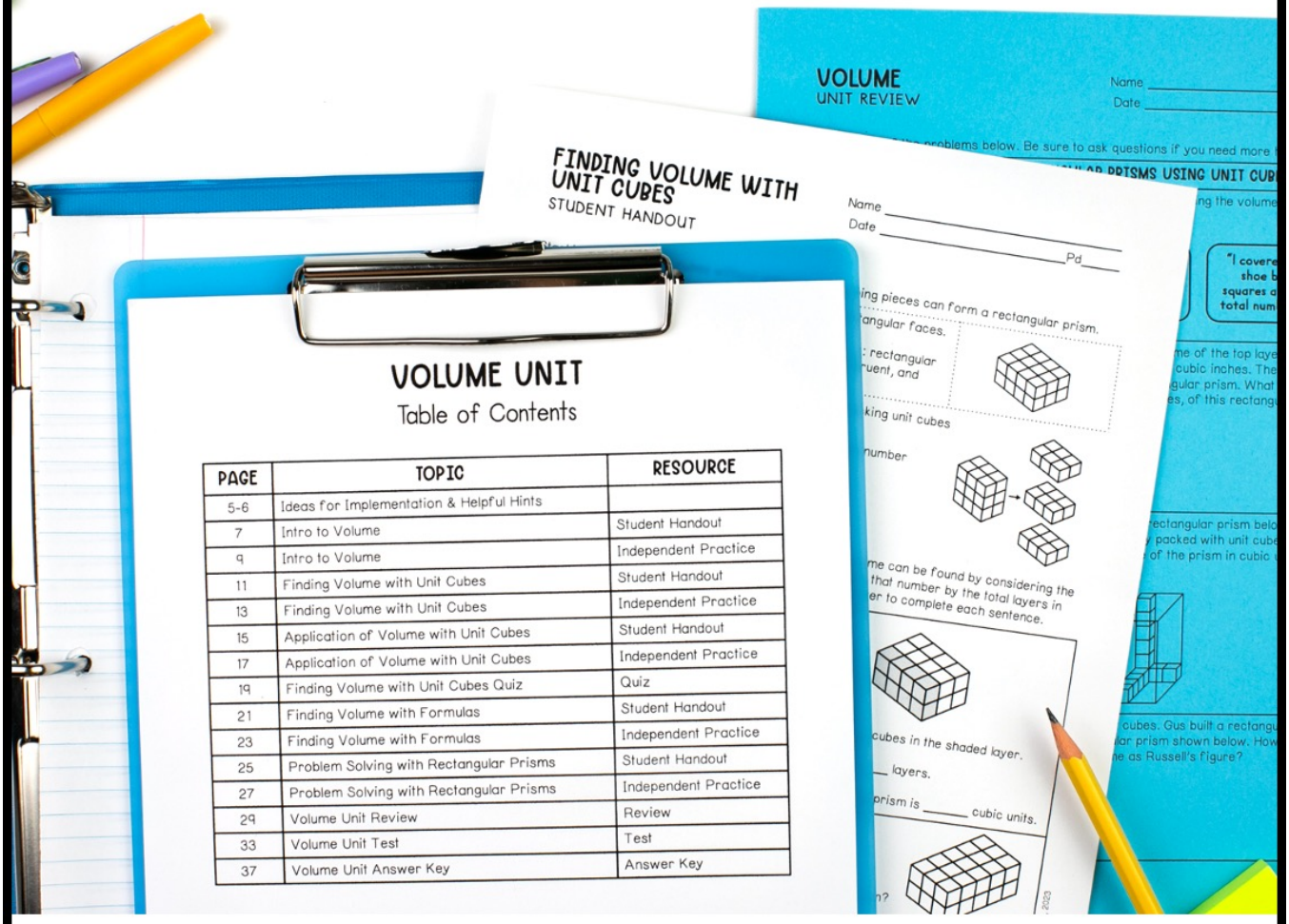
learning focus:

- ✓ solve problems involving volume with unit cubes
- ✓ find the volume of rectangular prisms with unit cubes and formulas
- ✓ determine the volume of composite figures made up of rectangular prisms

