	24

input	output
0	8
1	9
3	11
5	13
7	15
9	17

input	output
2	5
3	8
4	11
5	14
6	17
7	20

Creating the Notebook Page

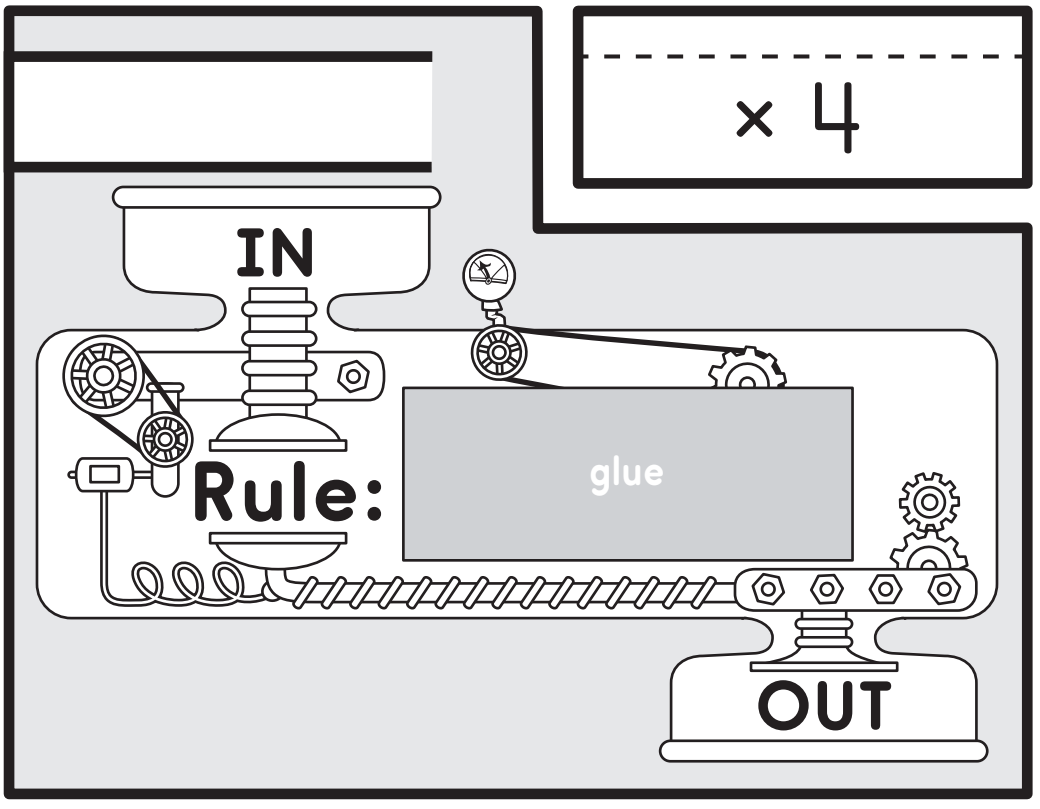
Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Numeric Patterns pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *0–9* piece.
4. Cut out the machine piece. Cut on the solid lines to create two flaps at the top. Slide the *0–9* piece in between the flaps above the *IN* section so a number shows in the space above the *IN* section. Flip the piece over, keeping the *0–9* piece in place. Apply glue to the back of the machine piece on the left and the right of the *0–9* piece. Do not apply glue to the space covered by the *0–9* piece or it won't slide freely. Flip the machine piece back over and attach it below the title.
5. Cut out the three expression pieces (*× 4, + 8*, and *× 3, – 1*). Fold each piece on the dashed lines. Apply glue to the gray glue sections on two pieces. Stack the three pieces to create three stacked flaps, with the *× 3, – 1* piece on the bottom and the *× 4* piece on top. Apply glue to the gray glue section on the machine piece and place the stacked flaps on top.
6. Cut out the three *input/output* charts. Glue each piece to the bottom of the page.
7. Discuss how putting a number in the machine, the *input,* will return a number after following the rule given, the *output*. Look at the first rule. Choose 6 input numbers from 0 to 9 and write them on the left chart. Slide the *0–9* piece so it shows the input number, apply the rule, then record the output number on the chart. Repeat with each input number to complete the chart.
8. Repeat step 7 with the remaining two rules to complete the remaining charts.

Reflect on Learning

To complete the left-hand page, have students make their own rule and create a chart to record at least 6 input and output values for that rule.

Numeric Patterns



× 4

0
1
2
3
4
5
6
7
8
9

glue

+ 8

glue

× 3, − 1

input	output

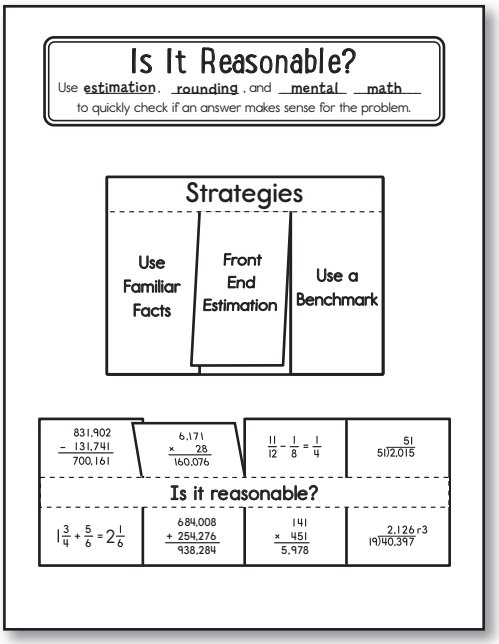
input	output

input	output

Is It Reasonable?

Introduction

Write a simple math fact on the board with an obviously wrong answer. For example, 1 + 1 = 3, or 2 × 5 = 20. Discuss with the class how they know the answer is incorrect and why it is easy to immediately know that the answer is wrong. Then, have students discuss in small groups why it isn't as easy to notice wrong answers with more complicated problems. Have each group choose a reason why it is important to be able to quickly find wrong answers. Allow each group to share their thinking.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Is It Reasonable? pages.
2. Cut out the title and glue it to the top of the page.
3. Complete the sentence under the title. (Use **estimation**, **rounding**, and **mental math** to quickly check if an answer makes sense for the problem.)
4. Cut out the *Strategies* three-flap book and the matching example three-flap book. Apply glue to the gray glue section at the top of the examples piece, and place the *Strategies* piece on top to create a stacked six-flap book. Apply glue to the back of the Strategies section and attach it below the title.
5. Read through the example under each strategy. Then, complete the sample problem under the flap to support the explanation.
6. Cut out the *Is it reasonable*? flap book. Cut on the solid lines to create eight flaps. Apply glue to the center section of the flap book. Attach it to the bottom of the page.
7. Check each problem using one of the three strategies. Under the flap, write *yes* if the answer given is reasonable, or *no* if it is not reasonable. Write a short explanation to support your answer.

Reflect on Learning

To complete the left-hand page, have students choose a strategy and explain it in their own words. Then, students should write an example to support their explanation.

Answer Key

Top: yes, no, no, no; Bottom: no, yes, no, yes

Is It Reasonable?

Use _____ , _____ , and _____ _____

to quickly check if an answer makes sense for the problem.

Strategies

- Use a Benchmark
- Front End Estimation
- Use Familiar Facts

glue

$\frac{5}{8} + \frac{1}{2} = \frac{7}{8}$	No! Because $\frac{5}{8}$ is greater than $\frac{1}{2}$. So, $\frac{5}{8} + \frac{1}{2}$ has to be greater than 1.
$\begin{array}{r} 245{,}687 \\ +\ 101{,}886 \\ \hline 321{,}573 \end{array}$	No! Because 240,000 + 100,000 is 340,000.
$7\overline{)4213}$ R 811	No! Because 42 ÷ 7 = 6, so 4,200 ÷ 7 = 600. The answer should be closer to 600.

$\begin{array}{r} 831{,}902 \\ -\ 131{,}741 \\ \hline 700{,}161 \end{array}$	$\begin{array}{r} 6{,}171 \\ \times\ \ 28 \\ \hline 160{,}076 \end{array}$	$\frac{11}{12} - \frac{1}{8} = \frac{1}{4}$	$51\overline{)2{,}015}$

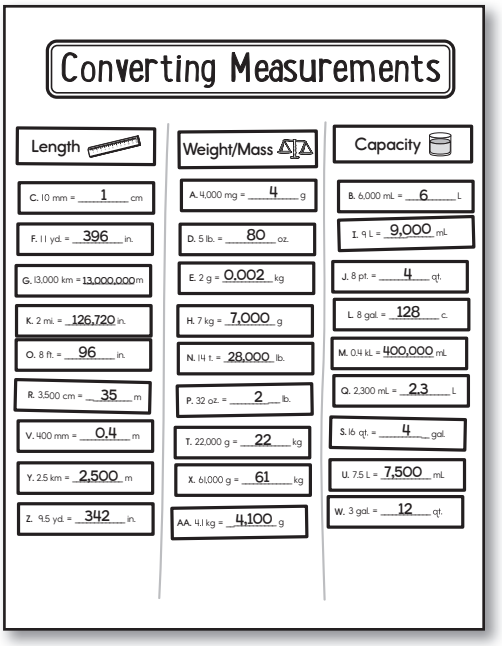
Is it reasonable?

$1\frac{3}{4} + \frac{5}{6} = 2\frac{1}{6}$	$\begin{array}{r} 684{,}008 \\ +\ 254{,}276 \\ \hline 938{,}284 \end{array}$	$\begin{array}{r} 141 \\ \times\ 451 \\ \hline 5{,}978 \end{array}$	$19\overline{)40{,}397}$ R 3

Converting Measurements

Introduction

Group students in pairs. Have partners work together to brainstorm a list of things that can be measured. Make sure measurements are specific. For example, *the height of a building*, not *a building*. After students have generated a list, they should group them into categories of their choosing. Allow partners to share their groupings and give a few example measurements from each category.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Converting Measurements pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Length*, *Weight/Mass*, and *Capacity* labels. Glue them below the title to create three columns. Draw two vertical lines to separate the columns.
5. Cut out the conversion problems. To prevent losing pieces, work with one row at a time. Glue each piece under the correct heading.
6. Convert each measurement.

Reflect on Learning

To complete the left-hand page, have students create a list of customary units and a list of metric units. Then, students should compare and contrast converting measurements in customary units versus converting measurements in metric units.

Answer Key
Length: C. 1; F. 396; G. 13,000,000; K. 126,720; O. 96; R. 35; V. 0.4; Y. 2,500; Z. 342
Weight/Mass: A. 4; D. 80; E. 0.002; H. 7,000; N. 28,000; P. 2; T. 22; X. 61; AA. 4,100
Capacity: B. 6; I. 9,000; J. 4; L. 128; M. 40,000; Q. 2.3; S. 4; U. 7,500; W. 12

Converting Measurements

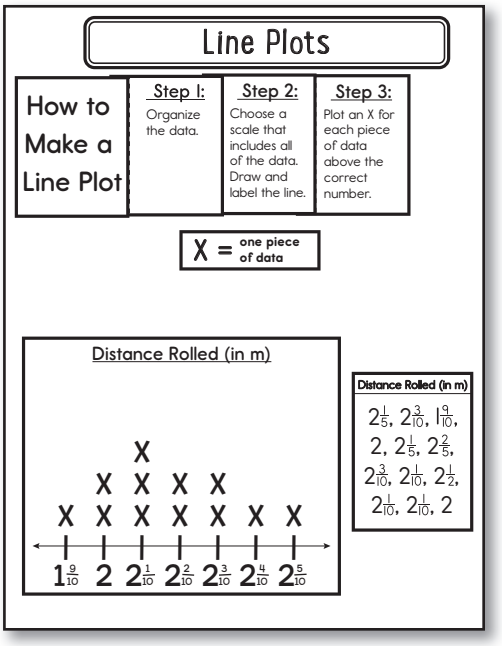
Length 
Weight/Mass 
Capacity 

A. 4,000 mg = _____ g	**B.** 6,000 mL = _____ L	**C.** 10 mm = _____ cm
D. 5 lb. = _____ oz.	**E.** 2 g = _____ kg	**F.** 11 yd. = _____ in.
G. 13,000 km = _____ m	**H.** 7 kg = _____ g	**I.** 9 L = _____ mL
J. 8 pt. = _____ qt.	**K.** 2 mi. = _____ in.	**L.** 8 gal. = _____ c.
M. 0.4 kL = _____ mL	**N.** 14 t. = _____ lb.	**O.** 8 ft. = _____ in.
P. 32 oz. = _____ lb.	**Q.** 2,300 mL = _____ L	**R.** 3,500 cm = _____ m
S. 16 qt. = _____ gal.	**T.** 22,000 g = _____ kg	**U.** 7.5 L = _____ mL
V. 400 mm = _____ m	**W.** 3 gal. = _____ qt.	**X.** 61,000 g = _____ kg
Y. 2.5 km = _____ m	**Z.** 9.5 yd. = _____ in.	**AA.** 4.1 kg = _____ g

Line Plots

Introduction

As a class, brainstorm a list of different graph types and ways to organize data. Divide students into small groups and assign each group an item from the list. Groups should determine the pros and cons of using each graph or display. Have each group share their ideas.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Line Plots pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Step 1*, *2*, and *3* flaps and the *How to Make a Line Plot* piece. Apply glue to the back of each small section. Starting with *Step 3*, place it on the top right side of the page. Then, attach *Step 2* to the left, so the flap covers up the blank section of the piece to the right. Repeat with each piece, gluing the entire title piece to the page last.
4. Under each of the *Step 1*, *2*, and *3* flaps, write any extra information or helpful hints. For example, under the *Step 2* flap, you may choose to write that every number in the scale should be included, even if no data points fall on that number.
5. Cut out the *X* = piece. Glue it to the page below the step pieces.
6. Discuss how each X on the line plot represents one piece of data. Therefore, when drawing line plots, it is important that all of the Xs are the same size.
7. Cut out the blank line plot and *Distance Rolled* table. Glue the line plot to the bottom left side of the page. Glue the data table to the right of the line plot.
8. Using the distances rolled, follow the steps to complete the line plot.

Reflect on Learning

To complete the left-hand page, have students collect 10 pencils, crayons, or colored pencils. Then, students should measure each one to the nearest eighth of an inch and record the data. Next, students should use the data to create a line plot. Finally, have students use the line plot to write three true statements about the data set.

Line Plots

How to Make a Line Plot

Step 1:
Organize the data.

Step 2:
Choose a scale that includes all of the data. Draw and label the line.

Step 3:
Plot an X for each piece of data above the correct number.

X = one piece of data

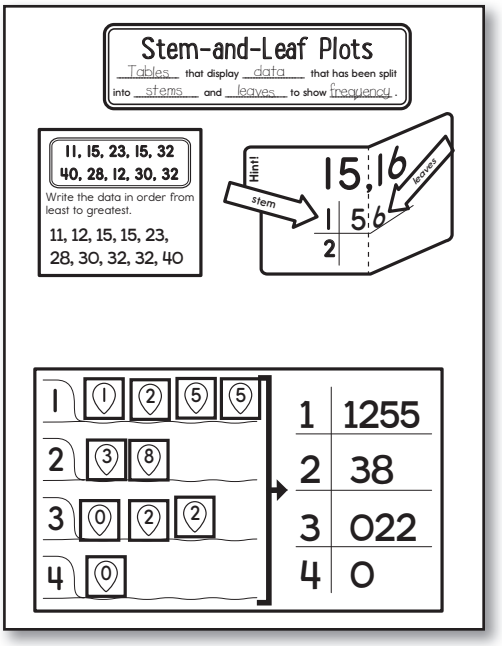
Distance Rolled (in m)

Distance Rolled (in m)
$2\frac{1}{5}$, $2\frac{3}{10}$, $1\frac{9}{10}$, 2, $2\frac{1}{5}$, $2\frac{2}{5}$, $2\frac{3}{10}$, $2\frac{1}{10}$, $2\frac{1}{2}$, $2\frac{1}{10}$, $2\frac{1}{10}$, 2

Stem-and-Leaf Plots

Introduction

Write a large set of test scores on the board. Ask students if it is easy to read and understand at a glance. Discuss why or why not. Then, have students put the data in order from least to greatest. Ask them if it's easy to tell how many students got scores in the 80s, or what the most common score was. Discuss why or why not.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Stem-and-Leaf Plots pages.
2. Cut out the title and glue it to the top of the page.
3. Complete the definition of a stem-and-leaf plot. (**Tables** that display **data** that has been split into **stems** and **leaves** to show **frequency**.)
4. Cut out the data piece. Glue it to the top left side of the page below the title.
5. Discuss how it is important to organize data before graphing it. Rewrite the data in order from least to greatest in the space provided.
6. Cut out the *Hint!* folder. Fold it in half on the dashed line. Apply glue to the back and attach it to the right of the data so the flap opens to the right.
7. Cut out the *stem* and *leaves* arrows. Glue them to the inside of the folder to label the parts of the number. Discuss how data is often split into 10s, the *stems*, and 1s, the *leaves*. However, some data may be split differently, such as with decimals.
8. Cut out the stem and leaf table. Glue it to the bottom of the page.
9. Cut out the leaves with numbers. Use the organized data to glue each leaf to the correct place on the stems.
10. Use the stems and leaves to transfer the information to the stem-and-leaf plot.

Reflect on Learning

To complete the left-hand page, have students create a stem-and-leaf plot with the test scores from the introduction of the lesson.

Stem-and-Leaf Plots

_____ that display _____ that has been split into _____ and _____ to show _____.

leaves

stem

11, 15, 23, 15, 32
40, 28, 12, 30, 32

Write the data in order from least to greatest.

Hint!

15,16

1	5 6
2	

0	0	1	2	2	2	3	5	5	8

1

2

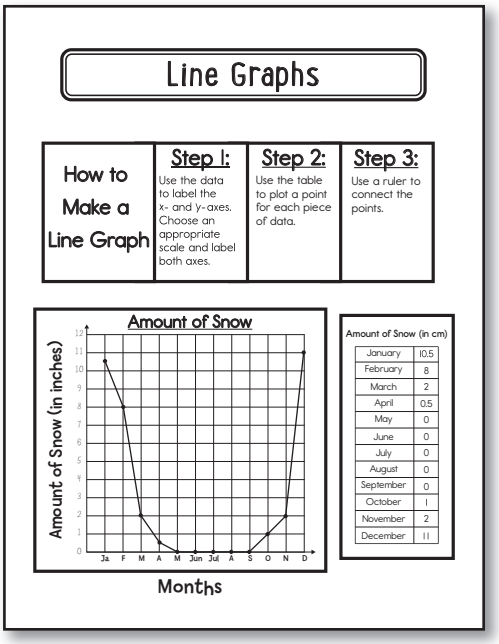
3

4

Line Graphs

Introduction

Gather high and low temperature data for the past week for your area. Display the data and have students use it to create a bar graph. Then, have students discuss whether or not a bar graph is the best way to display that type of data, and why.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Line Graphs pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Step 1*, *2*, and *3* flaps and the *How to Make a Line Graph* piece. Apply glue to the back of each small section. Starting with *Step 3*, place it on the top right side of the page. Then, attach *Step 2* to the left, so the flap covers up the blank section of the piece to the right. Repeat with each piece, gluing the entire title piece to the page last.
4. Under each of the *Step 1*, *2*, and *3* flaps, write any extra information or helpful hints. For example, under the *Step 1* flap, you may choose to write that scales can count by 1s, 2s, 5s, or any multiple that makes the data easier to fit in the space provided.
5. Cut out the blank graph and the *Amount of Snow* table. Glue the graph to the bottom left side of the page. Glue the table to the right of the graph.
6. Label the graph. Then, using the data, follow the steps to complete the line graph.

