LOWELL
PUBLIC SCHOOLS

At Home Learning Resources

Grade 5 - Week 5

Read these poems. Think about the theme in each poem. What does the poet want you to learn? What figurative language do you see (similes, metaphors, personification, etc.)? How does the language make you feel? Why did the poet include figurative language?

Cottontail
George Bogin

A couple of kids,
we went hunting for woodchucks
fifty years ago
in a farmer's field.
No woodchucks
but we cornered
a terrified
little cottontail rabbit
in the angle
of two stone fences.
He was sitting up,
front paws together,
supplicating,
trembling
while we were deciding
whether to shoot him
or spare him.
I shot first
but missed,
thank god.
Then my friend fired
and killed him
and burst into tears.
I did too.
A little cottontail.
A haunter.

Say I Fail?

Say that things don't work out?
Say I fail the test?
Say I'm just not good enough?
Say I did my best?

Say my friends all snigger?
Say they think I'm mad?
Say I'm just a loser now?
Say they call me sad?

Say that I'm embarrassed?
Say I lose esteem?
Say disaster strikes again?
Say I drown in dreams?

Say I never even try?
Say I don't begin?
Say I put it off for now?
Say regret sets in?

Say that I just give up?
Say I never dared?
Say that I look back and think -
'I could have but was scared.

'Say I might just make it?
Say that I deserve?
Say I keep believing big?
Say I test my nerve?

Say what I imagine,
Say I see it through,
Say this dream up in my head -
Say it will come true?

Say I never give up?
Say I plant the seed -
That roots, and shoots and blossoms?
Say that I succeed?

In the Ebony Room

In my classroom
We study by sunlight.
But when the wind whistles,
And the clouds hurry in front of the sun,
5 The trees bow.
Leaves flutter,
And the pages of our books
Begin flipping by themselves,
And the clouds are full of rain.
10 Then the wooden windows
Of my classroom
Are pulled shut.

In the ebony dark room
Grinning students whisper
15 How wonderful it is
Not to have to do their
Arithmetic, reading, and writing.
The whispering fades.
On wooden desks students rest their heads.
20 On wooden tables teachers rest their heads.
For in the ebony room
The rain sings
A lullaby to students and teachers.

The pit-a-pat of the rain
25 On the wooden windowpanes
And the whistling wind
Get louder.
Pupils wake up and sing:
"Stop, rain, stop.
30 We cannot play on green grass.
We cannot go home to our parents.
Stop, rain, stop.
Come back another day."

But the rain, with a mind of its own,
35 Beats against our wooden windows.
And pit-a-pat we hear it say:
"I have a rain forest to fill
And grass to keep green!
I will rain till I'm through.
40 Children can wait.
My music will not."
So in the dark room we nod and doze
To the rain's lullaby.

—Isaac Olaleye

Eraser and School Clock, *by Gary Soto*

My eraser
Is pink
And car-shaped.
It skids across
5   My math test,
Which is a mess of number
All wrong, like
When I unscrewed
The back of my watch
10   And the workings
Fell out.
The teacher frowned
When she saw
The watch,
15   Its poor heart
Torn out. Now
I'm working
On my math,
And I think,
20   I think, I think
I know. I look
Up at the school clock
With its hammerlike tick.
I could tear
25   Open its back,
And perhaps
The springs and gears
Would jump
And time stop.
30   This test could stop,
And my friends
Freeze, pencils
In their hands,
Erasers, too.
35   All would freeze,
Including my teacher,
And I could blow
On the skid marks
Of my eraser.

40   *I walk out*
To the playground,
My eight fingers
And two thumbs
Wrapped around
45   *A baseball bat.*
The janitor
Is frozen
To his broom,
The gardener
50   *To his lasso of*
Hose and sprinkler,
And the principal
To his walkie-talkie.
I hit homer
55   *After homer,*
And they stand,
Faces frozen
And mouths open,
Their eyes maybe moving,
60   *Maybe following*
The flight
Of each sweethomer.
What a dream.
I shrug
65   And look around
The classroom
Of erasers and pencils,
The clock racing
My answers to the finish.

Write some poems of your own. Use this chart to remind you of how to write poetry. Create a heart map and begin generating ideas. Turn those ideas into poems.

How to Write Poetry
- Study mentor poems and anthologies
- Generate ideas
    -Heart Map
    -Doors of Poetry
- Study the craft moves of mentor poets
- Develop notebook entries into poems
- Add meaning and musical craft tools
- Make choices about where to break lines and stanzas
- Use metaphors and similes
- Use precise word choice
- Choose a theme for your anthology
- Begin your poem in the midst of the experience
- **End your poem strongly**

One way to create ideas for poems is to make a heart map. Use this list to make a heart map of your own.

SAMPLE ANCHOR CHART

Heart Map Questions

Things That Really Matter to Me!
People, Places, Ideas

- Special people and why?
- Special places and why?
- Special moments and why?
- What has really affected your heart?
- What are some experiences that you'll never forget (past and present)?
- What happy or sad memories do you have?
- What secrets have you kept in your heart?
- What small things or objects are important to you (a tree in your backyard, a trophy, a stuffed animal?)
- What are your dreams?
- What are some things you love to do?
- What are your fears?