VOLUME UNIT

5th GRADE

7 DAY TEKS-ALIGNED UNIT



PAGE	TOPIC	RESOURCE
5-6	Ideas for Implementation & Helpful Hints	
7	Intro to Volume	Student Handout
9	Intro to Volume	Independent Practice
11	Finding Volume with Unit Cubes	Student Handout
13	Finding Volume with Unit Cubes	Independent Practice
15	Application of Volume with Unit Cubes	Student Handout
17	Application of Volume with Unit Cubes	Independent Practice
19	Finding Volume with Unit Cubes Quiz	Quiz
21	Finding Volume with Formulas	Student Handout
23	Finding Volume with Formulas	Independent Practice
25	Problem Solving with Rectangular Prisms	Student Handout
27	Problem Solving with Rectangular Prisms	Independent Practice
29	Volume Unit Review	Review
33	Volume Unit Test	Test
37	Volume Unit Answer Key	Answer Key

A MANEUVERING THE MIDDLE ® RESOURCE

VOLUME

an 7 day TEKS-aligned unit
TEKS: 5.4H, 5.6A, 5.6B

ready-to-go, scaffolded student materials

VOLUME UNIT

Table of Contents

A MANEUVERING THE MIDDLE® RESOURCE

VOLUME

an 7 day TEKS-aligned unit

TEKS: 5.4H, 5.6A, 5.6B

student friendly + real-world application

scaffolded concepts

INTRO TO VOLUME
STUDENT HANDOUT

Name _____

Date _____ Pd_____

Tamar hangs a painting on a wall in her apartment and wants to determine the amount of area it covers using a unit square. Each side of a unit square measures 1 unit and has an area of 1 unit². Find the area of Tamar's painting as shown at the right.

UNIT SQUARE
1 unit
1 unit

TAMAR'S PAINTING

Area is a helpful measurement for 2D figures. Similarly, volume can be a helpful measurement for 3D figures as described below:

AREA	VOLUME
• The amount of space a 2D object _____.	• The amount of space a 3D object _____ or the amount of space _____ of a 3D object.
• Area is described using _____ _____. Each side of a unit square measures 1 unit and has an area of _____.	• Volume is described using _____ _____. A unit cube has side unit and a volume of one cubic un

UNIT SQUARE
1 UNIT²
1 unit
1 unit

UNIT CUBE
1 UNIT³
1 unit
1 unit
1 unit

Sort cards A-D based on whether they describe finding the area or the volume of an o

A The amount of space inside a fish tank.

B The amount of floor space a rug covers.

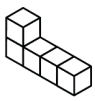
C The amount of butcher paper used for a banner.

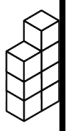
D The amount of space a box takes up inside a truck.

AREA

The number of unit cubes that form a figure without gaps or overlaps is equal to the _ of the figure. The figures in #1-3 are made of unit cubes. Find the volume of each figu

1. 
Volume = _____

2. 
Volume = _____

3. 
Volume = _____

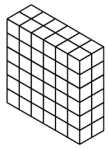
APPLICATION OF VOLUME WITH UNIT CUBES
INDEPENDENT PRACTICE

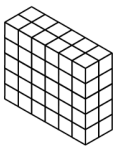
Name _____

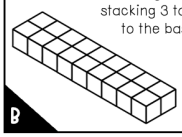
Date _____ Pd_____

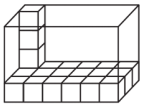
Each of the cards on the left has the same volume as one of the cards on the right. Find the cards with matching volumes to complete the sentences below.

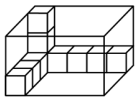
KEY
= 1 cm³

A 

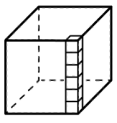
E 

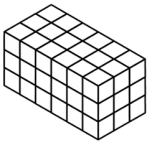
B 
A rectangular prism was built by stacking 3 total layers identical to the base layer shown.

F 

C 

The base layer in a rectangular prism has a length of 9 cm and width of 4 cm. There are 6 layers in this rectangular prism.
G

D 

H 

1. Card A and Card _____ have the same volume of _____ cm³.
2. Card B and Card _____ have the same volume of _____ cm³.
3. Card C and Card _____ have the same volume of _____ cm³.
4. Card D and Card _____ have the same volume of _____ cm³.

self-checking practice

A MANEUVERING THE MIDDLE® RESOURCE

VOLUME

an 7 day TEKS-aligned unit
TEKS: 5.4H, 5.6A, 5.6B

unit study guide + assessments

✓ quizzes

✓ editable unit test

FINDING VOLUME WITH UNIT CUBES
QUIZ

Name _____
Date _____Pd_____

Answer the questions below. Be sure to show your work.