Reflect on Learning

To complete the left-hand page, have students draw a line graph using the data from the introduction. Then, students should use the line graph to write three true statements about the data.

How to Make a Line Graph

Step 1:

Use the data to label the *x*- and *y*-axes. Choose an appropriate scale and label both axes.

Step 2:

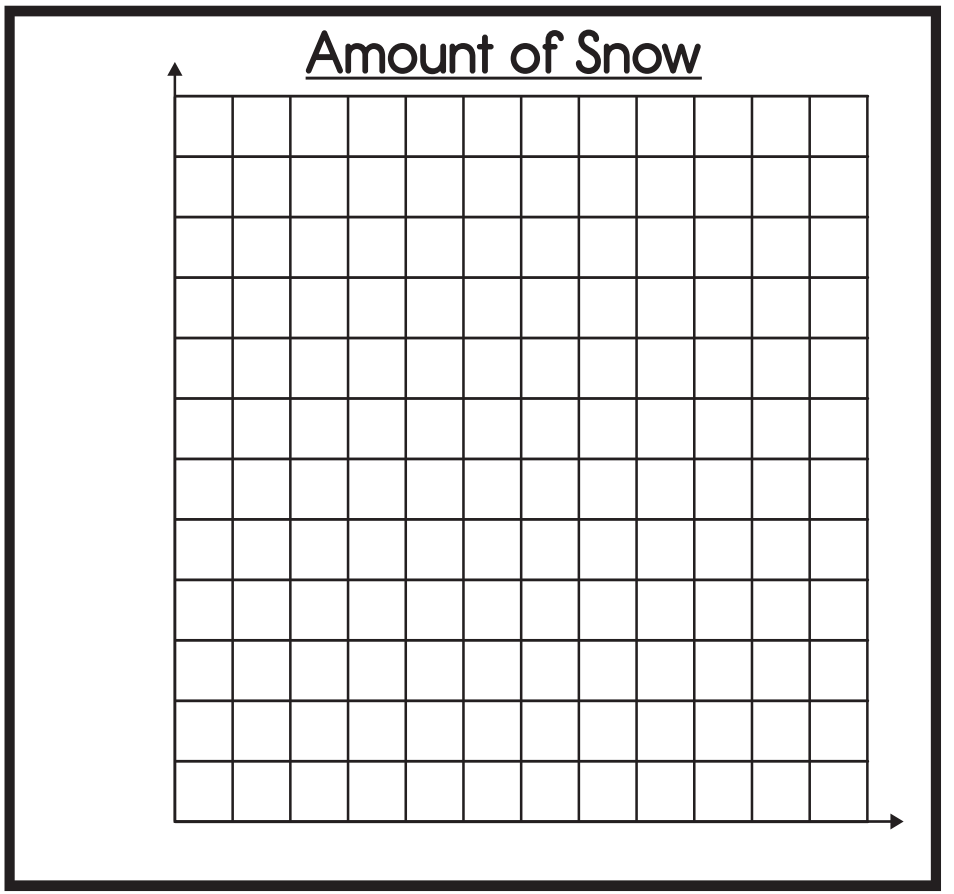
Use the table to plot a point for each piece of data.

Step 3:

Use a ruler to connect the points.

Amount of Snow (in cm)

January	10.5
February	8
March	2
April	0.5
May	0
June	0
July	0
August	0
September	0
October	1
November	2
December	11

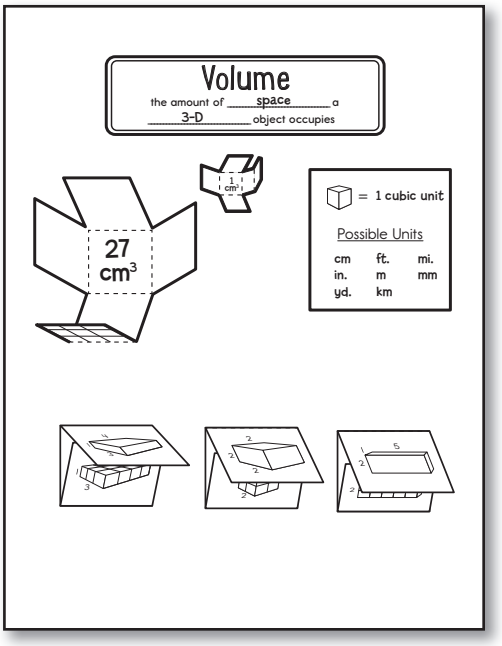


Line Graphs

Volume

Introduction

Review area and perimeter. Draw a rectangle on the board and label the dimensions. Have students find the area and perimeter of the rectangle. Then, ask students to imagine the rectangle is the border of a pool. Have students brainstorm how they would measure the space now that the shape has depth.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

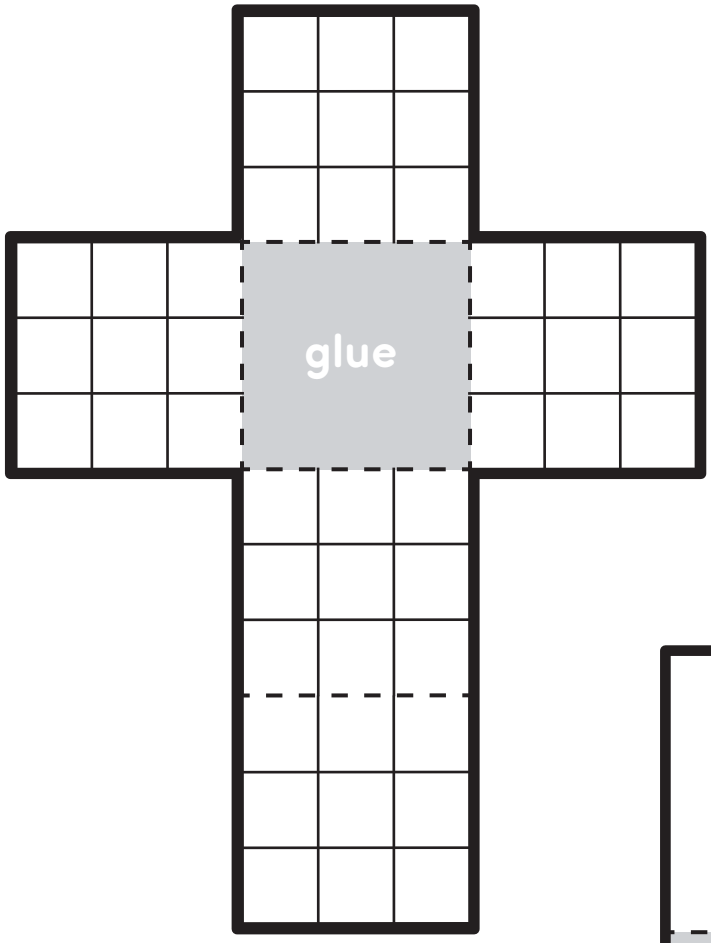
1. Add a Table of Contents entry for the Volume pages.
2. Cut out the title and glue it to the top of the page.
3. Complete the definition of volume (the amount of **space** a **3-D** object occupies).
4. Cut out the large net of a cube. Place the piece face down, and fold in each flap on the dashed lines to create a 3-D cube. Unfold and flip the piece back over. Apply glue to the gray glue section and attach it to the top left side of the page below the title.
5. Repeat step 4 with the small net of a cube. Attach it near the large net.
6. Fold up the cubes and discuss how the small cube represents one cubic centimeter of space because its sides measure 1 cm each. The large cube can hold 27 cubic centimeter cubes, so its area is 27 cm^3. Write the volumes on the inside of each cube.
7. Cut out the *Possible Units* piece. Glue it to the right of the cubes.
8. Beside the drawing of a cube, write the unit (1 cubic unit). Brainstorm and record the units volume can be measured in.
9. Cut out the three two-flap pieces. Starting with the piece face down, fold each piece in on the dashed lines so the solid figure is on top and the divided figure is underneath. Apply glue to the gray glue sections and attach the three pieces to the bottom of the page.
10. Open each flap to see the figure divided into cubic units. Find the volume of each figure and write it under the bottom flap.

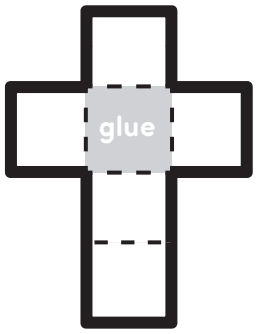
Reflect on Learning

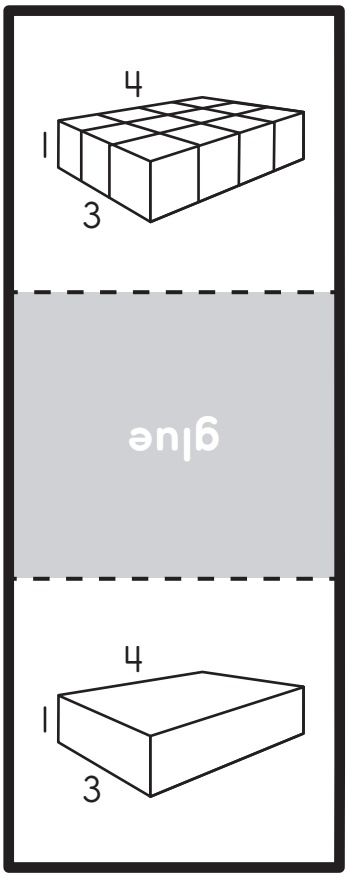
To complete the left-hand page, have students explain in their own words why the units for volume are called *cubic* units.

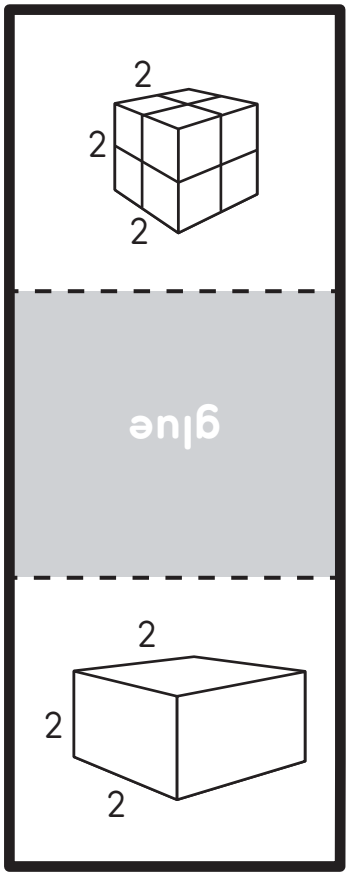
Volume

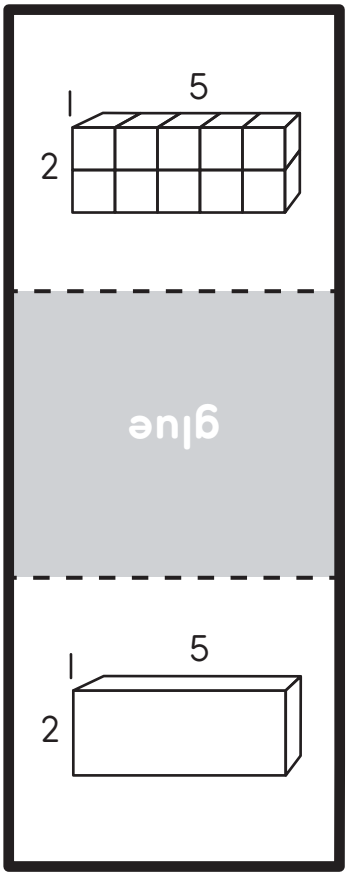
the amount of _____ a _____ object occupies











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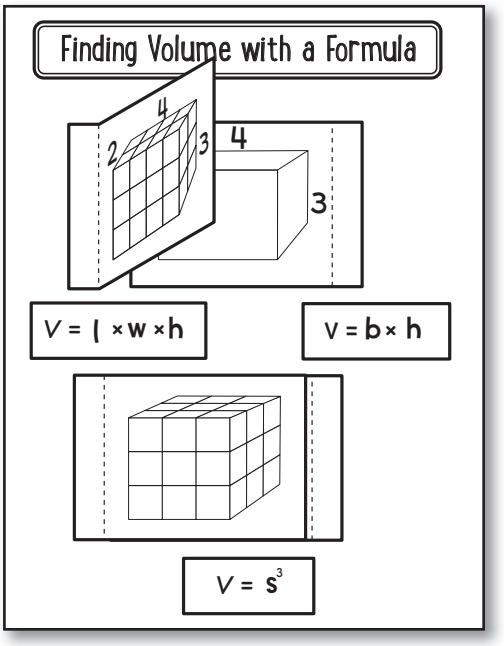
Possible Units

Finding Volume with a Formula

Introduction

Review volume. Draw several rectangular prisms on the board and label the dimensions. Have students explain how to divide it into cubic units and find the total volume of the figure.



Creating the Notebook Page

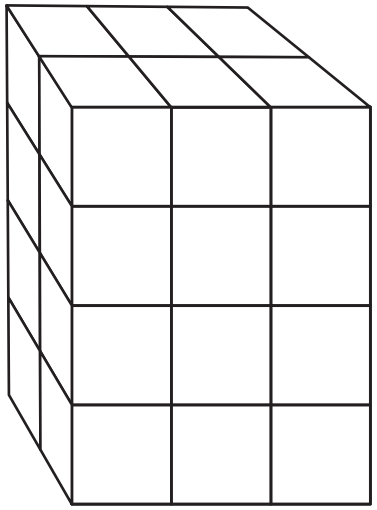
Guide students through the following steps to complete the right-hand page in their notebooks.

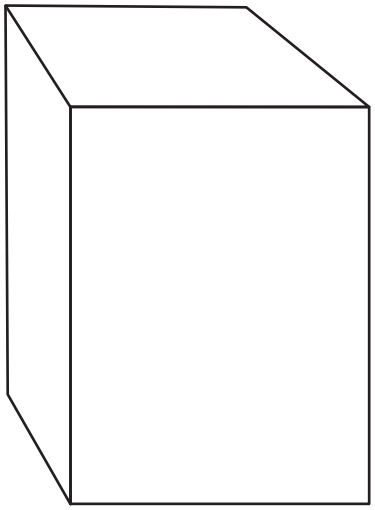
1. Add a Table of Contents entry for the Finding Volume with a Formula pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the 4 by 3 by 2 figure flap and the matching solid figure flap. Apply glue to the back of each narrow section. Attach the solid figure flap to the page so the flap opens to the right. Attach the divided figure flap to the page so it overlaps the solid figure and the flap opens to the left.
4. Write the dimensions on the divided figure. Then, open the top flap and write the same dimensions on the solid figure. Discuss how volume can be found by multiplying the length, width, and height. Under the bottom flap, write the formula for the volume of the figure and solve.
5. Cut out the $V = \ \times$ and $V = \ \times \ \times$ pieces. Glue them under the first set of flaps.
6. Complete the formula for volume of a rectangular prism ($V = \boldsymbol{l} \times \boldsymbol{w} \times \boldsymbol{h}$ and $V = \boldsymbol{b} \times \boldsymbol{h}$).
5. Repeat steps 3–6 with the remaining pieces to explore the formula for volume of a cube ($V = \boldsymbol{s}^3$).

Reflect on Learning

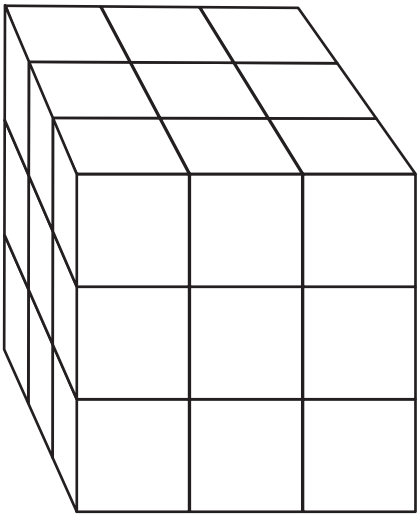
To complete the left-hand page, have students describe the similarities and differences between finding the volume of a rectangular prism and finding the volume of a cube.

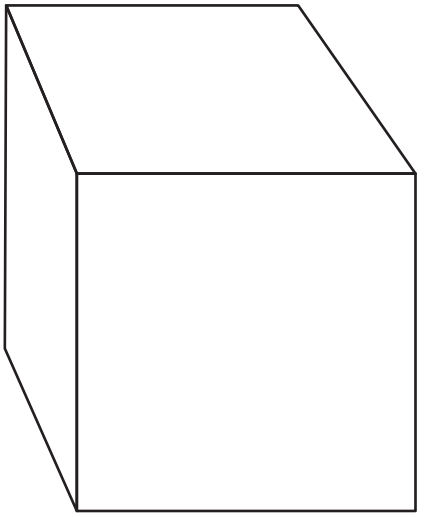
Finding Volume with a Formula





$V = \times \times$





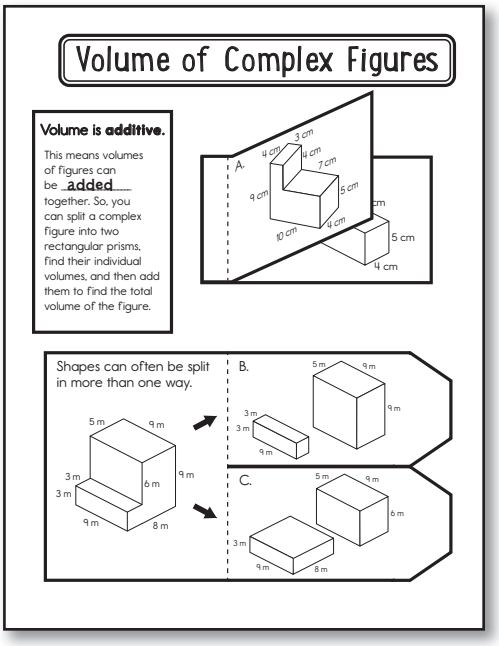
$V = \times$

$V = ^{3}$

Volume of Complex Figures

Introduction

Review finding volume with a formula. Have students measure several rectangular objects such as their desks or textbooks to the nearest inch or centimeter. Then, have students use the measurements to find the volume of each item.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Volume of Complex Figures pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Volume is additive* piece and glue it to the top left side of the page below the title.
4. Complete the explanation. (This means volumes of figures can be **added** together.)
5. Cut out the two rectangular flaps. Apply glue to the gray glue section and place the other flap directly on top to create a two-flap book. Apply glue to the back of the narrow section and attach it to the page beside the explanation piece.
6. Discuss how the figure on the top flap can be split into two rectangular prisms. Lift the flap and look at the split figure. Return to the first flap and draw lines to show where the complex figure was split. Lift the flap and find the volume of the two rectangular prisms. Show your work under the flap. Add the volumes to get the total volume of the original figure.
7. Cut out the two-flap piece. Cut on the solid lines to create two flaps. Apply glue to the back of the left section and attach it to the bottom of the page.
8. Discuss how shapes can be split in more than one way. Use two different colors to draw lines on the original figure showing how it was split on each flap. Under each flap, find the total volume. Discuss if splitting the shape in different ways affected the final volume.