MY HEART MAP

Charlie & Maria

touch
charades
Spit
card games
Jackie
Siblings
Concussion
~ Christmas
- presents under
tree
- coffee 1st

Wedding day

Family House on
Gill ~ Pool
Memories
- babies
big tree
out my window
Superdive!
sleeping
together
Sharing the baby
bedroom
broken flute
Randy
Hot Peppers
Hawaii
helicopter
most beautiful place

Cedar Point
The Dragster
The Millennium
Teaching
{ Willow Run
Judy - Lauren }
FPS
Peggy, Susan
1st Grade
3rd Grade
birthday homerun
We met
at a stop
light

Grandma & Grandpa D.
name was
Abbey
instant connect
blanket
Lizzies
Stamps
Stamping!
Steve
Brian
Binky Fairy
Abbey
Gizmo
rotten
teeth
pennys
best pal
Abbey Rose was born
- when she was born
- when she died
best neighbors
great friends
House on
Edna
chinese jumprope
pogo stick
baseball
skateboard

Florida
bike
ride
in rain
throw a
ball?
Find it
she never
gives up
blind
Penny
Bailey
met the
day Abbey
died
making
blanket forts
Swimming

tree forts
in empty lot
Seizure
couldnt stand
died that day
testing
Abbey
Myrtle Beach
1st dog
beagle
crazy
↓
jump
like
tigger

Grandma
Haywood
grilled
cheese &
tomato
soup
garden

Sick
days

Spring
break
sunburn

Here is an example of how to take something you wrote about in your journal or notebook and turn it into a poem. Now you try it.

Writer's Notebook Entry

In the winter it snows a lot. Every morning I heard the wind howling upon my window. I always wanted to stay asleep inside my bed. But I would wake-up and peek out my window. After a snow storm, everything looked so white in my backyard. I felt like I was living in a snow globe.

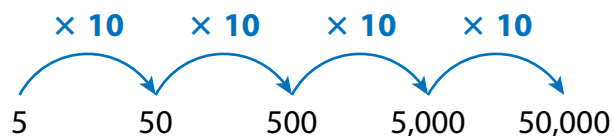| Poem Draft 1	Poem Revised - Draft 2
It's winter. And it's been snowing for days and days now. Every morning, I hear the howling wind upon my window: whoo, whoo. I want to stay asleep, peaceful inside my warm bed. But instead I wake-up and peek out my window, watching the snow fall, fall, fall. Soft and silent. The whole world is full of white and I am living in a snow globe.	It's been snowing for days and days and days. Every morning wind howls upon my window *whoo* *whoo* like a lullaby luring me back to sleep. But I don't stay asleep I wake-up and peek outside my window watching the pure white snowflakes fall fall fall soft and silent. The whole world is full of white and I am living in a snow globe.

Prepare for Powers of 10

1 Think about what you know about powers of 10. Fill in each box.
Use words, numbers, and pictures. Show as many ideas as you can.

Examples

Examples

Examples

power of 10

Examples

Examples

Examples
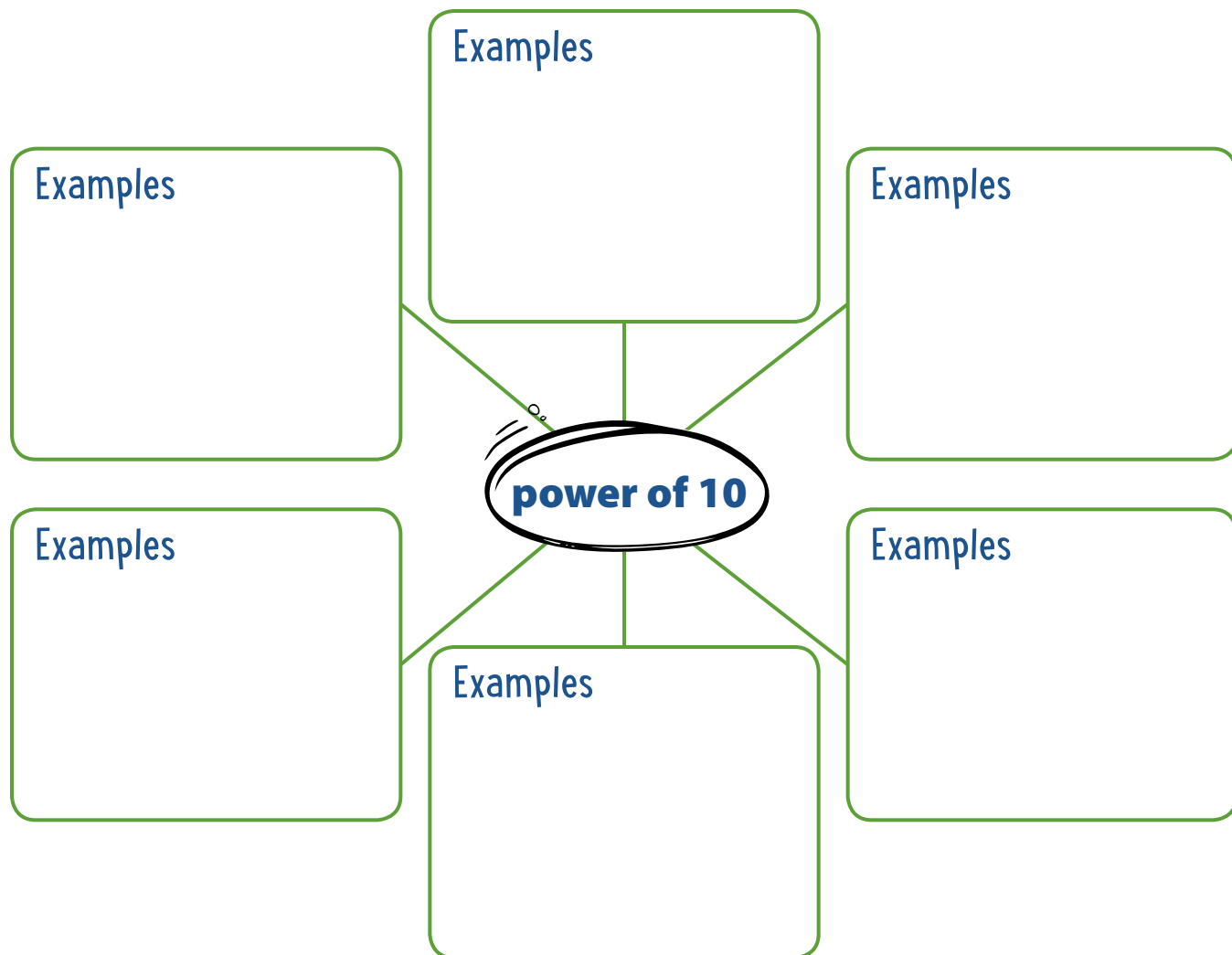
2 Use the diagram to help you find each product.