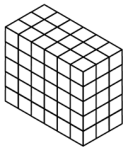
1. Which of these could best be measured with unit cubes?

a. The amount of fabric used to cover a bulletin board.
b. The amount of space inside a refrigerator.
c. The amount of space a welcome mat takes up on a porch.
d. The amount of space a calendar take

Answers
1. _____
2. _____
3. _____

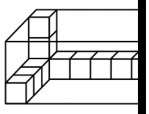
2. The figure shown is made of 1-inch cu
cubes need to be added to the figure so
of 17 cubic inches?

3. The figure shown is a rectangular pris
What is the volume of the figure?



Figures A-C are rectangular prisms that have been partially packed with 1-inch cubes. Figure B is a cube.

FIGURE A



4. Which figure has a volume of 84 cubic inches?

a. Figure A
b. Figure B
c. Figure C
d. Figures A and C

5. How
fit insi

VOLUME
UNIT REVIEW

Name _____
Date _____Pd_____

Solve each of the problems below. Be sure to ask questions if you need more help with a topic.

I CAN MEASURE VOLUME OF RECTANGULAR PRISMS USING UNIT CUBES.

1. Circle the name of the student(s) whose quote represents finding the volume of an object.

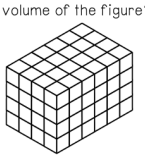
CORA

"I filled a box with centimeter cubes and counted the total number of cubes."

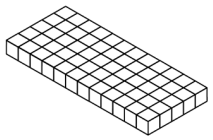
ENZO

SADIE

2. The figure shown is a rectangular
made of 1-centimeter cubes. What is
volume of the figure?



4. A model of a high-rise building wa
blocks that each have a volume of 1
The prism was made by stacking 50
identical to the base layer shown bel
is the volume of the model?

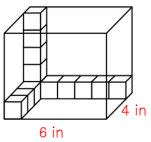


6. Gus and Russell built a rectangular
base layer of 10 cubic units. Russell b
does Gus need for his figure to have

FINDING VOLUME WITH FORMULAS
STUDENT HANDOUT

Name Answer Key
Date _____Pd_____

The rectangular prism shown below contains several unit cubes that each measure 1 cubic inch. Use the cubes to label the dimensions of the prism and then complete a-b.



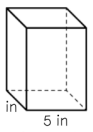
a. Multiply the length and the width (l × w) to determine the number of cubes in the base layer. Use your knowledge of area formulas to describe what this value represents.
6 × 4 = 24; This represents the area of the base.

b. Describe the next step needed to find the volume of the prism.
I need to multiply the area of the base by the height of the prism.

Using formulas can be an efficient method to find certain measurements such as volume. Packing a prism with unit cubes helps to visualize and make sense of the formulas that can be used to find the volume of a rectangular prism.

VOLUME OF RECTANGULAR PRISMS	V = l × w × h	V = Bh
	l: length of one base w: width of one base h: height (distance between the two bases)	B: area of one base h: height (distance between the two bases)

1. Use both formulas to find the volume of the prism. Compare your answers and explain how the formulas relate to each other.

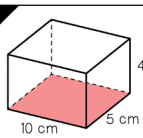
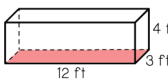
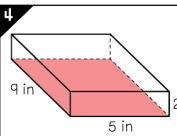


V = l × w × h
V = 5 × 2 × 8
V = 80 in³

V = Bh
V = 10 × 8
V = 80 in³

In a rectangular prism the base is a rectangle, so B = l × w. In both formulas the area of the base is being multiplied by the height.

In #2-4, shade the base of the prism and label the height of the prism. Then find the volume.

	2	3	4
			
FORMULA	V = Bh	V = Bh	V = Bh
PLUG-IN VALUES	V = 50 × 4	V = 36 × 4	V = 45 × 2
VOLUME	V = 200 cm³	V = 144 ft³	V = 90 in³

answer keys included

A MANEUVERING THE MIDDLE® RESOURCE