Reflect on Learning

To complete the left-hand page, have students reflect on whether or not volume can be subtractive. To help students understand, use the example of a figure with a hole through the middle.

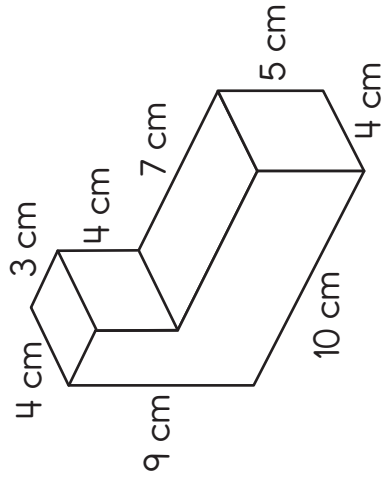
Answer Key
A. 108 cm^3; 140 cm^3; Total: 248 cm^3
B. 81 m^3 and 405 m^3; C. 216 m^3 and 270 m^3; Total: 486 m^3

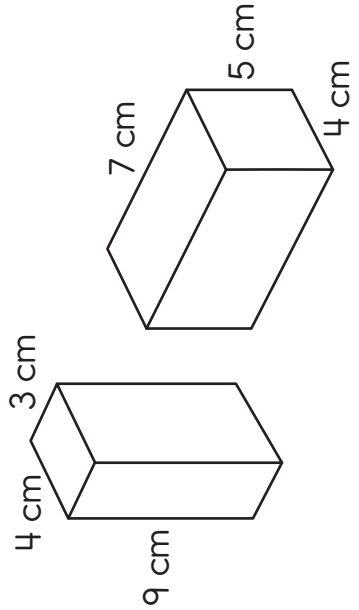
Volume of Complex Figures

Volume is **additive.**

This means volumes of figures can be _____ together. So, you can split a complex figure into two rectangular prisms, find their individual volumes, and then add them to find the total volume of the figure.

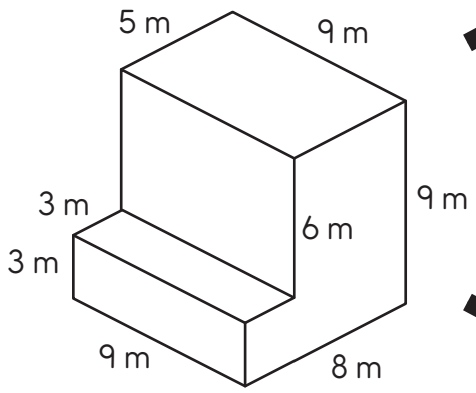
A.



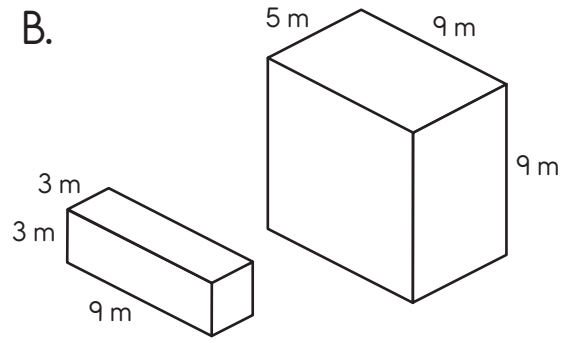


glue

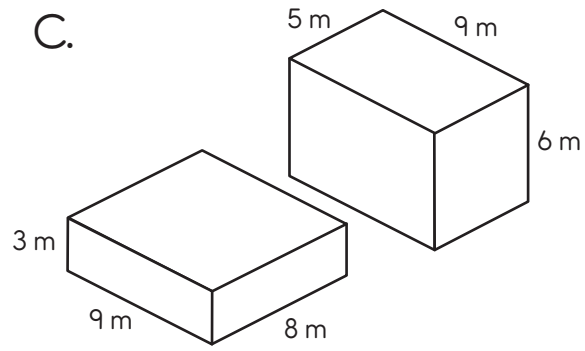
Shapes can often be split in more than one way.



B.



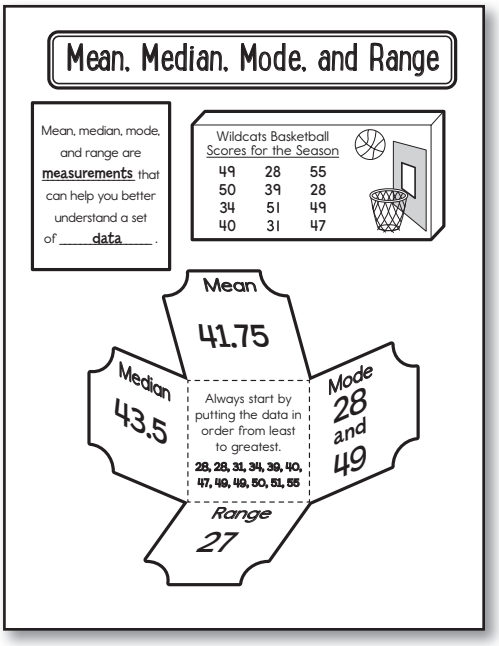
C.



Mean, Median, Mode, and Range

Introduction

Display a graph. Have students share with a partner three true pieces of information about the data. Discuss how graphs give a lot of information, but you can also get information from a data set by finding measures of center, such as the mean, median, mode, and range.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Mean, Median, Mode, and Range pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the explanation piece. Glue it to the left of the page below the title.
4. Complete the explanation. (Mean, median, mode, and range are **measurements** that can help you better understand a set of **data**.)
5. Cut out the *Wildcats Basketball Scores* piece. Glue it to the right of the explanation piece.
6. Cut out the *Mean*, *Median*, *Mode*, and *Range* piece. Fold in the flaps on the dashed lines. Apply glue to the back of the square-shaped center and attach it to the bottom of the page.
7. Unfold the flaps. In the center box, write the scores in order from least to greatest. On the top, blank side of each flap, write the name of the measurement and how to find it (Mean: add up the data and divide by the number of data pieces; Mode: find the piece of data that occurs most often; Range: subtract the highest and the lowest pieces of data; Median: find the middle number of the data set. Discuss with students what to do if there are two middle numbers.). Then, under the flap, find that measurement for the data given. Discuss how to find the median of a data set with an even number of data pieces.

Reflect on Learning

To complete the left-hand page, have students compare and contrast using mean, median, mode, and range and looking at a graph to find information about a set of data. Students may choose to draw a graph showing the data from the right-hand page.

Answer Key

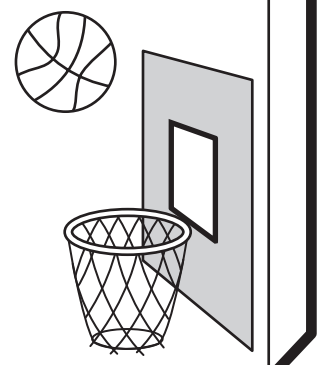
Mean: 41.75; Mode: 28 and 49; Range: 27; Median: 43.5

Mean, Median, Mode, and Range

Mean, median, mode, and range are _____ that can help you better understand a set of _____ .

Wildcats Basketball Scores for the Season

49	28	55
50	39	28
34	51	49
40	31	47



Mean

Median

Always start by putting the data in order from least to greatest.

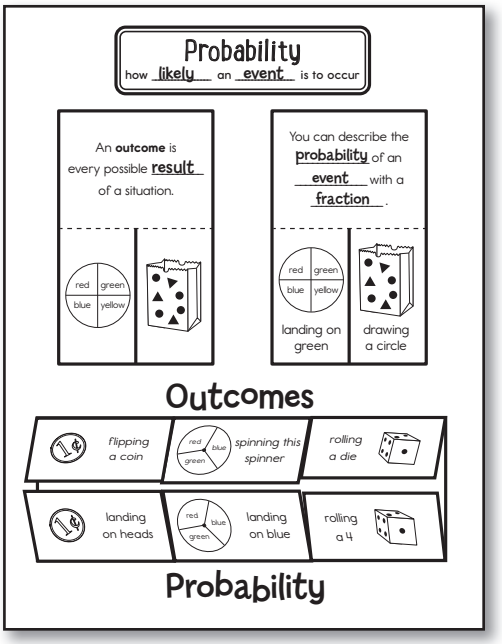
Mode

Range

Probability

Introduction

Look at the weather forecast for the next few days. As a class, discuss what the percents given mean. For example, discuss if a 30% chance of rain means it is certain, very likely, somewhat likely, or impossible that it will rain that day.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Probability pages.
2. Cut out the title and glue it to the top of the page.
3. Complete the definition of probability (how **likely** an **event** is to occur).
4. Cut out the *An outcome is…* and *You can describe…* pieces. Cut on the solid lines to create two flaps on each piece. Apply glue to the back of the top of each piece and attach them below the title.
5. Complete the definition of outcome. (An outcome is every possible **result** of a situation.) Discuss the possible outcomes of each situation on the flaps below. Write all possible outcomes for that situation under the flap.
6. Complete the sentence on the *You can describe…* piece. (You can describe the **probability** of an **event** with a **fraction**.) Discuss how the fraction refers to how many possible outcomes (the numerator) out of how many total outcomes (the denominator). Under each flap, write the probability of the event shown ($\frac{1}{4}$ and $\frac{4}{7}$).
7. Cut out the six-flap shutter fold. Cut on the solid lines to create six flaps. Flip the piece over and fold the flaps in on the dashed lines. Flip the piece back over and apply glue to the gray glue section. Attach it to the bottom of the page.
8. Label the top *Outcomes*. Label the bottom *Probability*. Under the top flaps, write all of the outcomes of each given situation. Under the bottom flaps, write the probability of each given event.

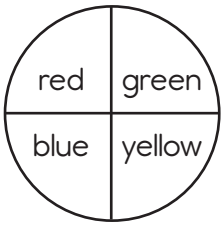
Reflect on Learning

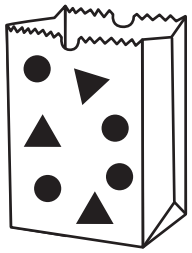
To complete the left-hand page, draw a spinner divided into fourths, with two red sections, a yellow section, and a green section. Have students write the outcomes and the probability of spinning each color.

Probability is to occur

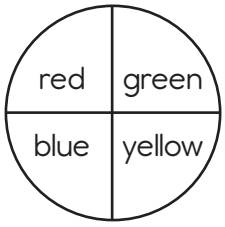
how _____ an _____

An **outcome** is every possible _____ of a situation.

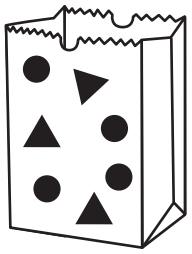




You can describe the _____ of an _____ with a _____.

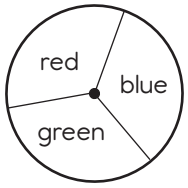


landing on green



drawing a circle

landing on heads

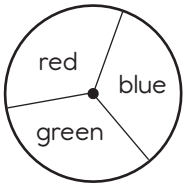


landing on blue

rolling a 4

glue

flipping a coin



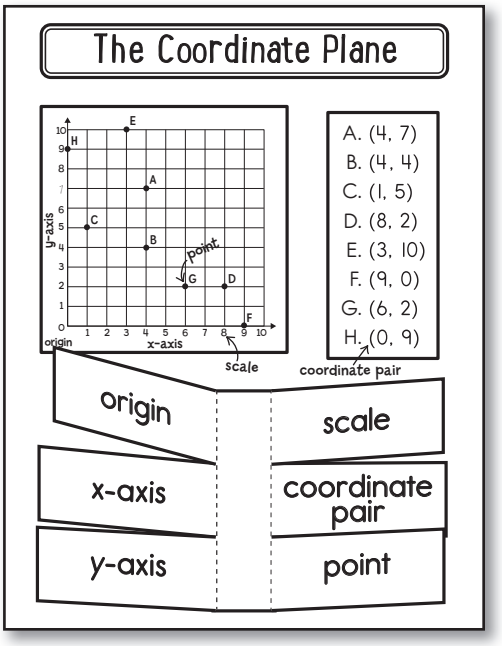
spinning this spinner

rolling a die

The Coordinate Plane

Introduction

Review the parts of a graph, such as the *x*- and *y*-axes. Discuss what number each scale always starts with, where it begins, and in which direction numbers increase.



Creating the Notebook Page

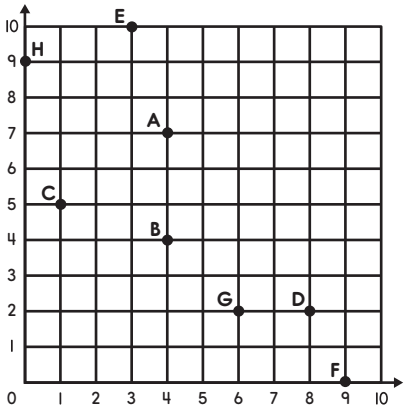
Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the The Coordinate Plane pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the coordinate plane and glue it to the top left side of the page below the title. Number the axes.
4. Cut out the *A*–*H* piece and glue it to the right of the coordinate plane.
5. Plot and label each coordinate on the coordinate plane.
6. Cut out the six-flap flap book. Cut on the solid lines to create six flaps. Apply glue to the back of the center section and attach it to the bottom of the page.
7. Under each flap, write a definition of the word. Then, label the coordinate plane with the word.

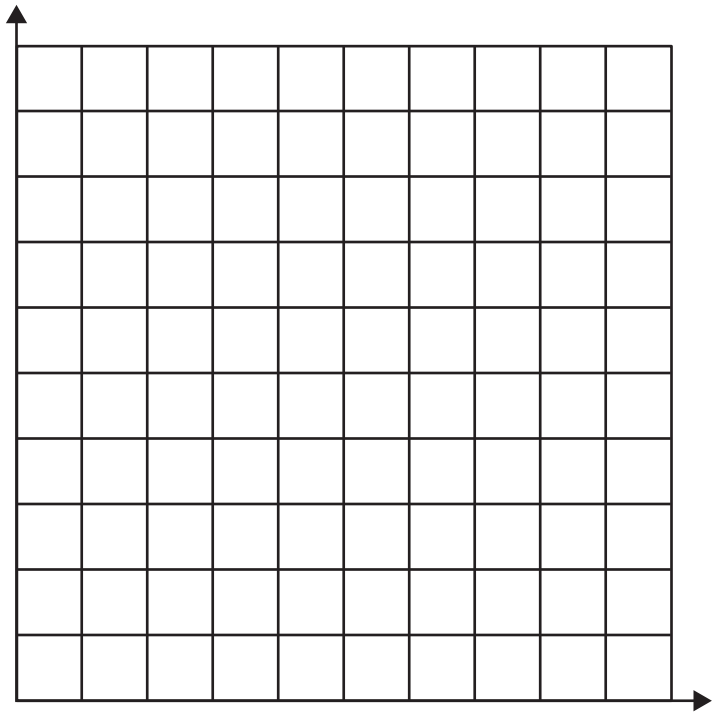
Reflect on Learning

To complete the left-hand page, have students use a Venn diagram to compare and contrast the coordinate plane and coordinate pairs, with the grid used for line graphs and line graph data points.

Answer Key



The Coordinate Plane



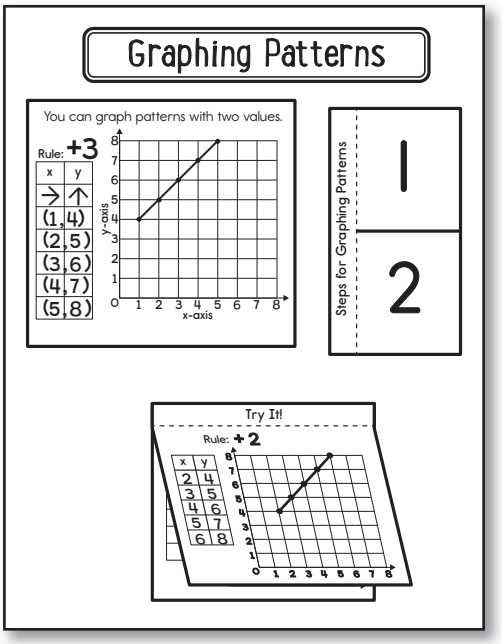
A. (4, 7)
B. (4, 4)
C. (1, 5)
D. (8, 2)
E. (3, 10)
F. (9, 0)
G. (6, 2)
H. (0, 9)

origin	scale
x-axis	coordinate pair
y-axis	point

Graphing Patterns

Introduction

Review numeric patterns with two values. Write a rule on the board, such as *× 4*. Have students create an input/output table for the rule and any 6 values.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Graphing Patterns pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *You can graph…* piece. Glue it to the top left side of the page below the title.
4. In the *x*, *y* table, draw arrows in the spaces below the *x* and *y* to show which direction each value is graphed. Choose a rule, such as *+ 3*. Complete the chart for the values 1–5. Add parentheses and commas to each row to show how the *x* and *y* values become a coordinate pair.
5. Cut out the *Steps for Graphing Patterns* piece. Cut on the solid line to create two flaps. Apply glue to the back of the title section and attach it to the right of the graph.
6. Under each flap, write the steps for graphing patterns (1. Use the *x* and *y* values to create and graph coordinate pairs. 2. Connect the points with a line.) Label the graph. Then, follow the directions in *Steps for Graphing Patterns* to graph the pattern created in the rule table.
7. Cut out the two flap pieces. Apply glue to the gray glue section and place the other flap directly on top. Glue the flap book to the bottom of the page.
8. Write a rule above each chart. Choose five *x* values. Then, complete each table using the rule. Label each graph and graph the pattern. Be sure to choose a scale for the coordinate plane that will fit all of the values.

Reflect on Learning

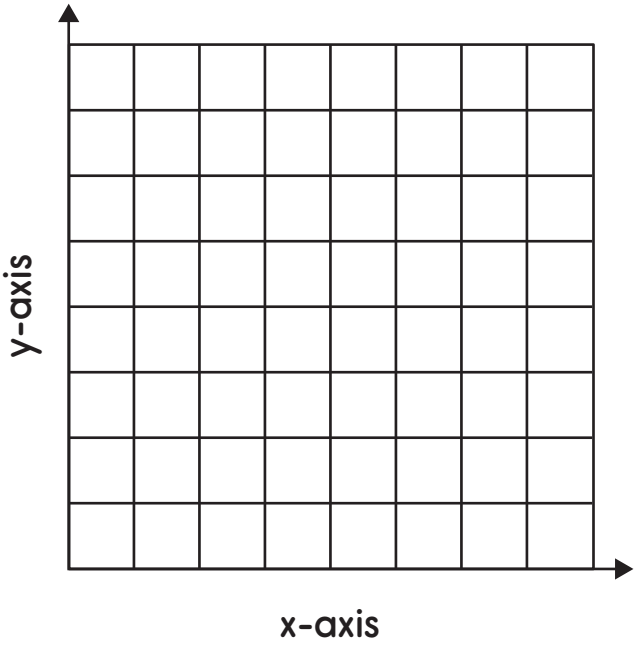
To complete the left-hand page, have students graph the values from the pattern given in the introduction of the lesson.