×10   ×10   ×10   ×10

5   50   500   5,000   50,000

$5 \times 100 =$ ....

$5 \times 10,000 =$ ....

Solve.

3 Complete the table showing different ways to write powers of 10.

Standard Form	Product of Tens	Exponent Form
100	10×10	10^2
1,000		10^3
10,000	$10 \times 10 \times 10 \times 10$	
	$10 \times 10 \times 10 \times 10 \times 10$	

4 Complete the table to show different ways to write 500, 5,000, and 50,000.

Standard Form	Using a Power of 10	Using Factors of 10	Exponent Form
500	$5 \times 1\textbf{00}$	$5 \times 1\textbf{0} \times 1\textbf{0}$	$5 \times 10^{\textbf{2}}$
5,000	$5 \times 1,000$	5	$5 \times$
50,000	$5 \times$	$5 \times 10 \times 10 \times 10 \times 10$	$5 \times$

5 Rewrite each division equation to show the power of 10 in exponent form. Use the first pair of equations as an example.

$5,000 \div 10 = 500 \longrightarrow 5,000 \div 10^1 = 500$

$5,000 \div 100 = 50 \longrightarrow 5,000 \div \text{.............} = 50$

$5,000 \div 1,000 = 5 \longrightarrow 5,000 \div \text{.............} = 5$

Practice with Powers of 10

Study how the Example shows multiplying a decimal number by a power of 10. Then solve problems 1–7.

EXAMPLE

Find $10^2 \times 0.004$.

Break 10^2 into the product of tens.

$$10^2 \times 0.004 = 10 \times \mathbf{10 \times 0.004}$$
$$= 10 \times \mathbf{0.04}$$
$$= 0.4$$

The value of the digit 4 increases by moving one place to the left for each factor of 10.

$$10^2 \times 0.004 = 0.4$$

---

1 Write the missing power of 10 in exponential form.

a. $0.04 \times \text{..................} = 0.4$ $0.004 \times \text{..................} = 4$

b. $\text{..................} \times 0.006 = 0.6$ $\text{..................} \times 0.006 = 6$

c. $0.007 \times \text{..................} = 7$ $0.07 \times \text{..................} = 7$

2 Complete the equations to find each product.

a. $8 \times 100 = 8 \times 10^2 = \text{..................}$

b. $8 \times 1,000 = 8 \times \text{..................} = \text{..................}$

c. $2 \times \text{..................} = 2 \times 10^1 = \text{..................}$

d. $0.02 \times 100 = 0.02 \times \text{..................} = \text{..................}$

3 Complete the equations.

a. $0.03 \times 1,000 = \text{..................}$

b. $0.18 \times 100 = \text{..................}$

Vocabulary

power of 10 a number that can be written as a product of tens.
$$10 = 10$$
$$100 = 10 \times 10$$
$$1,000 = 10 \times 10 \times 10$$

exponent the number in a power that tells how many times to use the base as a factor.

$$10^{\mathbf{2}} \longleftarrow \textbf{exponent}$$
$$\uparrow$$
$$\textbf{base}$$

$$10^2 = 10 \times 10, \text{ or } 100$$

---

4   Use the place-value chart to show dividing 9 by powers of 10. Complete each row with the quotient shown to the right of the row.

Ones	.	Tenths	Hundredths	Thousandths	
9	.	0	0	0	
	.				$9 \div 10$
	.				$9 \div 10^2$
	.				$9 \div 10^3$

5   Match each expression with its quotient.

a. $5.2 \div 10$

b. $520 \div 10^2$

c. $52 \div 10^3$

d. $5{,}200 \div 10^1$

0.052
0.52
5.2
52
520
5,200

6   Describe how the placement of the decimal point changes when you multiply a number by a power of ten. How is this the same and different for division?

7   Is multiplying by 10^3 the same as multiplying by 10 factors of 3? Explain.

Practice Using Estimation with Decimals

**Study the Example showing how to estimate a difference using decimal grids.
Then solve problems 1–4.**

EXAMPLE

Kamala has 2.73 liters of lemonade. She wants to have about 5.5 liters for her party.
About how much more lemonade does Kamala need?

One way to estimate is to round to the nearest tenth.
5.5 is given to the nearest tenth. **2.73** is about **2.7**.

−2   −0.7
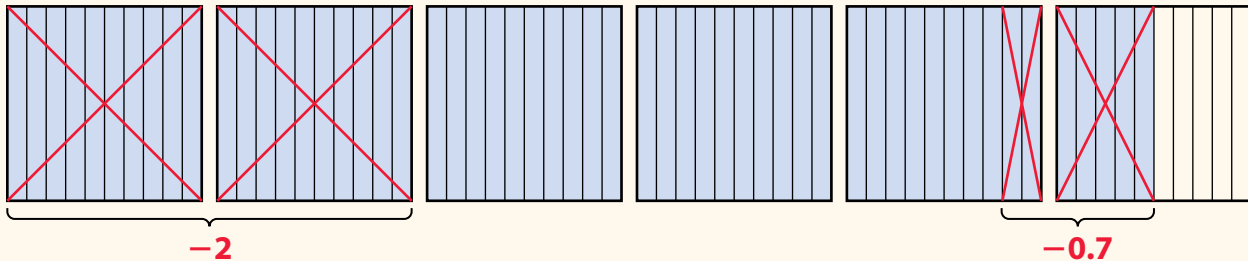
Kamala needs about 2.8 liters more of lemonade.

1 Look at the Example. Does this situation require an exact answer, or is the estimate enough? Explain.

2 Suppose Kamala wants to have exactly 5.5 liters of lemonade for her party. How much more lemonade does she need? Show your work.

Kamala needs _____ liters more of lemonade.

③ Ryan and Sarah are looking at cell phone plans. They could share a group plan that costs $119.95 per month, or they could each pay for an individual plan that costs $62.77 per month.

a. Estimate which choice would cost less for Ryan and Sarah. Explain why.

b. How much money could they save per month by paying for the choice that costs less instead of the choice that costs more? Show your work.

Ryan and Sarah can save .... by choosing a(n) .... plan.

④ Chris wants to make at least 4.5 pounds, but no more than 5 pounds, of berry salad. He finds a carton of raspberries that weighs 1.83 pounds, a carton of blueberries that weighs 1.5 pounds, a carton of blackberries that weighs 1.72 pounds, and a carton of strawberries that weighs 1.29 pounds. If Chris wants to use three different types of berries, what is one combination of cartons he could buy? Explain. Show your work.
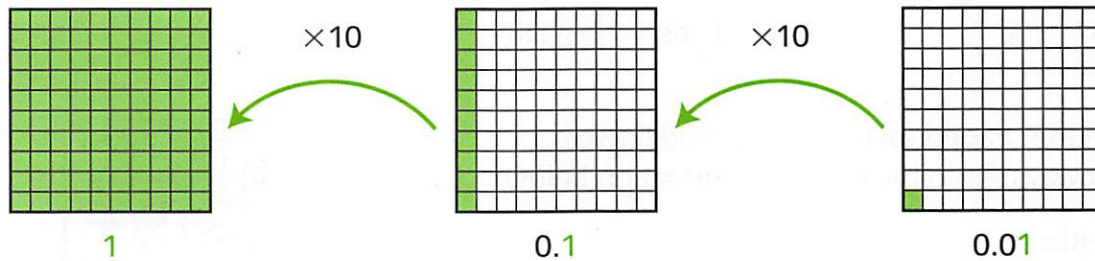
Solution ....

....

....

....

....

Name: _____

Work with Place-Value Patterns

**Study how the example shows place-value patterns.
Then solve problems 1–8.**

Example

Show how the numbers 1, 0.1, and 0.01 are related.

| 1 | ×10 | 0.1 | ×10 | 0.01 |

1 Use the ×10 pattern from the example to complete each equation.

_____ = 1 × 10

1 = _____ × 10

0.1 = _____ × 10

2 The pattern can also be described using division. Use the grids in the example to complete the equations.

10 ÷ 10 = _____

1.0 ÷ 10 = _____

0.1 ÷ 10 = _____

3 Use the ÷10 pattern to fill in the blanks.

400   _____   _____   0.4   _____

4 How are the decimals 0.009 and 0.09 related? Explain.

_____

_____

_____
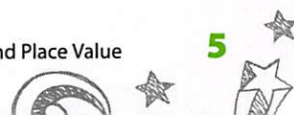
Solve.

5 Choose *Yes* or *No* to tell whether the expression is equivalent to 0.07.

a. 0.007×10 ☐ Yes ☐ No

b. $0.7 \div 10$ ☐ Yes ☐ No

c. 0.07×10 ☐ Yes ☐ No

d. $0.007 \div 10$ ☐ Yes ☐ No

6 Describe the shaded section of the model two different ways. Fill in the missing information below.
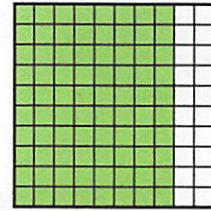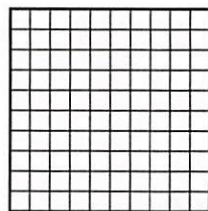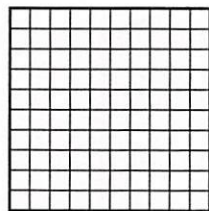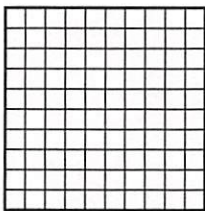
a. 8 tenths = _____