Graphing Patterns

You can graph patterns with two values.

Rule:

x	y



Steps for Graphing Patterns

1

2

Try It!

Rule:

y					
x					

glue

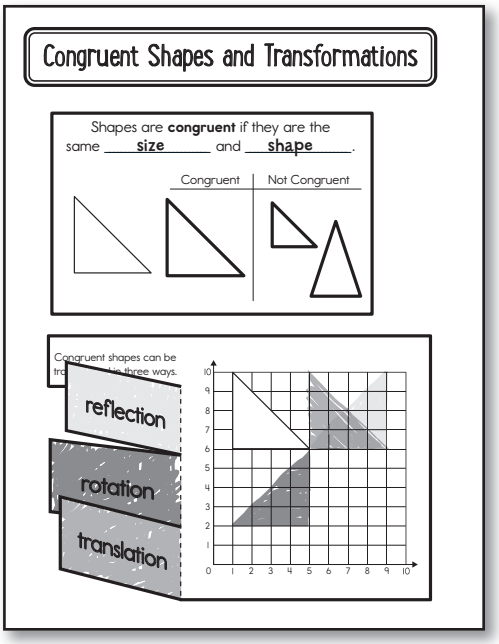
Rule:

y					
x					

Congruent Shapes and Transformations

Introduction

Have students stand up behind their desks. Ask them to slide. Then, discuss how students demonstrated that word. Next, ask students to turn. Discuss how students demonstrated that word. Have students sit down. Ask students to show a reflection with their hands. Have small groups of students come up with a definition for each term.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

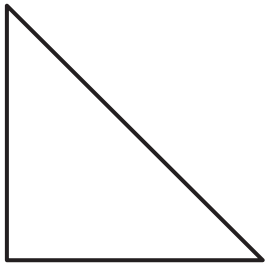
1. Add a Table of Contents entry for the Congruent Shapes and Transformations pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Shapes are congruent…* piece and glue it below the title.
4. Complete the explanation. (Shapes are congruent if they are the same **size** and **shape**.)
5. Cut out the three triangles. Test each triangle against the triangle below the explanation to see if it is congruent. Glue each triangle on the Congruent/Not Congruent chart in the correct space.
6. Cut out the *Congruent shapes can be…* piece. Cut on the solid lines to create three flaps. Apply glue to the back of the large right section and the top left section. Attach it to the bottom of the page.
7. Under each flap, write the simple term (*flip*, *turn*, or *slide*) and a definition for the transformation. Color the top of each flap a different color. Then, using the same color, draw a congruent triangle on the grid to the right showing that transformation.

Reflect on Learning

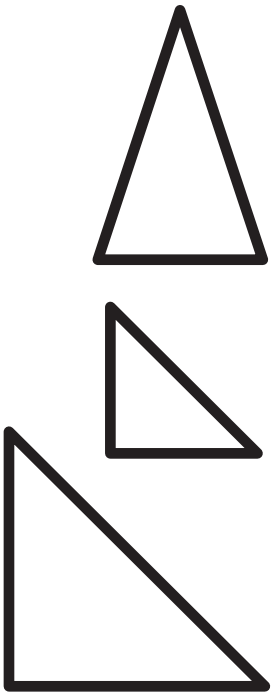
To complete the left-hand page, have students write an explanation for why transformed shapes must be congruent. Have students draw pictures to support their explanations.

Congruent Shapes and Transformations

Shapes are **congruent** if they are the same _____ and _____.



Congruent	Not Congruent

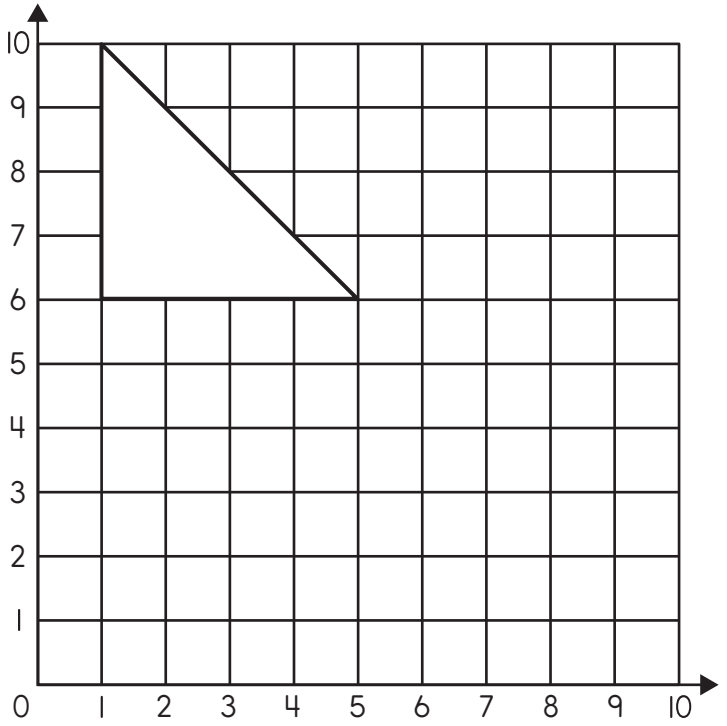


Congruent shapes can be transformed in three ways.

reflection

rotation

translation

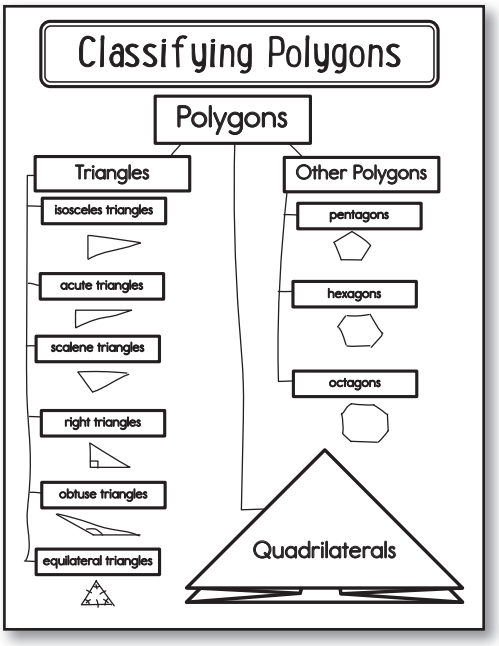


Classifying Polygons

This lesson is designed to be open-ended. Students should choose to organize their polygons in a hierarchy that makes sense to them. The sample shown below is only one possible configuration.

Introduction

Review polygons. Call out shapes and have students draw an example for each such as *pentagon*, *trapezoid*, *acute triangle*, or *non-square quadrilateral*. Allow students to share their drawings with partners and discuss before giving new shapes to draw.



Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Classifying Polygons pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the large square. Fold and unfold it on all three dashed lines. Flip it upside down and refold it along the lines. Bring the top edge down to meet the bottom edge while pulling in the sides at the fold lines. Flatten the shape down. You should end up with a triangle that unfolds into a square.
4. Cut out the labels.
5. Decide on a way to categorize the given polygons. Separate the quadrilaterals from the other polygons. Glue them in a hierarchy inside the *Quadrilaterals* triangle.
6. Organize the remaining labels and glue them down on the page. Apply glue to the gray glue section on the *Quadrilaterals* triangle to attach it to the page and include it in the hierarchy. Draw lines between them to show the hierarchy. If space allows, draw an example under each label.

Reflect on Learning

To complete the left-hand page, have students explain the classification system they used on the right-hand side. Then, have students use their hierarchy to explain how parallelograms, squares, and rhombuses are related.

Classifying Polygons

Polygons

Triangles

Other Polygons

- acute triangles
  - rectangles
  - trapezoids
  - rhombuses
  - equilateral triangles
- obtuse triangles
- right triangles
- non-parallelograms

- other quadrilaterals
- isosceles triangles
- squares
- parallelograms

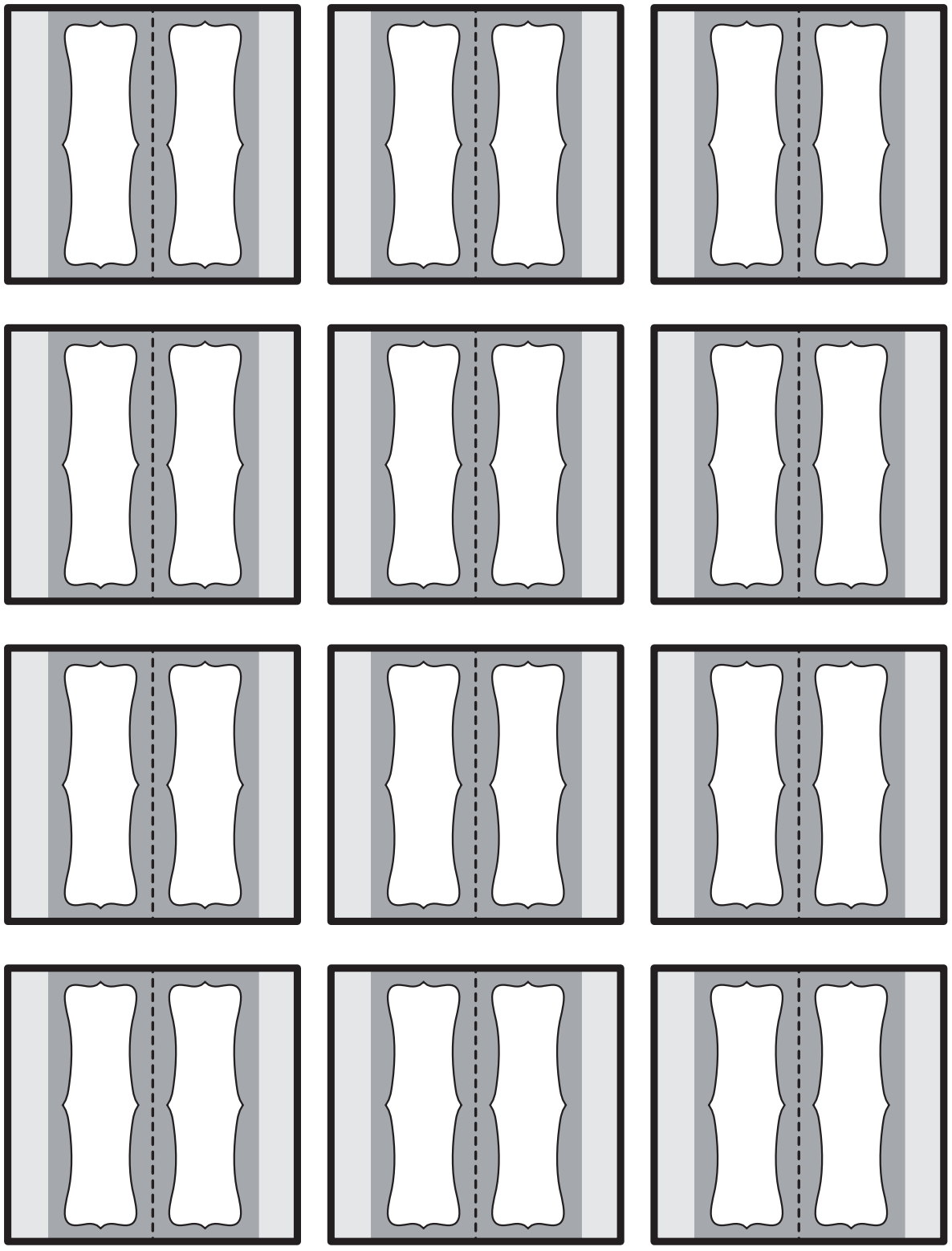
- scalene triangles
- octagons
- hexagons
- pentagons

glue

Quadrilaterals

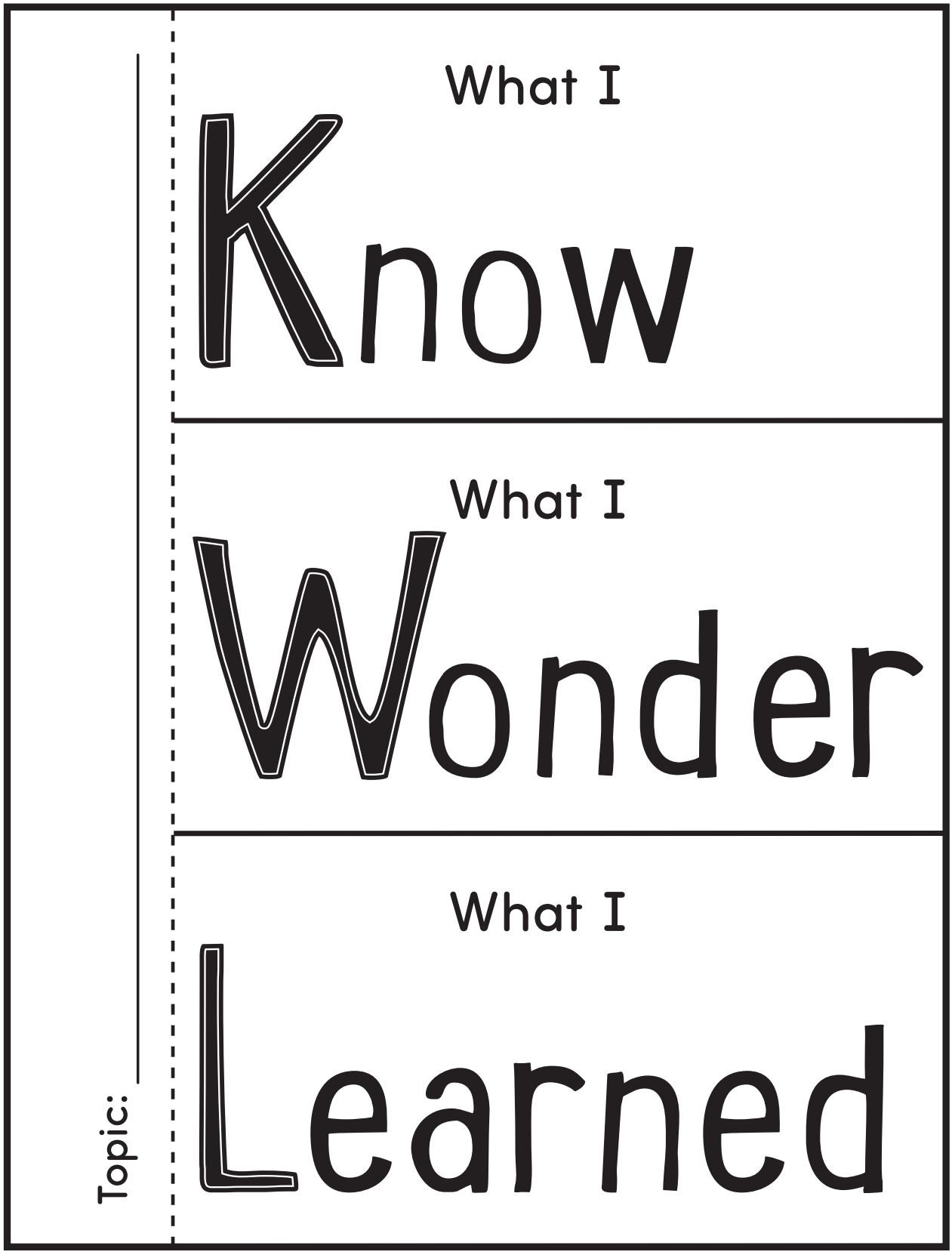
Tabs

Cut out each tab and label it. Apply glue to the back of each tab and align it on the outside edge of the page with only the label section showing beyond the edge. Then, fold each tab to seal the page inside.



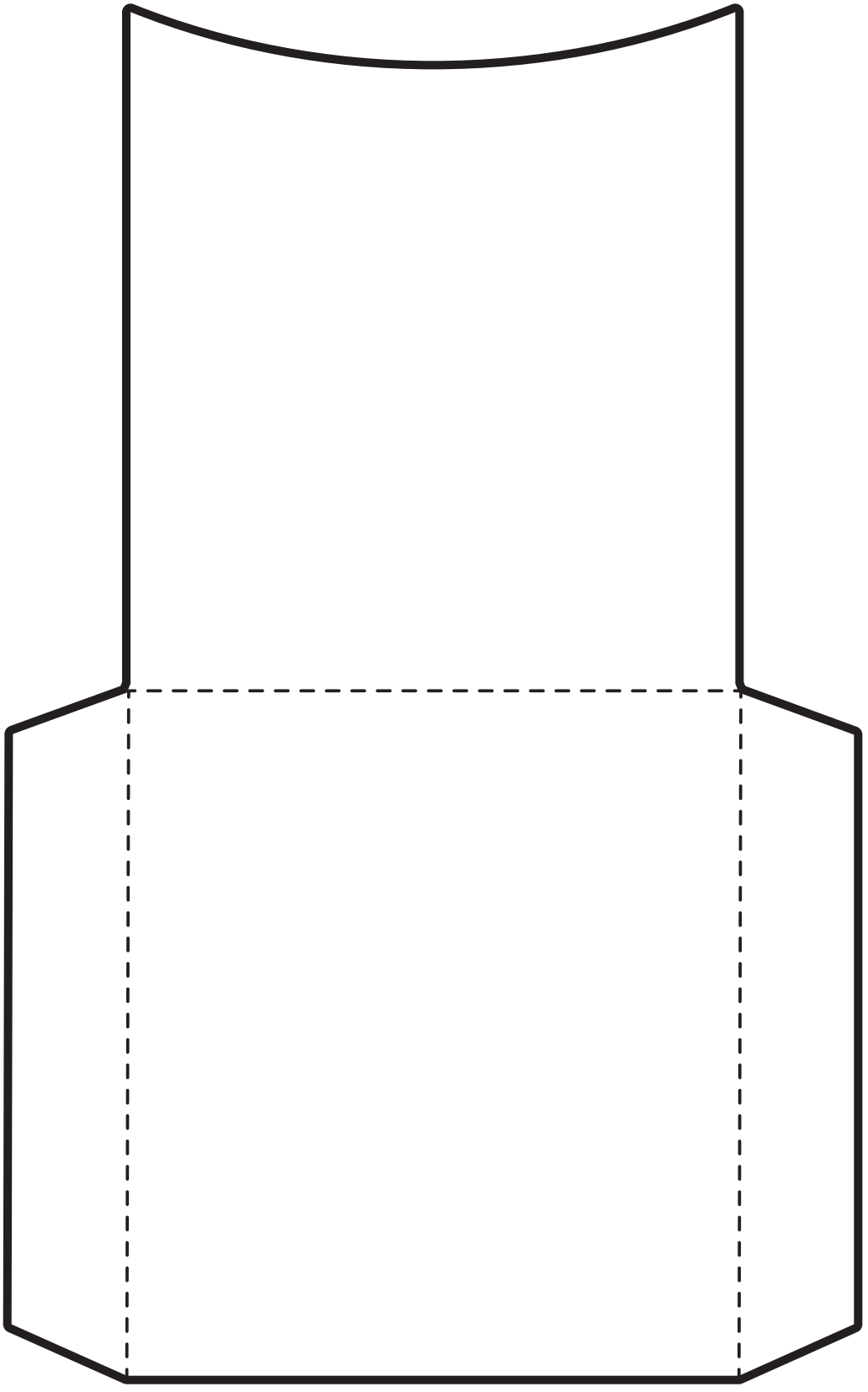
KWL Chart

Cut out the KWL chart and cut on the solid lines to create three separate flaps. Apply glue to the back of the Topic section to attach the chart to a notebook page.