b. _____ hundredths = 0.80

7 Choose a symbol from the box to show the relationship between 0.8 and 0.80.

| < | > | = |

0.8 ◯ 0.80

8 Shade some or all of the grids to show that 2 ones is the same as 20 tenths. Explain.

_____

_____

_____

_____

Understand
Powers of Ten

Name: _____

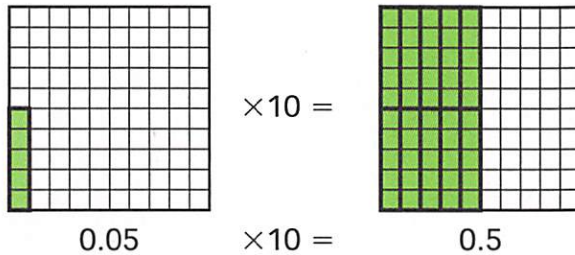> **How can you multiply and divide decimals by 10?**

Study the example problem showing multiplying a decimal by 10. Then solve problems 1–6.

Example

Find 0.05×10. Check your answer using a model.

When you multiply the value of a digit by 10, the digit moves one place to the left, so $0.05 \times 10 = 0.5$.

0.05	$\times 10 =$	0.5

---

1 Use the example to help you complete each equation.

a. $0.005 \times 10 =$ _____

b. $0.05 \times$ _____ $= 0.5$

c. _____ $\times 10 = 5$

d. $5 \times 10 =$ _____

2 How could you rewrite $0.05 \times 10 = 0.5$ as a division equation? Explain how you know.

_____

_____

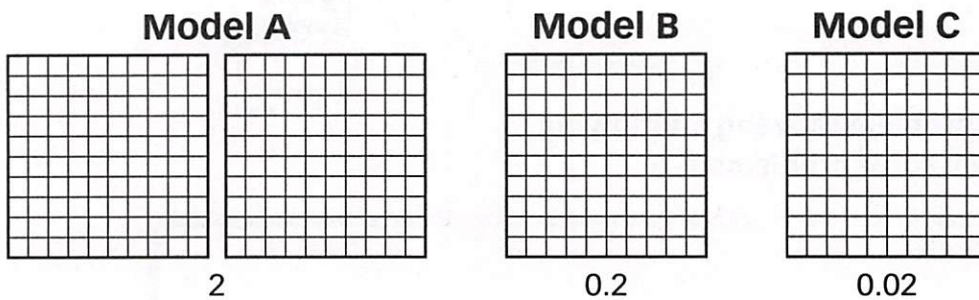_____

_____

Solve.

3 Each grid below represents a whole. Shade Models A, B, and C to match the number and decimals.

Model A

Model B

Model C

2

0.2

0.02

4 Use the shaded grids in problem 3 to complete the multiplication sentences that show how the models are related.

a. Look at Model A and Model B.

$0.2 \times 10 =$ _____

b. Look at Model B and Model C.

_____ $\times 10 =$ _____

5 Use the shaded grids in problem 3 to write division sentences that show how the models are related.

a. Look at Model A and Model B.

_____ $\div 10 =$ _____

b. Look at Model B and Model C.

_____ $\div 10 =$ _____

6 Look at problem 3. Imagine a Model D that shows 0.002. Write a multiplication equation and a division equation that show how Model C and Model D are related. Is there more than one possible answer? Explain.

_____

_____

_____

Name: _____

Multiply and Divide with Powers of Ten

Study the example showing how the decimal point moves when you multiply a decimal number by a power of ten. Then solve problems 1–7.

Example

Find 100×0.004.

Break 100 into the product of 10s.

$100 \times 0.004 = 10 \times 10 \times 0.004$

$= 10 \times 0.04$

$= 0.4$

The decimal point moves one place to the right for each factor of ten.

$100 \times 0.004 = 0.4$

---

1 Write the missing power of ten.

a. $0.04 \times \underline{\hspace{1cm}} = 0.4$ $0.004 \times \underline{\hspace{1cm}} = 4$

b. $\underline{\hspace{1cm}} \times 0.006 = 0.6$ $\underline{\hspace{1cm}} \times 0.006 = 6$

c. $0.007 \times \underline{\hspace{1cm}} = 7$ $0.07 \times \underline{\hspace{1cm}} = 7$

2 When you multiply a decimal by a power of ten, what is the relationship between the number of places the decimal point moves and the number of zeros in the power of ten? Give an example.

_____

_____

_____

_____

_____

3 Complete the equations.

a. $0.03 \times 1{,}000 = \underline{\hspace{1cm}}$

b. $0.008 \times 100 = \underline{\hspace{1cm}}$

Vocabulary

power of ten a number that can be written as a product of tens.

$10 = 10$

$100 = 10 \times 10$

$1{,}000 = 10 \times 10 \times 10$

Solve.

4 Complete the table below to show dividing by powers of ten.

Ones	.	Tenths	Hundredths	Thousandths	
9	.	0	0	0	
					$9 \div 10$
					$9 \div 100$
					$9 \div 1,000$

5 Write the quotient.

a. $0.03 \div 10 =$ _____

b. $0.3 \div 100 =$ _____

c. $3 \div 1,000 =$ _____

6 How is the way the decimal point moves when you divide a decimal number by a power of ten the same as when you multiply? How is it different?

_____

_____

_____

_____

7 Complete the equations showing powers of tens using exponents.

a. $8 \times 100 = 8 \times 10^2 =$ _____

b. $8 \times 1,000 = 8 \times$ _____ $=$ _____

c. $2 \times$ _____ $= 2 \times 10^1 =$ _____

d. $0.02 \times 100 = 0.02 \times$ _____ $=$ _____

Vocabulary

exponent the number in a power that tells how many times to use the base as a factor.

$10^2 \leftarrow$ **exponent**

↑
base

$10^2 = 10 \times 10$, or 100

PADDLE POWER

The Challenge
Build a boat that paddles itself using a rubber band as its power source.

In this challenge, kids (1) follow the design process to make a boat out of cups; (2) design and build working paddles; (3) use rubber bands to store and release energy; and (4) figure out ways to attach their paddles to their boats.

① Introduce the challenge (5 minutes)
Begin by looping a rubber band over your thumb and index finger. Slide a 1 x 2-inch piece of chipboard through the rubber band and wind it up. Let go so the chipboard spins. Begin by telling kids the challenge. Tell them that they'll be using this kind of rubber-band-powered paddle to drive a boat across a container of water. Then get them thinking about storing and releasing energy. Ask:

- Where was the energy stored that made the paddle spin? (*In the rubber band*)
- Tell kids that the term for stored energy is **potential energy**. Ask, "How can you increase a rubber band's potential energy?" (*Wind it up more.*)
- How can you tell when potential energy stored in the rubber band is being used? (*Something moves.*)
- Tell kids the term for motion energy is **kinetic energy**. Ask, "What are some examples of kinetic energy that occur when a paddleboat moves through the water?" (*The rubber band unwinds; the paddle spins; the boat moves; waves spread out*)

② Brainstorm and design (10 minutes)
Show kids the materials and ask, "How can you use these materials to make a boat that paddles itself through the water using a rubber band as its power source?" After discussing their ideas, have them sketch their designs on a piece of paper or in their design notebooks.

③ Build, test, evaluate, and redesign (35 minutes)
Distribute the challenge sheet and have kids begin building. If any of the following issues come up, ask kids questions to get them thinking about how they might solve their problems.

- Kids are all doing the exact same design. *Suggest different boat designs, such as: (1) Seal a cup by putting tape over the opening and floating it on its side; (2) Cut a cup in half lengthwise and tape the halves together to form an open boat; (3) Tape several cups together to make a raft; and (4) Use the chipboard for the boat's bottom and sides.*
- Water leaks into the cup. *Seal openings with duct tape.*
- The paddles are hard to attach to the cup. *(1) Tape straws or wooden skewers along the sides of a cup (or poke them through the sides and bottom) so they stick out far enough to loop a rubber band over them. (2) Build a frame out of straws or wooden skewers and mount it between two cups. Attach the rubber band and paddle to this frame.*

SHOW KIDS THE RELATED TV EPISODE

Photo: Parrish Kennington

In Paddle Power, kids figure out how to power a boat through the water. Show them the Aquatic Robotics episode in which *Design Squad* teams attempt to build a radio-controlled underwater robot. Get it online at pbs.org/designsquad.

A paddleboat moves when the rubber band's stored (*potential*) energy is converted into motion (*kinetic*) energy and spins the paddle.

Testing in a large container of water lets the boats paddle a good distance before hitting a side.

- The chipboard paddle warps when it gets wet. *Protect it by wrapping it in duct tape.*
- The paddle hits the frame that holds it. *Reposition the rubber band; widen or lengthen the frame; make the paddle smaller.*
- The frame holding the rubber band bends when the rubber band is wound tight. *Make sure the frame is securely taped to the cup. See if adding a crosspiece can help stiffen the frame. Also, move the rubber band toward the cup. The closer it is to the cup, the harder it will be to bend the frame. Finally, use wooden skewers. They're stronger than straws.*
- The boat tips and does not let the paddle hit the water properly. *Add weight to the boat to control its position. Tape a washer or two to the bottom of the hull. Weight used to keep a boat upright is called* **ballast***.*

4 Discuss what happened (10 minutes)

Have kids talk about their designs and how they solved any problems that came up. Emphasize the key themes in this challenge—potential and kinetic energy—by asking questions such as:

- What are some examples of potential and kinetic energy in your paddleboat? (*An example of potential energy is the wound rubber band. Examples of kinetic energy include the things that moved, like the paddle, rubber band, boat, and water.*)
- How can you store a lot of energy in your boat? (*Wind up the rubber band tighter, or use more than one rubber band.*)
- What was the hardest problem to solve when building your boat? (*Answers will vary, but perfecting the paddles and attaching them to the cup is often quite challenging.*)

FOR EVENTS

- Draw kids into your area by asking, "How quickly can you get a boat to power itself through the water?"
- It's hard to make boats that float well with cups smaller than 8 ounces. If you want to give kids more design options, offer them two different-sized cups, such as 8- and 12-ounce cups.
- Test boats in large containers. Kiddie pools, underbed storage containers, or wallpaper trays offer kids longer, more satisfying travel times for their boats. In addition, even when a boat doesn't go straight, it can still go reasonably far before hitting a side.
- To avoid overcrowding, provide one kiddie pool per 20 participants expected, one underbed storage container per 10 kids expected, or one wallpaper tray per 4 kids expected. Since kids won't all be testing at once, these numbers will provide plenty of open water for testing.
- Large containers filled with water are heavy and awkward. Put the container where you want it on the floor of the testing area. Then use a bucket to fill and empty it.
- Have towels on hand to mop up spills.