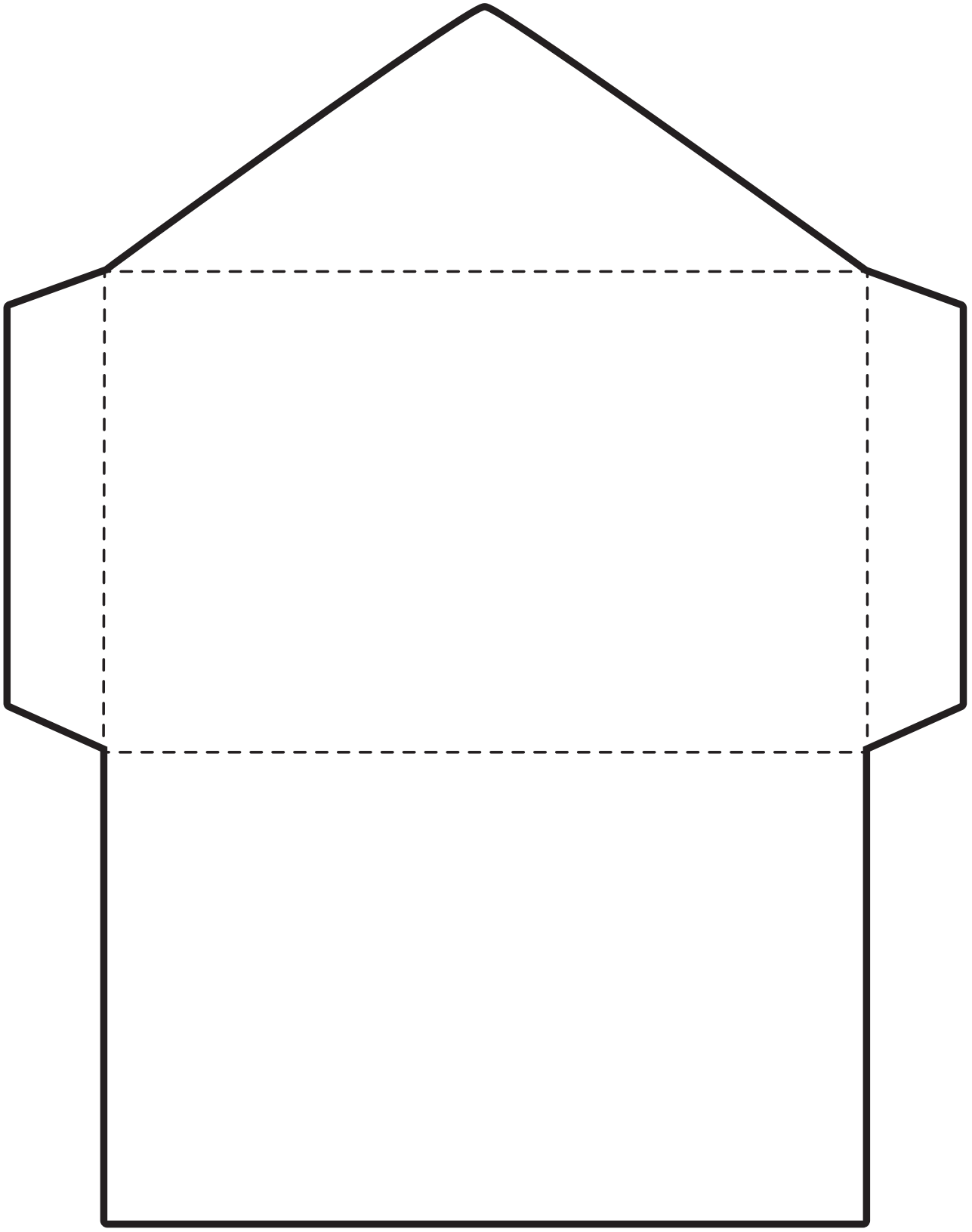
Library Pocket

Cut out the library pocket on the solid lines. Fold in the side tabs and apply glue to them before folding up the front of the pocket. Apply glue to the back of the pocket to attach it to a notebook page.



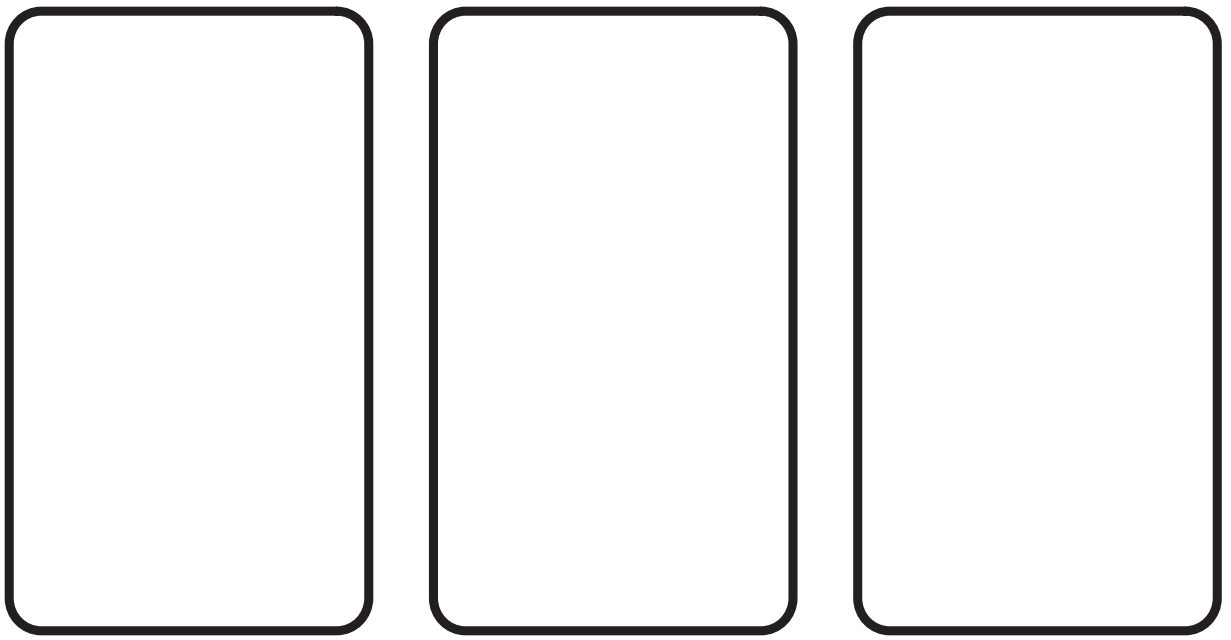
Envelope

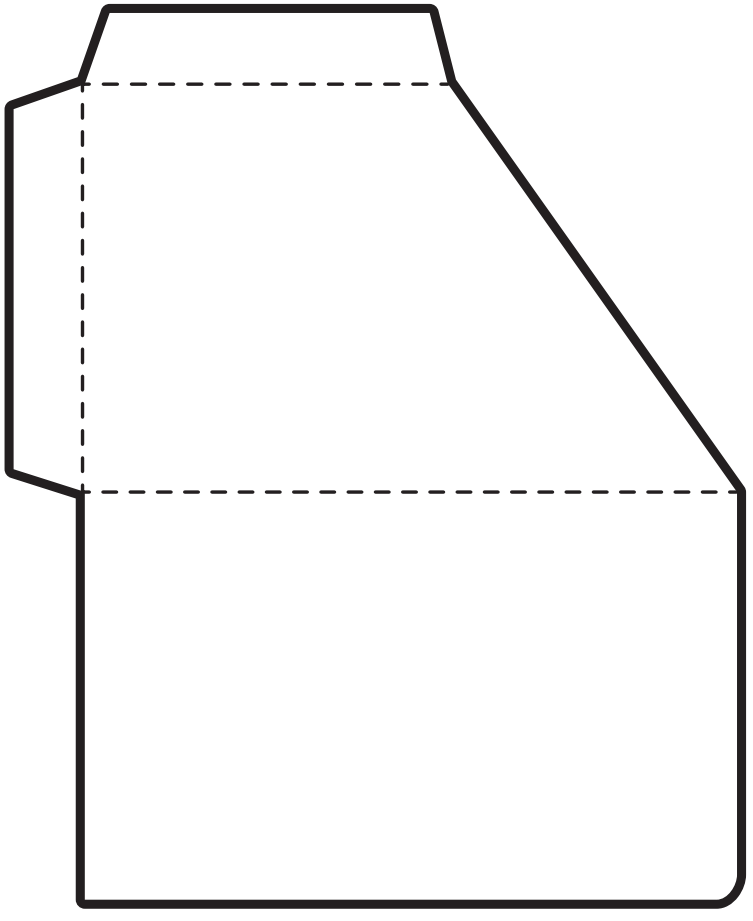
Cut out the envelope on the solid lines. Fold in the side tabs and apply glue to them before folding up the rectangular front of the envelope. Fold down the triangular flap to close the envelope. Apply glue to the back of the envelope to attach it to a notebook page.

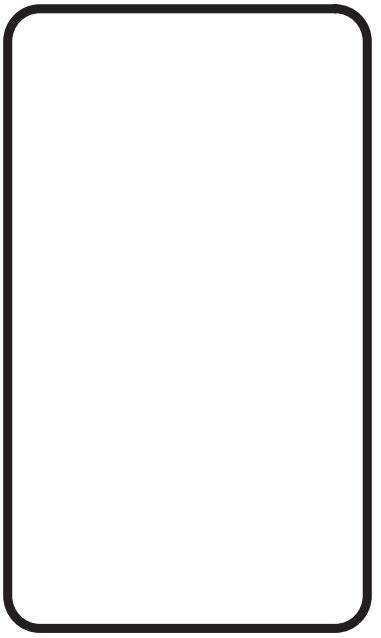


Pocket and Cards

Cut out the pocket on the solid lines. Fold over the front of the pocket. Then, apply glue to the tabs and fold them around the back of the pocket. Apply glue to the back of the pocket to attach it to a notebook page. Cut out the cards and store them in the envelope.



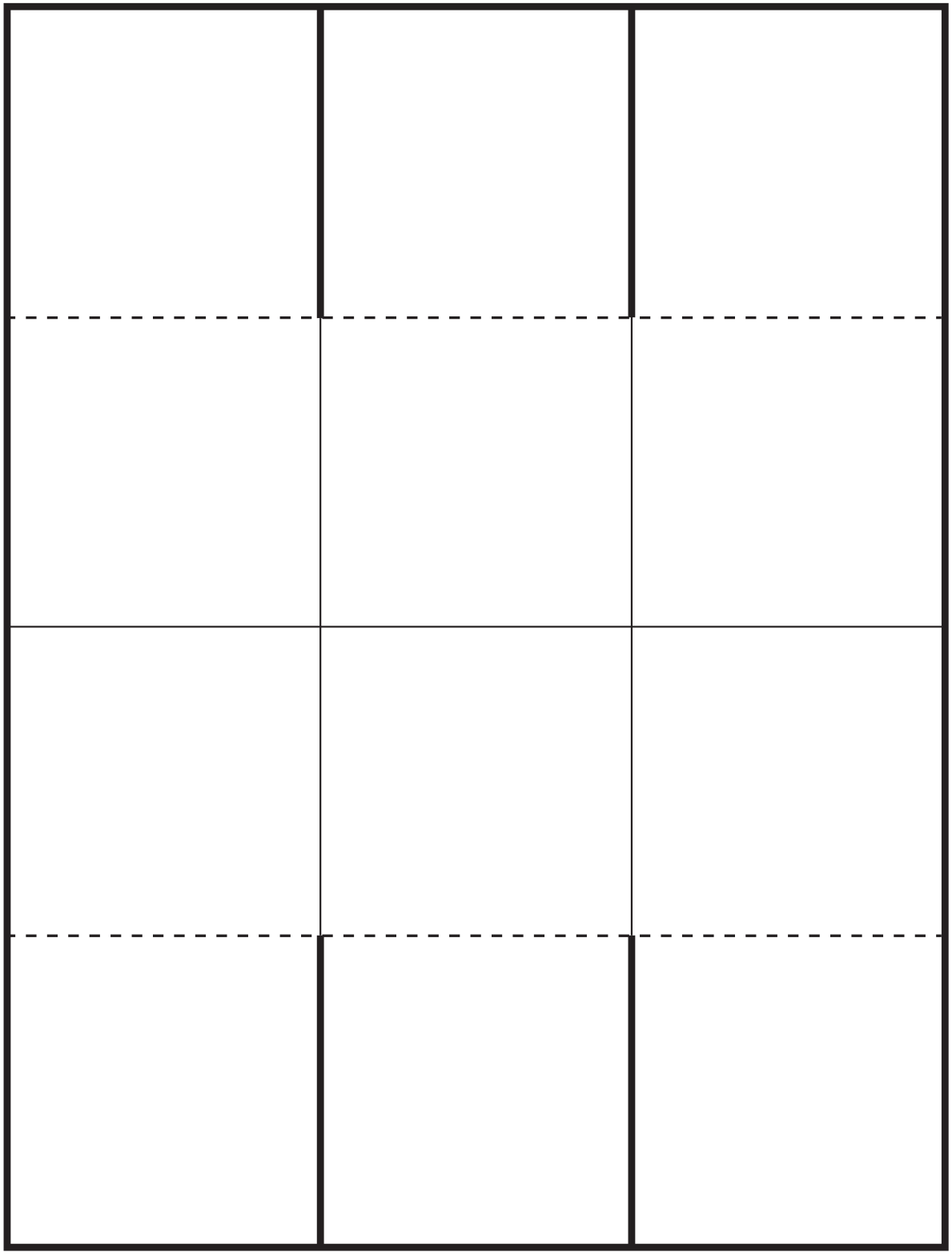




Six-Flap Shutter Fold

Cut out the shutter fold around the outside border. Then, cut on the solid lines to create six flaps. Fold the flaps toward the center. Apply glue to the back of the shutter fold to attach it to a notebook page.

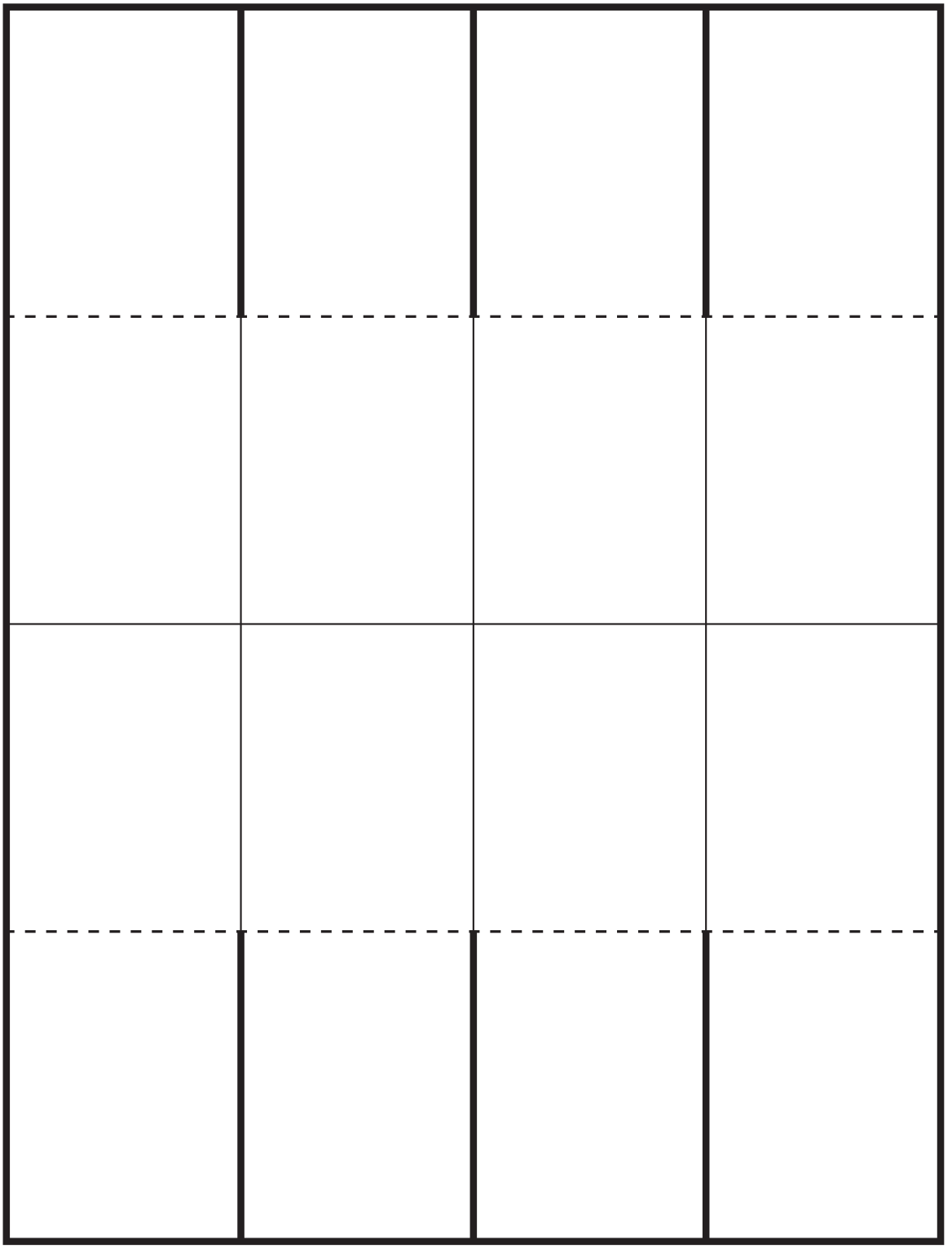
If desired, this template can be modified to create a four-flap shutter fold by cutting off the bottom row. You can also create two three-flap books by cutting it in half down the center line.



Eight-Flap Shutter Fold

Cut out the shutter fold around the outside border. Then, cut on the solid lines to create eight flaps. Fold the flaps toward the center. Apply glue to the back of the shutter fold to attach it to a notebook page.