To determine how many materials you'll need for different-sized events, for information on obtaining large quantities of materials, and for other general event tips, see page 7.

PADDLE POWER

DESIGN SQUAD

PBS

as built on TV

pbs.org /designsquad

YOUR CHALLENGE

Design and build a boat that paddles itself across a container of water using a rubber band as its power source.

BRAINSTORM & DESIGN

Look at your materials and think about the questions below. Then sketch your ideas on a piece of paper or in your design notebook.

1. How can you use these materials to make a boat that floats well?

2. How will you attach a rubber band and paddle to your boat?

3. How big a paddle do you need so that it reaches the water and drives the boat?

4. How will you make sure your boat doesn't sink, tip, or roll over?

BUILD, TEST, EVALUATE & REDESIGN

Use the materials to build your paddleboat. Then test it by winding it up, putting it in the container of water, and releasing it. When you test, your design may not work as planned. The saying, "If at first you don't succeed, try, try again," is at the heart of the design process. Testing a design and then revising it based on what you've learned is a key to success. Study the problems and then redesign. For example, if your paddleboat:

- tips—*Add some weight to the bottom of the boat to help keep it upright.*

- has a warped paddle—*Think of some ways to waterproof the paddle.*

- has a paddle that hits the frame holding it—*See if moving the rubber band makes a difference. Also consider changing the size of the frame or the paddle.*

- has parts that bend when the rubber band is wound tight—*Make sure parts are taped on securely. Also, see if moving the rubber band makes a difference. The closer it is to the boat, the harder it will be to bend things. Finally, find ways to add support to any parts that bend.*

- doesn't make it across the container—*Experiment with ways of storing up more energy. Your boat moves by changing stored energy (**potential energy**) into motion energy (**kinetic energy**). The more you wind the rubber band (or the more rubber bands you use), the more potential energy you store. When you let go, this potential energy turns into kinetic energy, and the boat moves.*
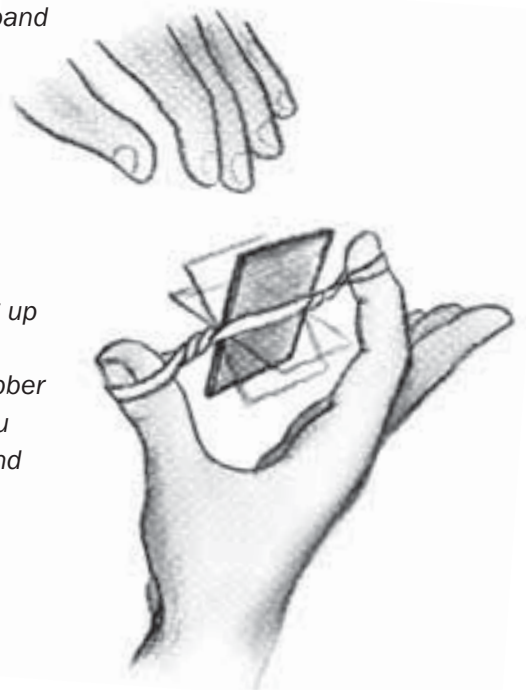
TAKE IT TO THE NEXT LEVEL

- Watch your fingers! Add an on-off switch so you can start and stop the paddle.

- Ready. Set. Go! Experiment with the paddle, the rubber band, or the boat's shape to increase its speed. Then race other paddleboats.

- Tugboat time! Carry or tow a Ping-Pong ball from one side of the container to the other.

ENGINEERING IN ACTION

Engineer Paul MacCready was always intrigued by the way birds soared through the air. As an adult, he brought his passion to life by building gliders that won contests and set records. His success didn't stop with gliders—he built the world's first human-powered aircraft. Yes, that's right, *human* powered! In one of MacCready's planes, the *Gossamer Condor*, the pilot pedaled a modified bike to spin a propeller. It was a breakthrough in design. With a wingspan of 96 feet, the *Condor* was 30 feet long and 18 feet high—bigger than a tractor-trailer truck. And it weighed only 70 pounds—less than half the weight of the pilot! MacCready made his planes light and strong with clever designs that used materials in new ways. His motto was "do more with less."
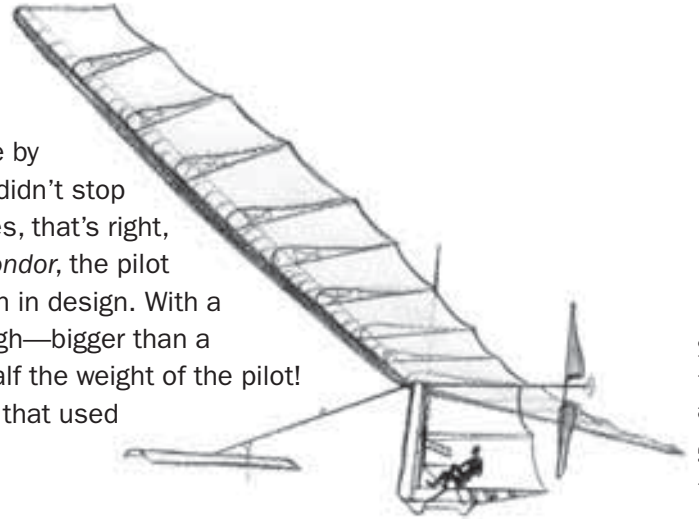
Look at the materials below. MacCready used all but one to build the Condor. Guess which one wasn't a part of his incredible flying machine?