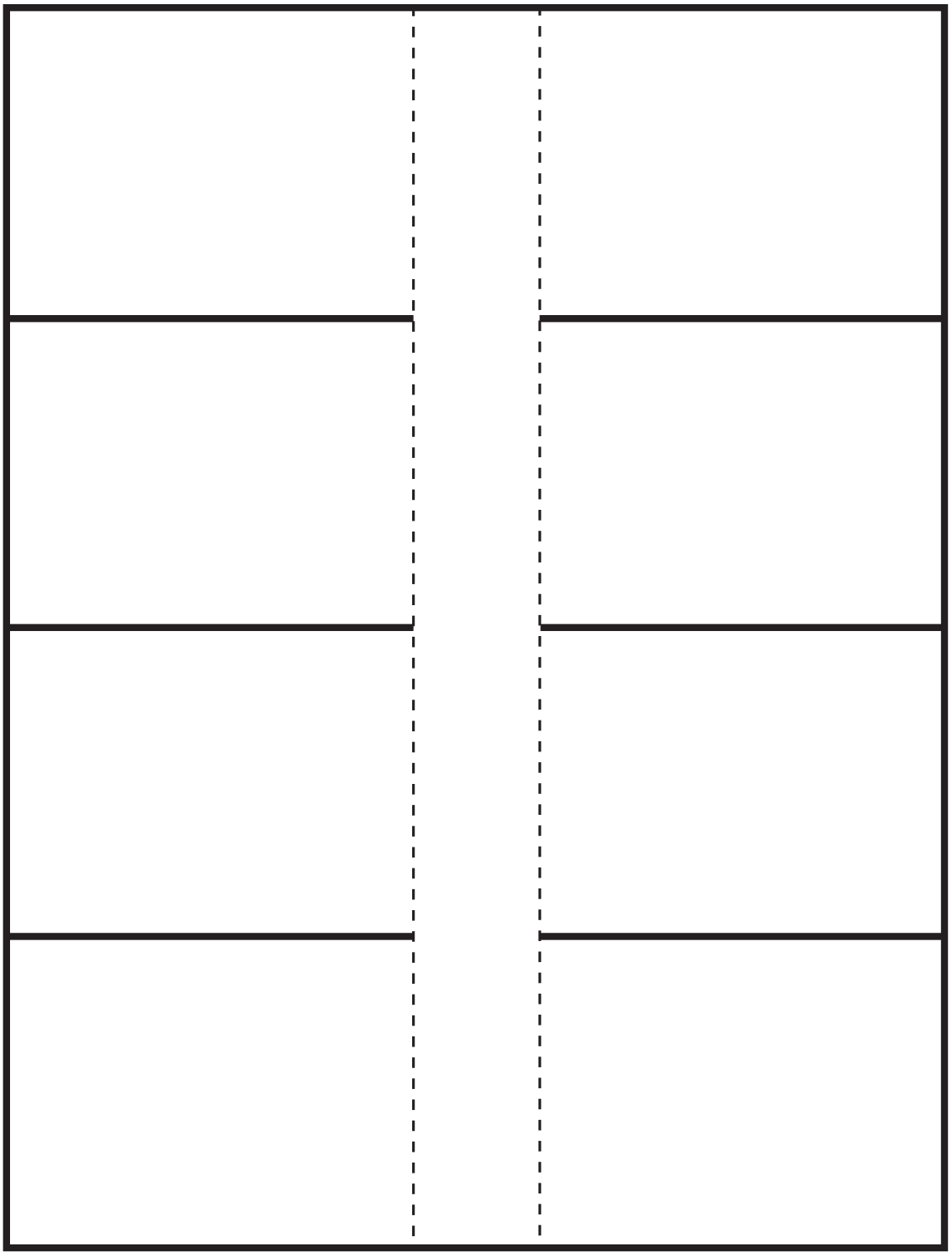
If desired, this template can be modified to create two four-flap shutter folds by cutting off the bottom two rows. You can also create two four-flap books by cutting it in half down the center line.



Eight-Flap Flap Book

Cut out the flap book around the outside border. Then, cut on the solid lines to create eight flaps. Apply glue to the back of the center section to attach it to a notebook page.

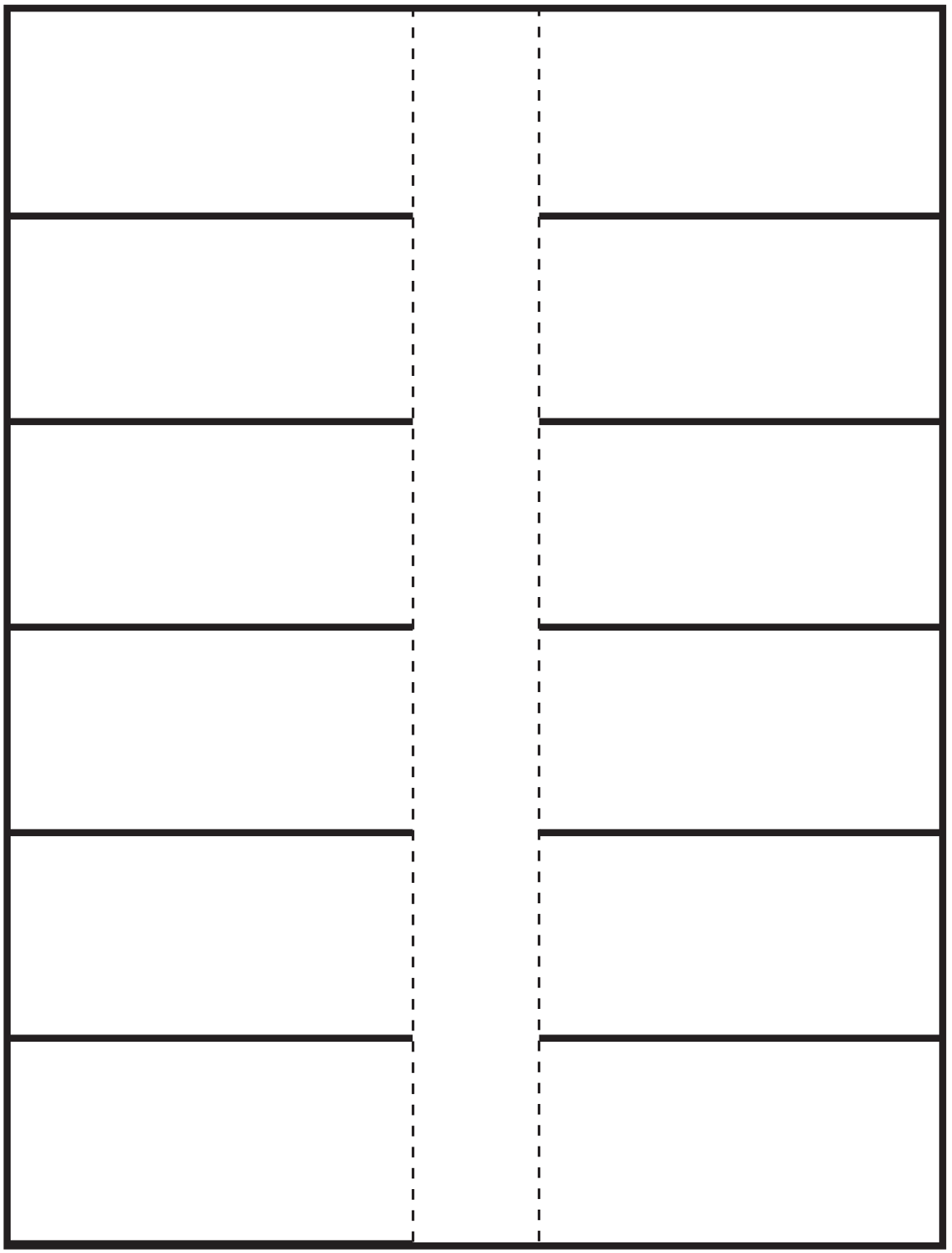
If desired, this template can be modified to create a six-flap or two four-flap books by cutting off the bottom row or two. You can also create a tall four-flap book by cutting off the flaps on the left side.



Twelve-Flap Flap Book

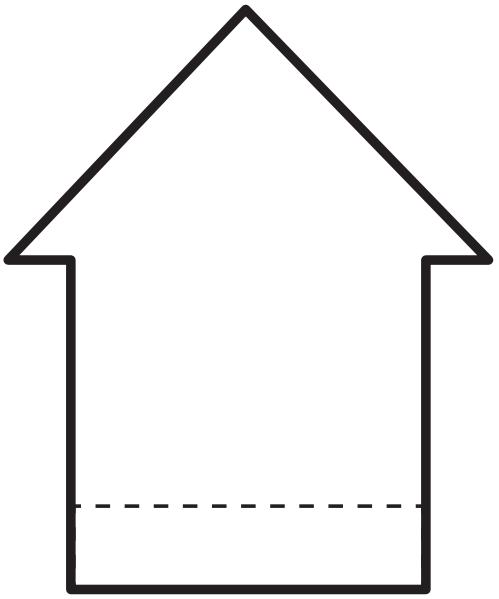
Cut out the flap book around the outside border. Then, cut the solid lines to create 10 flaps. Apply glue to the back of the center section to attach it to a notebook page.

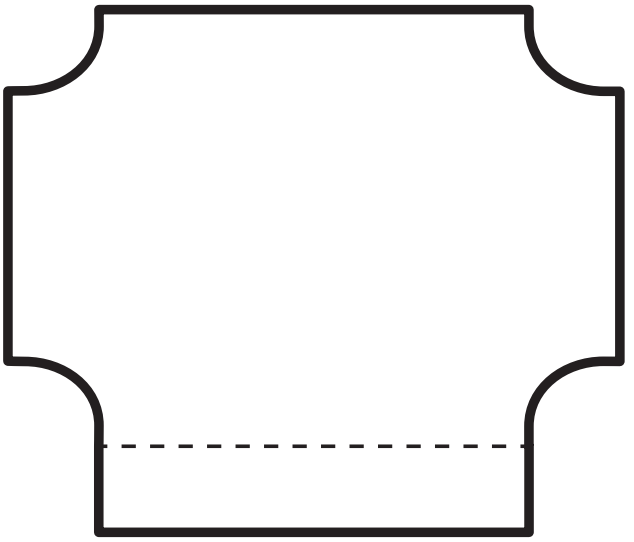
If desired, this template can be modified to create smaller flap books by cutting off any number of rows from the bottom. You can also create a tall flap book by cutting off the flaps on the left side.

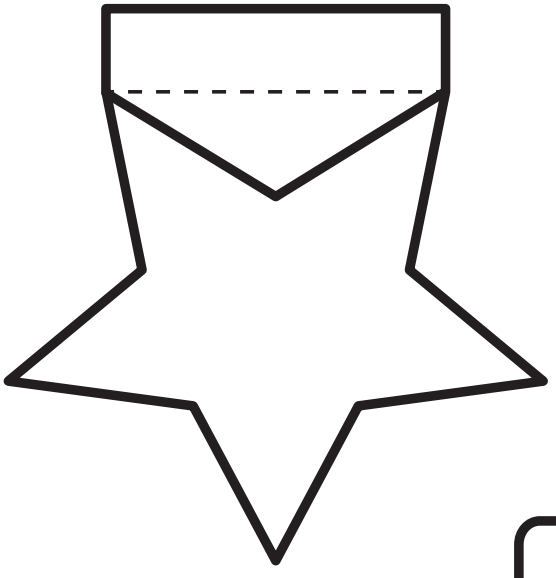


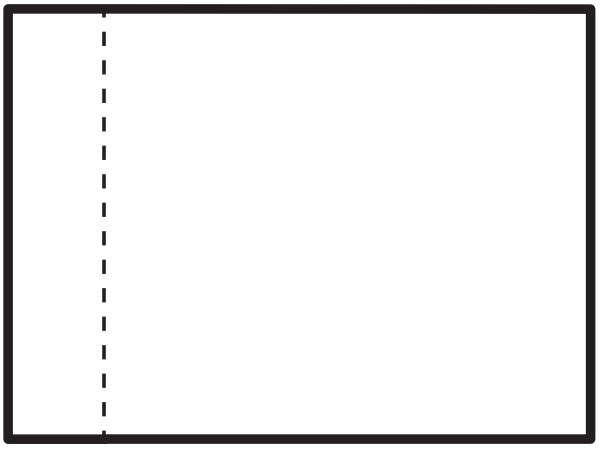
Shaped Flaps

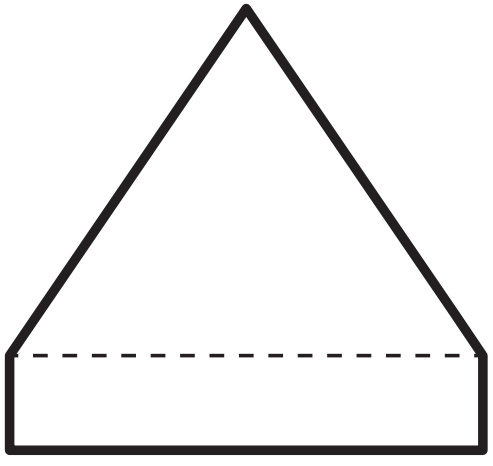
Cut out each shaped flap. Apply glue to the back of the narrow section to attach it to a notebook page.

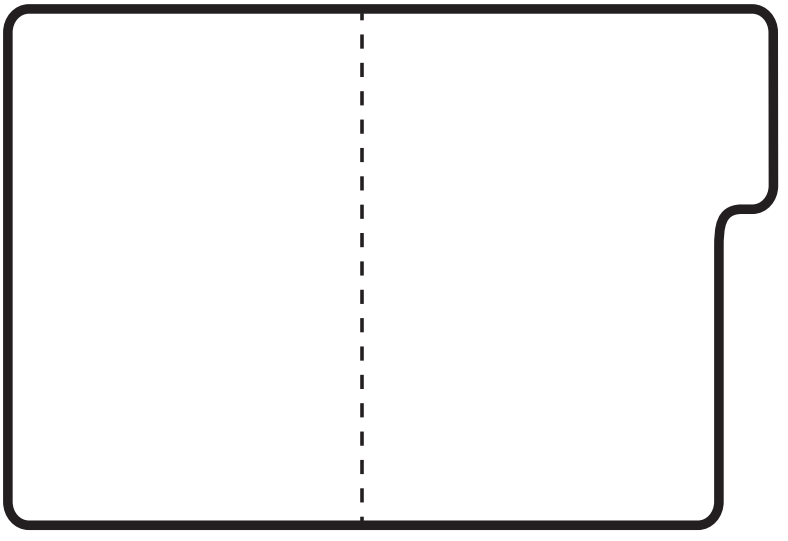




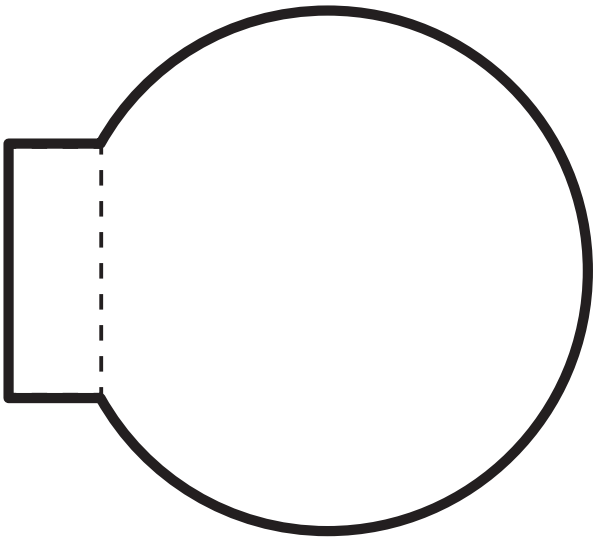


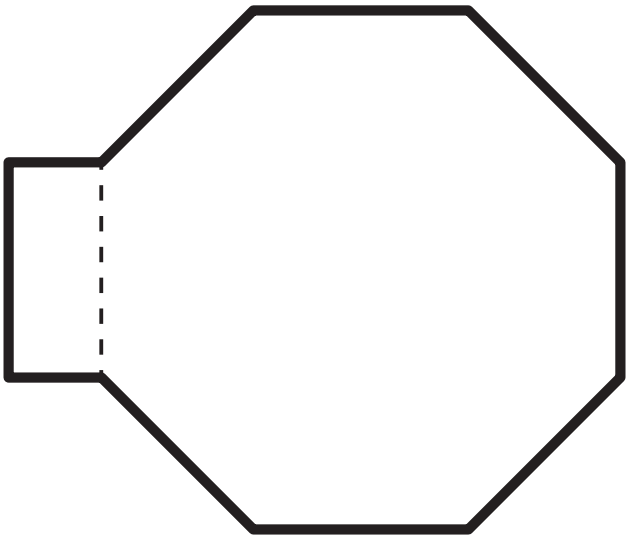


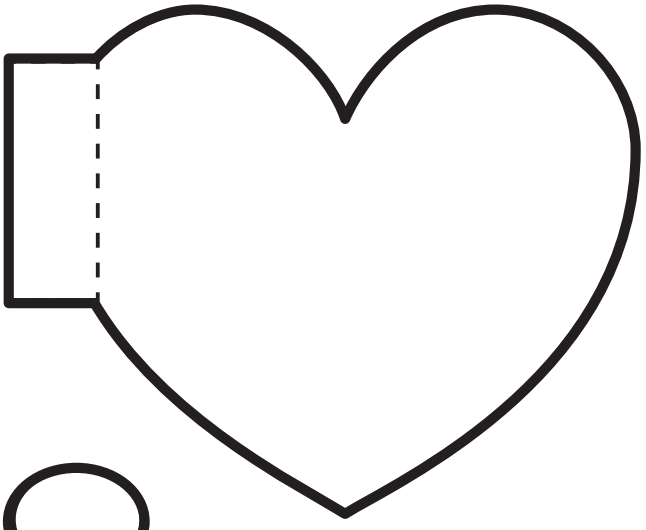


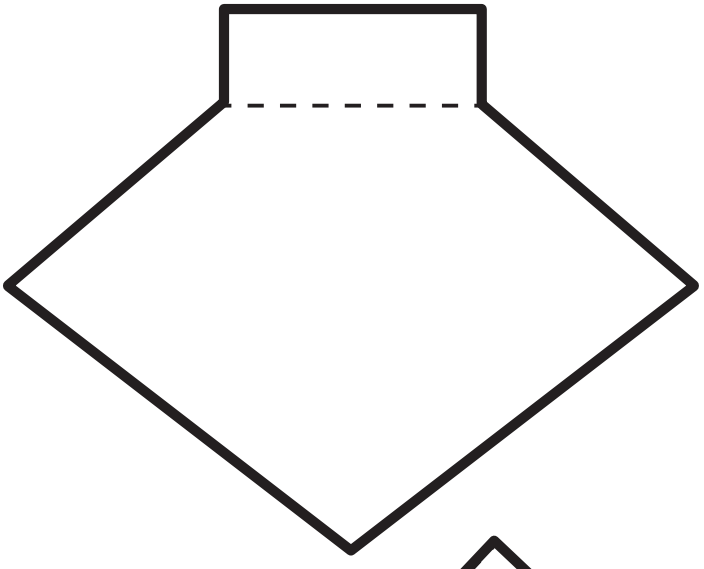


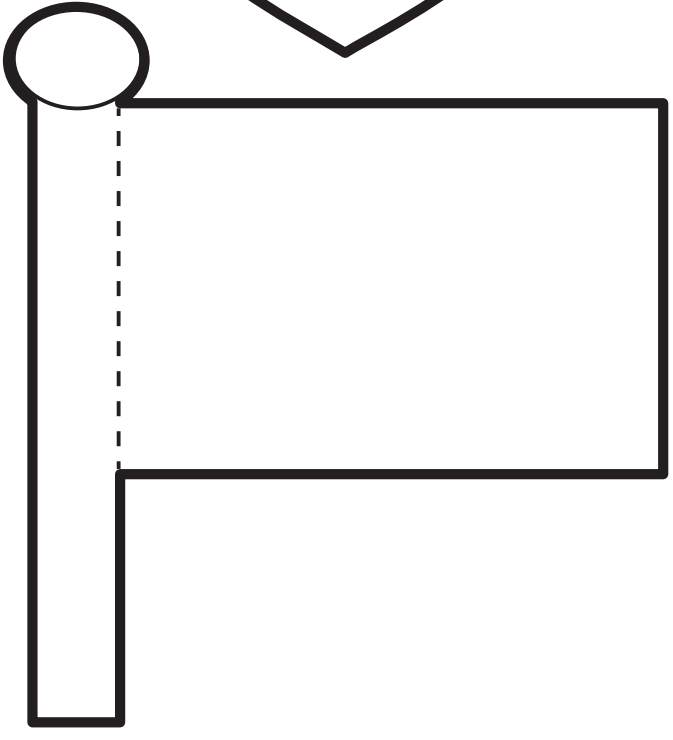
Shaped Flaps

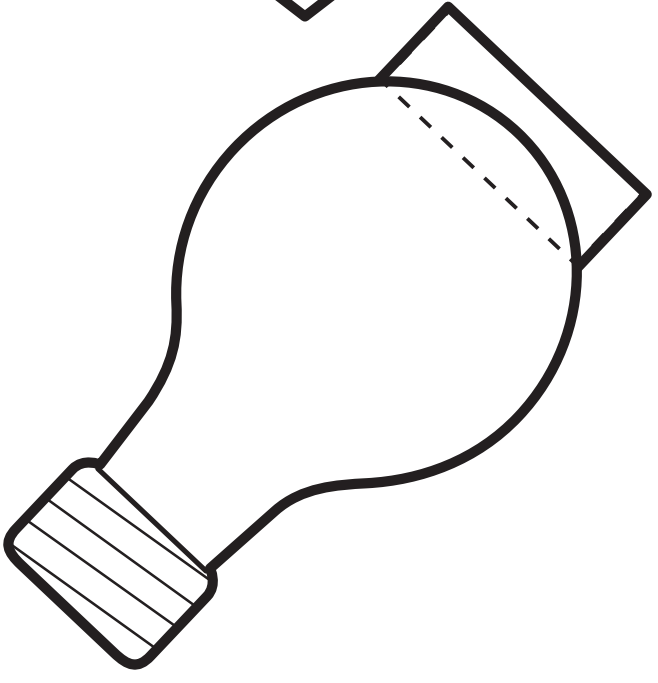






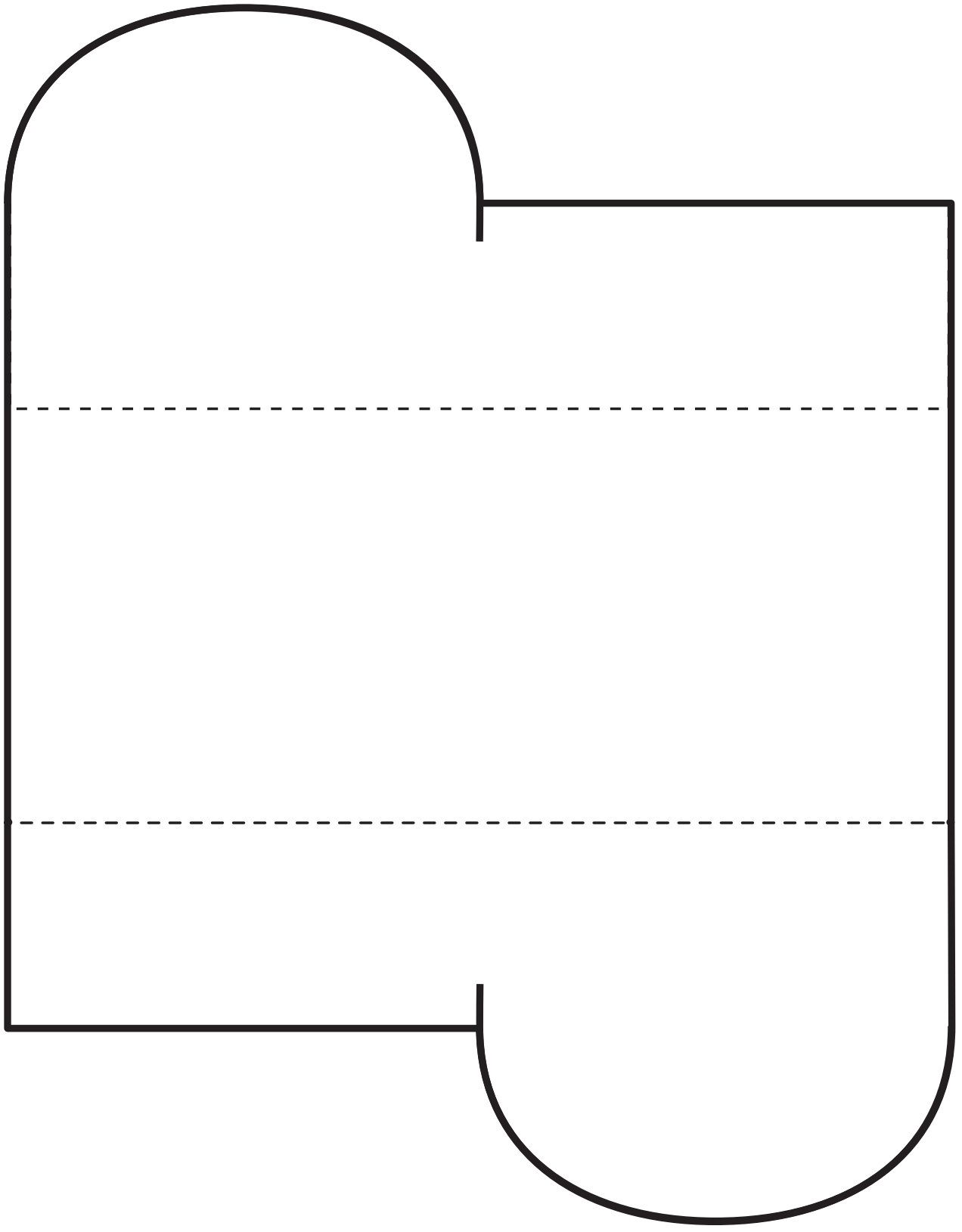






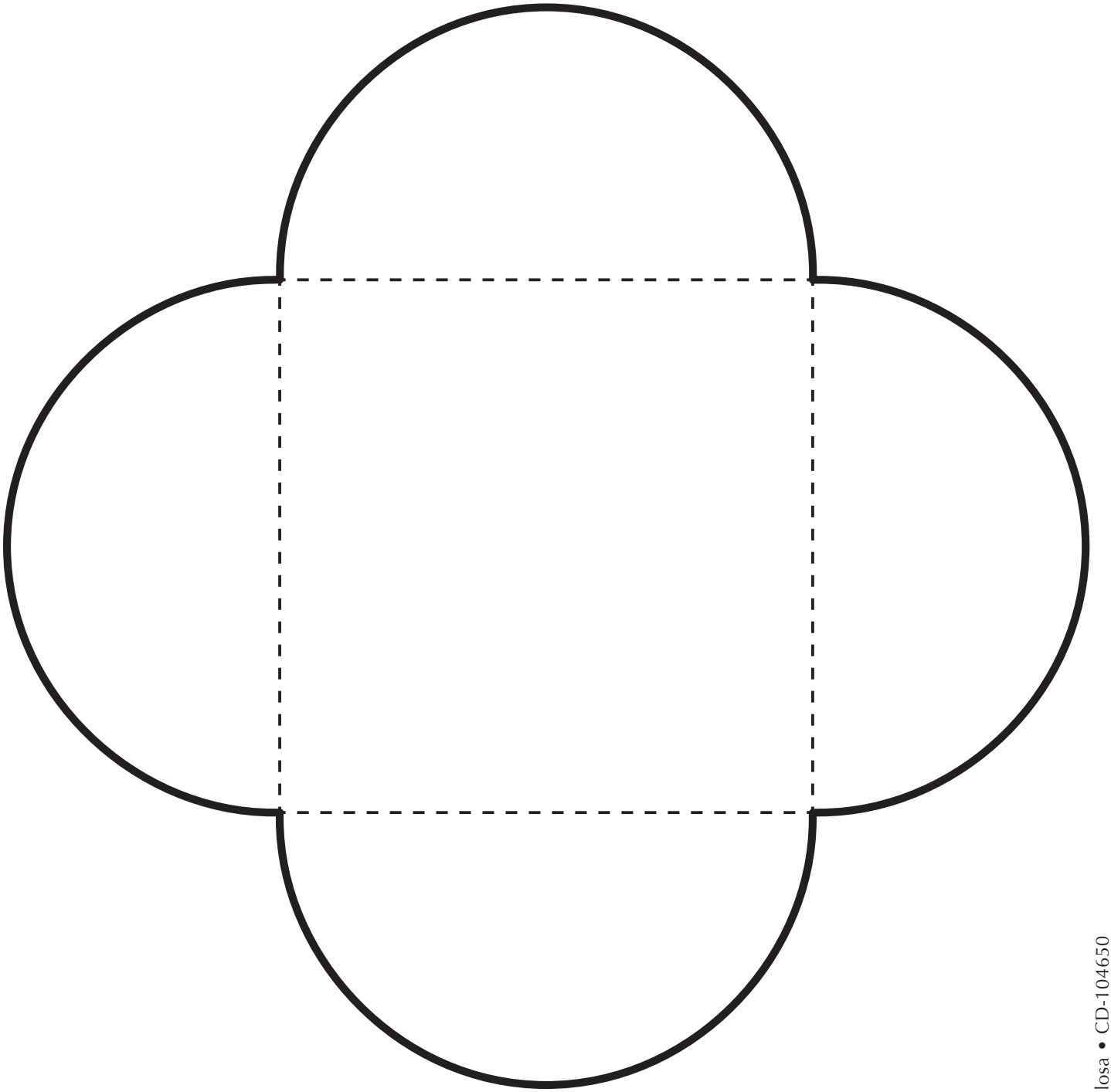
Interlocking Booklet

Cut out the booklet on the solid lines, including the short vertical lines on the top and bottom flaps. Then, fold the top and bottom flaps toward the center, interlocking them using the small vertical cuts. Apply glue to the back of the center panel to attach it to a notebook page.



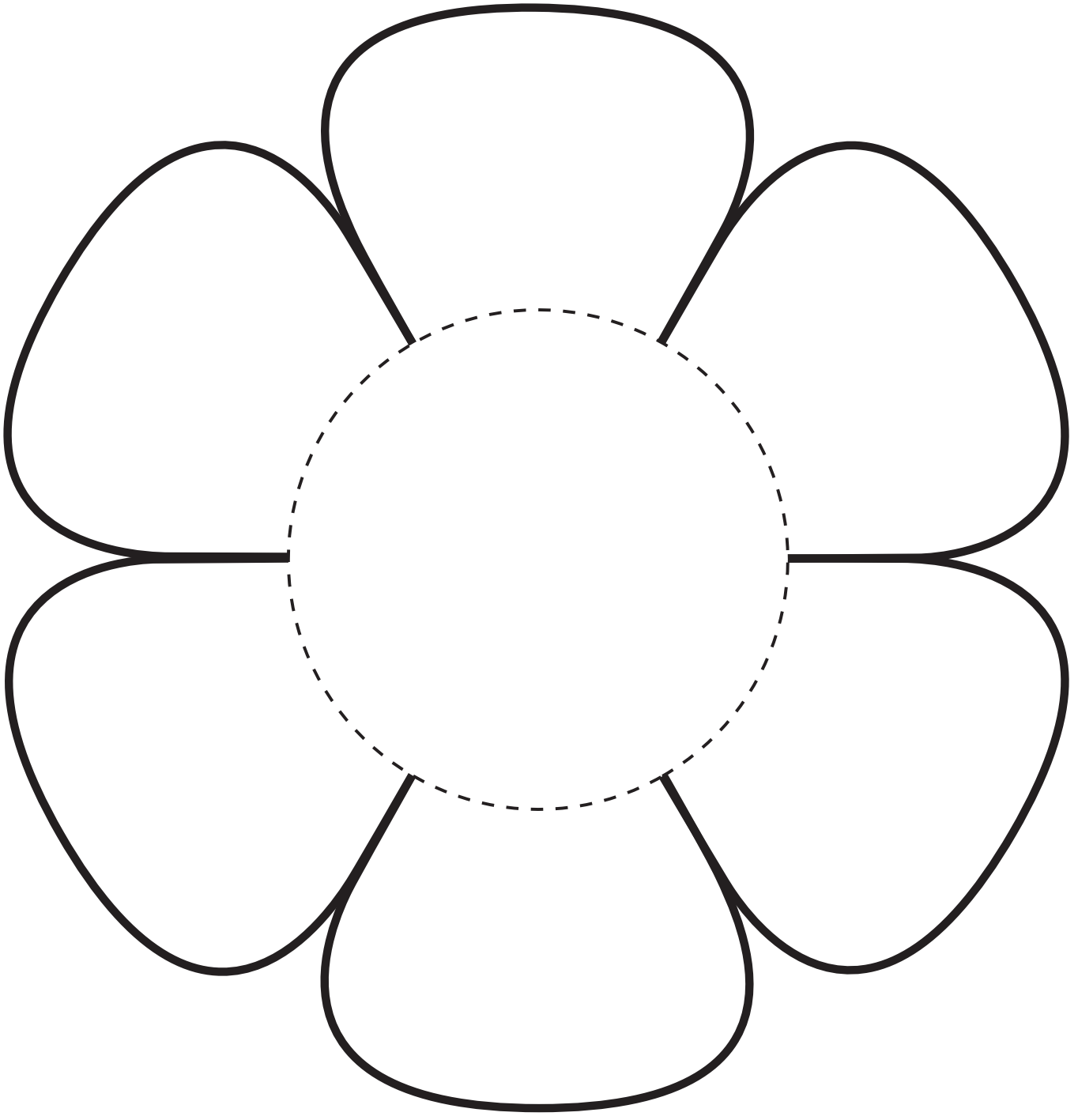
Four-Flap Petal Fold

Cut out the shape on the solid lines. Then, fold the flaps toward the center. Apply glue to the back of the center panel to attach it to a notebook page.



Six-Flap Petal Fold

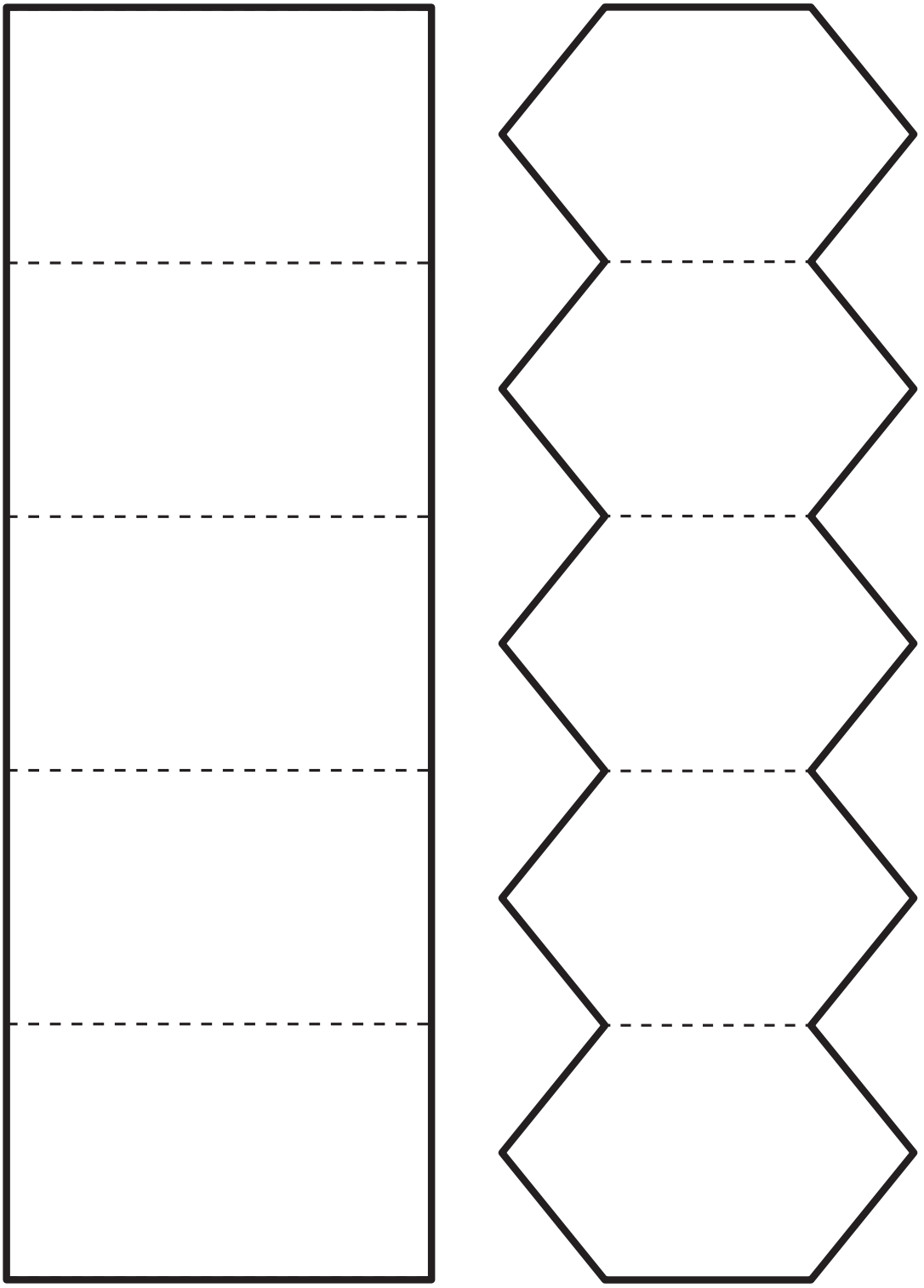
Cut out the shape on the solid lines. Then, fold the flaps toward the center and back out. Apply glue to the back of the center panel to attach it to a notebook page.



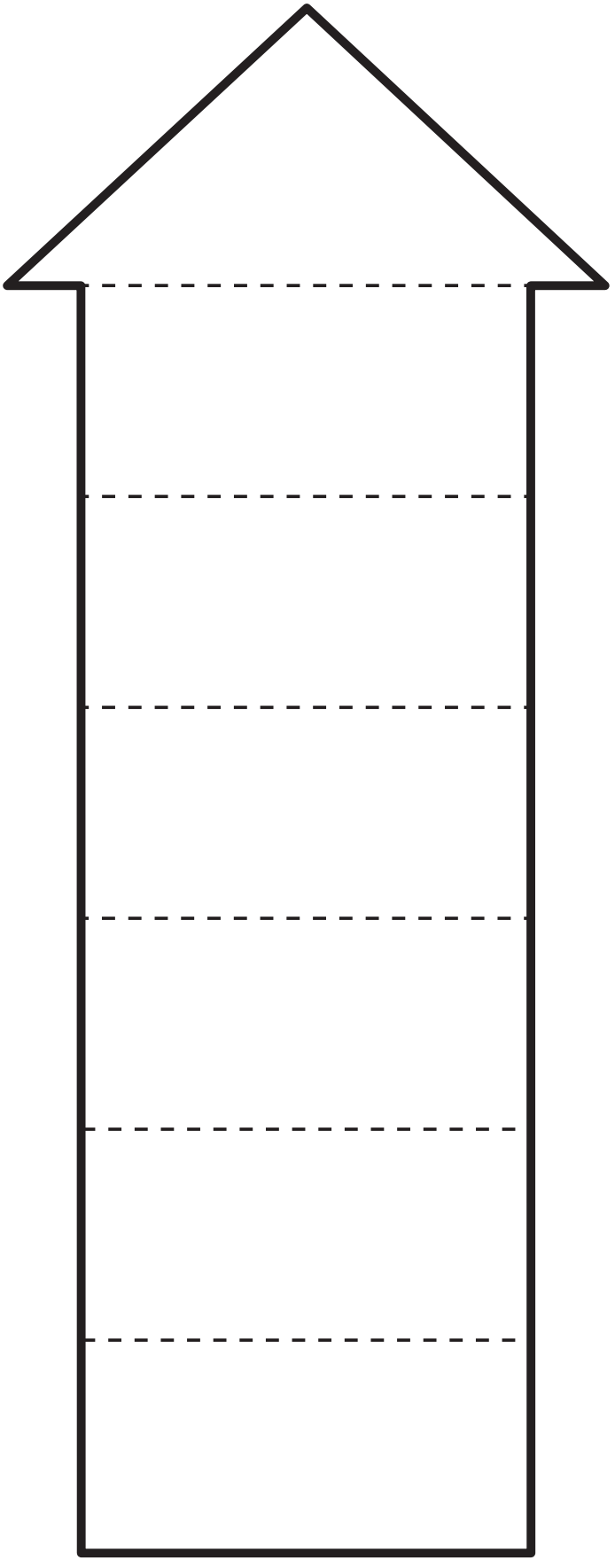
Accordion Folds

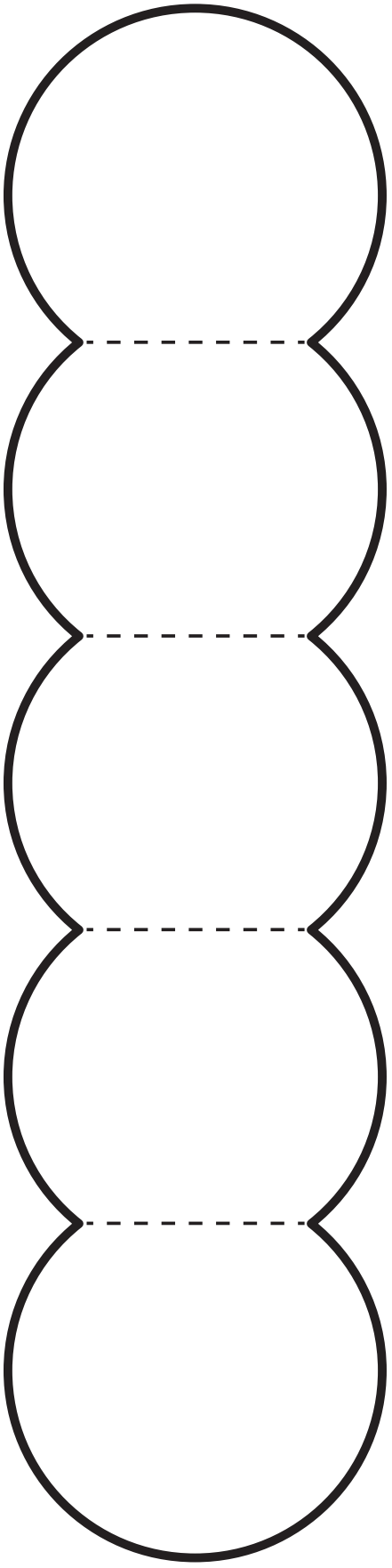
Cut out the accordion pieces on the solid lines. Fold on the dashed lines, alternating the fold direction. Apply glue to the back of the last section to attach it to a notebook page.

You may modify the accordion books to have more or fewer panels by cutting off extra panels or by having students glue the first and last panels of two accordion books together.



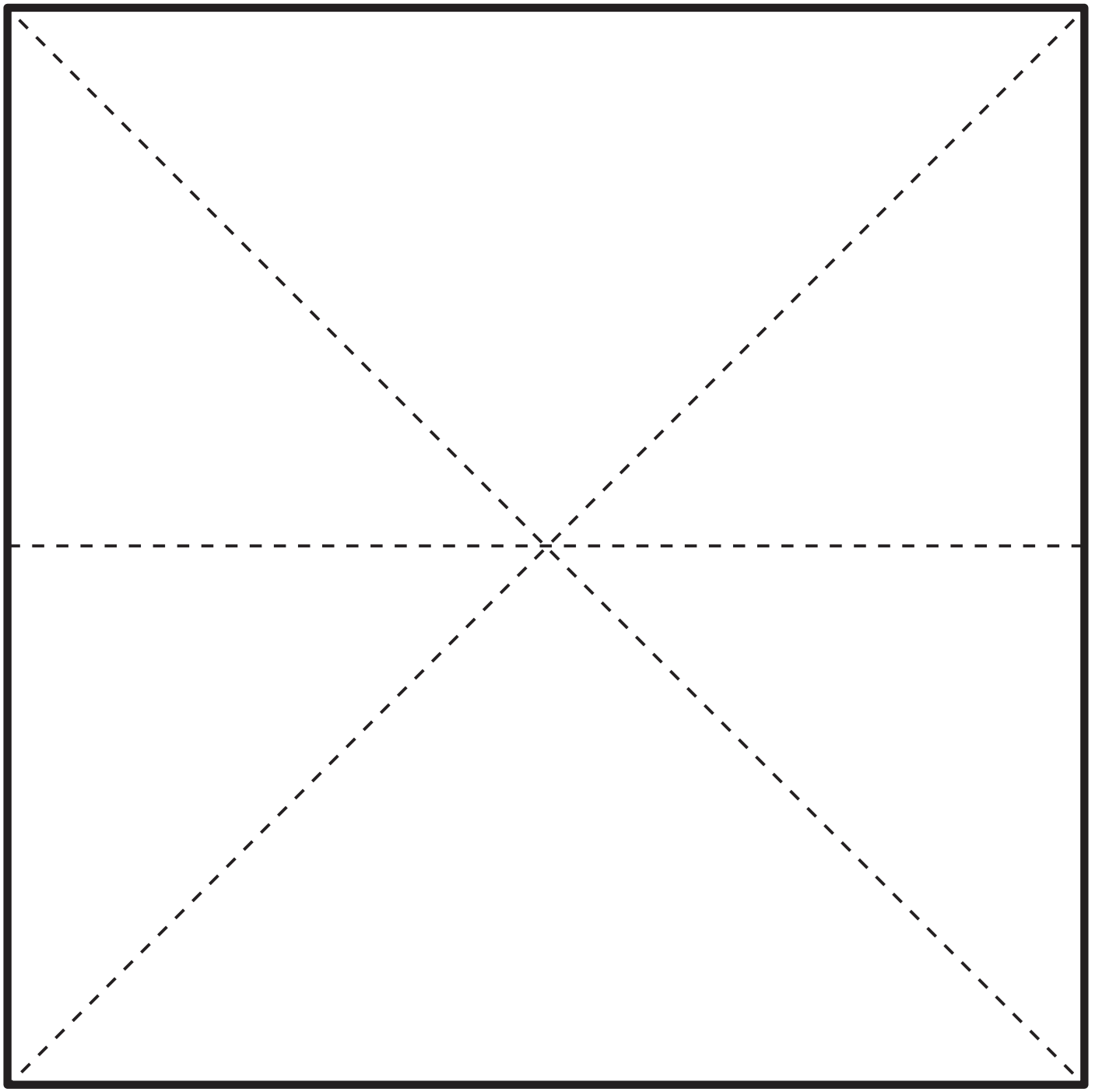
Accordion Folds





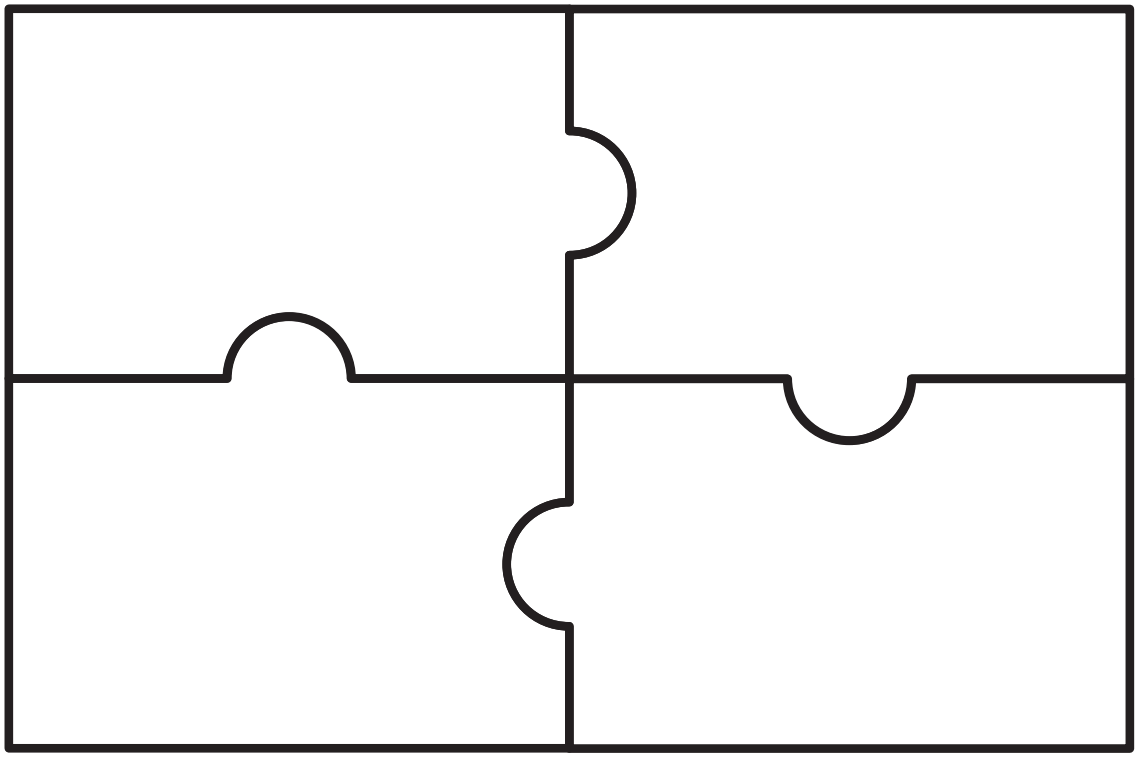
Clamshell Folds

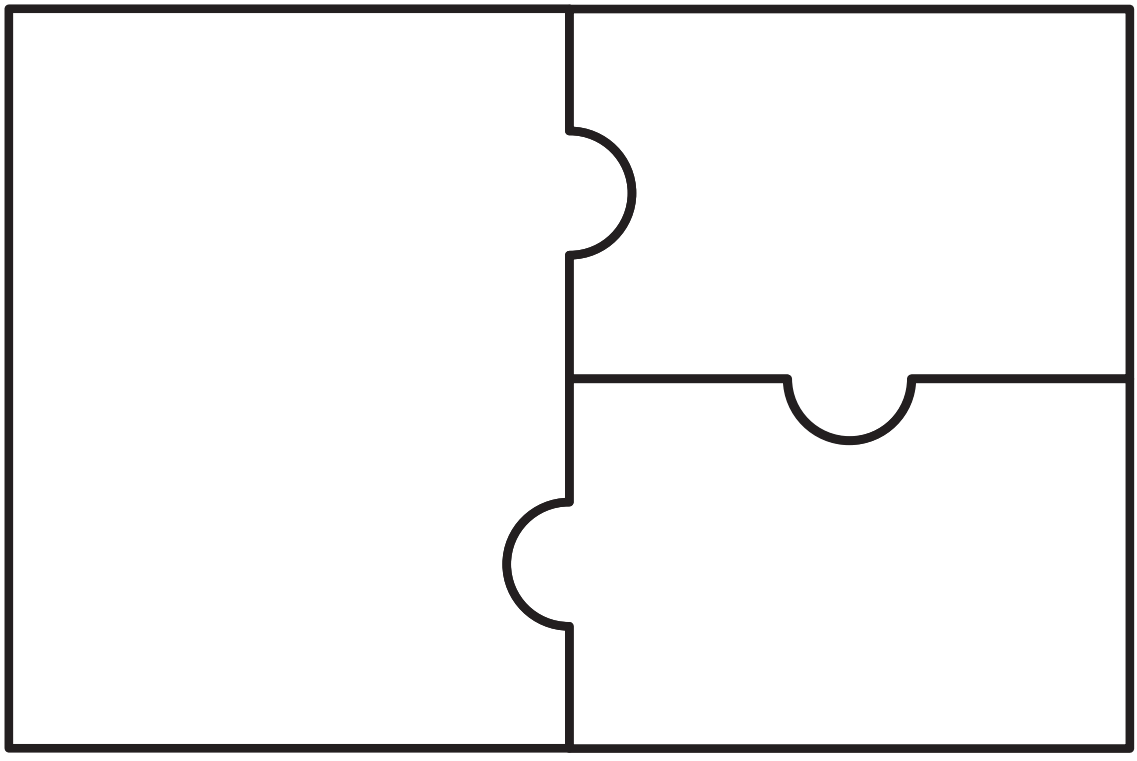
Cut out the clamshell fold on the solid lines. Fold and unfold the piece on the three dashed lines. With the piece oriented so that the folds form an X with a horizontal line through it, pull the left and right sides together at the fold line. Then, keeping the sides touching, bring the top edge down to meet the bottom edge. You should be left with a triangular shape that unfolds into a square. Apply glue to the back of the triangle to attach the clamshell to a notebook page.



Puzzle Pieces

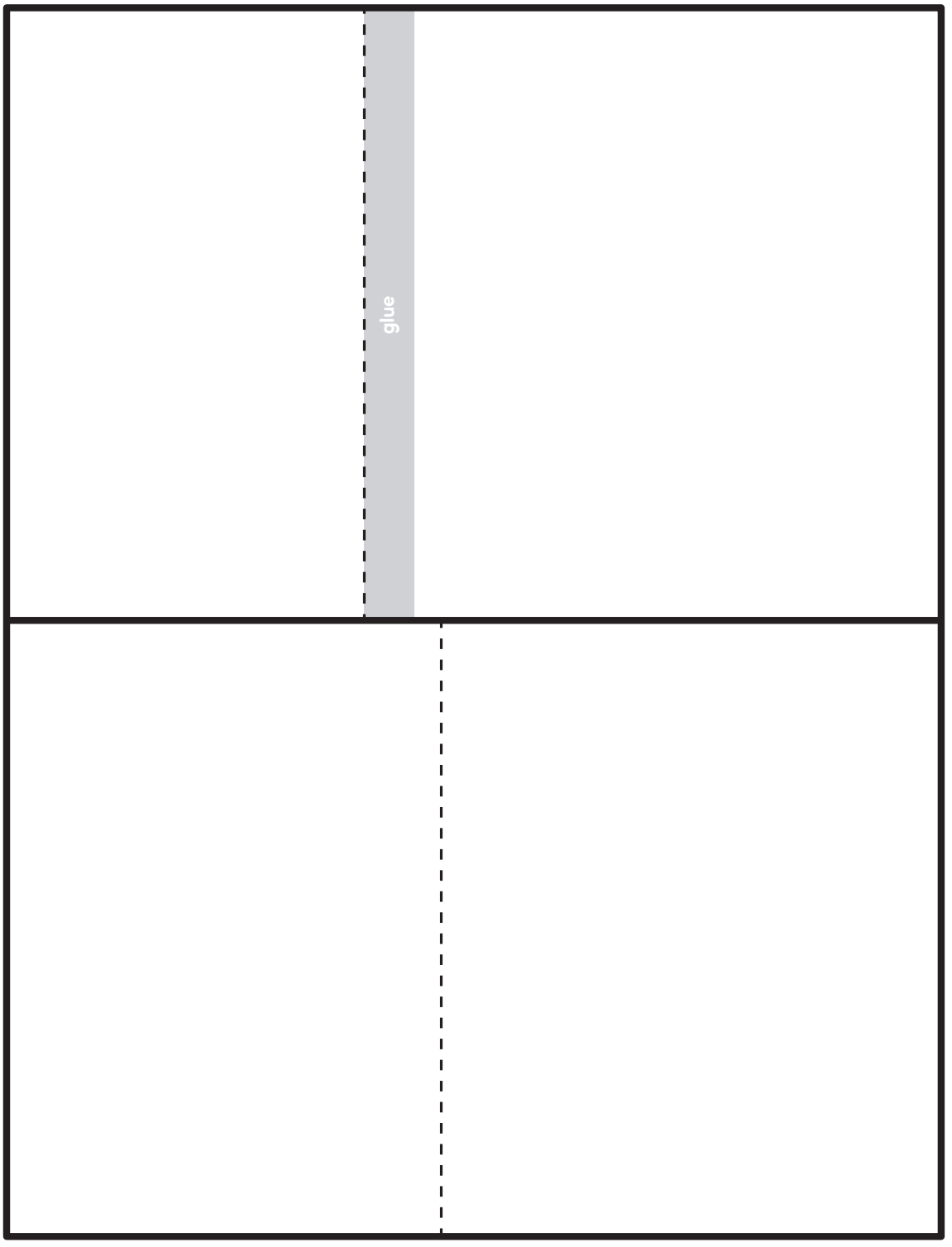
Cut out each puzzle along the solid lines to create a three- or four-piece puzzle. Apply glue to the back of each puzzle piece to attach it to a notebook page. Alternatively, apply glue only to one edge of each piece to create flaps.





Flip Book

Cut out the two rectangular pieces on the solid lines. Fold each rectangle on the dashed lines. Fold the first piece so the gray glue section is inside the fold. Apply glue to the gray glue section and place the other folded rectangle on top so that the folds are nested and create a book with four cascading flaps. Make sure that the inside pages are facing up so that the edges of both pages are visible. Apply glue to the back of the book to attach it to a notebook page.

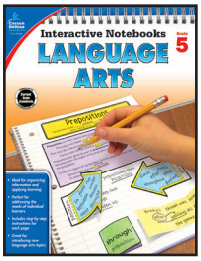


Interactive Notebooks

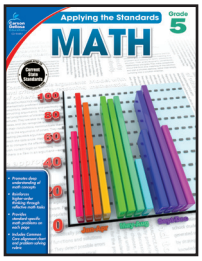
MATH

Interactive notebooks are a fun new way to teach and reinforce effective note taking for students of all ages. Students are able to personalize learning to fit their own needs as they create fun, interactive notebook pages for each new math topic. Students will learn organization, color-coding, summarizing, and other useful skills while creating portfolios of individual learning that they will refer back to all year long. This book will guide you through setting up, creating, and maintaining interactive notebooks throughout the year. It is an invaluable resource for anyone who wants to begin using this effective tool for skill retention in the classroom.

Look for these and other great Carson-Dellosa titles to support standards-based instruction in the classroom.



Interactive Notebooks
Language Arts
Grade 5
CD-104656



Applying the Standards
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Grade 5
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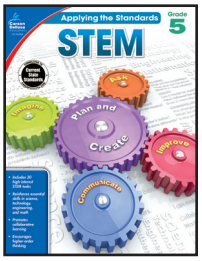

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