A. Mylar® plastic (like in silver balloons)

B. Aluminum tubes

C. Bicycle parts

D. Cardboard

E. Titanium panels

F. Piano wire

G. Clear household tape

H. Styrofoam®

(Answer: E. Titanium panels. Even though titanium is a lightweight metal, it's still a lot heavier than Mylar®.)

Watch the DESIGN SQUAD Aquatic Robotics episode on PBS or online at pbs.org/designsquad.

A Battle Over Bags

1   Shawntil Bailey was carrying a paper bag filled with groceries out of a supermarket in Austin, Texas. Suddenly, the bag ripped. Her groceries went crashing to the ground.

2   "I've lost loads of groceries lots of times," Bailey says. "The paper bags aren't as sturdy as the plastic ones."

3   Bailey isn't the only person in Austin who's had to adjust to life without plastic bags. Since March 2013, stores in Austin cannot give out disposable plastic bags at checkout counters. Instead, they give out paper bags. Store shoppers can also bring their own reusable cloth bags.

4   A growing number of places in the United States have banned plastic shopping bags. In August 2014, California became the first state to ban single-use plastic bags at large stores. Today, many other states and big cities have also banned plastic bags.

5   Why the ban? Officials say they're trying to cut down on garbage and protect oceans and wildlife. Will other cities and states follow their lead?

Plastic Problems

6   Americans use a lot of plastic bags. They use about 100 billion of them each year, according to the U.S. International Trade Commission. Most plastic bags end up in landfills. They get buried with other trash under layers of dirt. Some experts say the bags may take up to 1,000 years to decompose, or break down, in landfills.

7   But many plastic bags never make it to landfills. Instead, they become litter on the street. They may wash down sewer drains or blow into rivers and oceans. Once in the water, the bags pose a threat to marine animals. Fish, sea turtles, and seabirds can get caught in the bags. They might even mistake the bags for food and choke on them.

8   All these environmental problems have made plastic bags a target worldwide. At least six countries, including China and Italy, have banned them.

9   "The sheer number of plastic bags in the environment means that they're going to have a **detrimental** impact," says Robert Harris. He is the director of the Hawaii chapter of the Sierra Club, an environmental group.

Bag the Ban?

10   Many people, however, think plastic bags are getting a bad rap. Phil Rozenski works for Hilex Poly, the largest U.S. plastic-bag manufacturer. He says plastic bags are often reused for other purposes. A survey by the American Chemistry Council showed that 9 out of 10 people reuse plastic bags. They might use the bags to line trash cans, store items, and more. In addition, billions of the bags are recycled each year.

11   Rozenski argues that plastic-bag bans may also cost many Americans their jobs. He says that the plastic-bag industry employs 30,000 people.

12   "Thirty thousand families are pretty important," he says.

Changing Behavior

13   For now, people who live in places where plastic bags have been banned are learning to get along without them.

14   Olga Garcia also lives in Austin. She says she now brings reusable bags with her to the grocery store.

15   "When the ban first happened, I was upset," she says. "But it feels better now, because I'm not wasting any bags."

Name: _____

Directions: Read the article "A Battle Over Bags." Then answer the questions below.

1. Which of the following points does the author make in this article?

    A. Almost every U.S. state has banned the use of plastic bags.

    B. U.S. cities and states aren't the only places in the world trying to stop the problems caused by plastic bags.

    C. No one wants to stop using plastic bags.

    D. Every state should make recycling plastic bags a law.

2. Which sentence from the article best supports the answer to question 1?

    A. In addition, billions of the bags are recycled each year. *(paragraph 10)*

    B. A growing number of places in the United States have banned plastic shopping bags. *(paragraph 4)*

    C. For now, people who live in places where plastic bags have been banned are learning to get along without them. *(paragraph 13)*

    D. At least six countries, including China and Italy, have banned them. *(paragraph 8)*

3. What does the word *detrimental* mean as it is used in paragraph 9?

    A. Harmful

    B. Important

    C. Helpful

    D. Costly

4. Which sentence from the article best supports the answer to question 3?

    A. Rozenski argues that plastic-bag bans may also cost many Americans their jobs. *(paragraph 11)*

    B. "The paper bags aren't as sturdy as the plastic ones." *(paragraph 2)*

    C. Many people, however, think plastic bags are getting a bad rap. *(paragraph 10)*

    D. Once in the water, the bags pose a threat to marine animals. *(paragraph 7)*

5. How does the section "Bag the Ban?" contribute to the development of ideas in the article?

    A. It presents the point of view of those who think banning plastic bags is not necessary.

    B. It describes the effects of plastic bags on the environment.

    C. It makes comparisons between plastic bags and paper bags.

    D. It summarizes the reasons people want to ban plastic bags.

6. All of the following reasons support the point of view presented in the section "Bag the Ban?" except that _____.

    A. billions of bags are recycled each year

    B. plastic bags are reused by most people

    C. the plastic-bag industry makes generous contributions to environmental groups

    D. the plastic-bag industry provides jobs to thousands of Americans

7. What do you think should be the law regarding plastic bags in your town or city? Explain your opinion, using details from the article to support your answer.

_____

_____

_____

_____

_____

_____

_____

_____

_____

ESL at Home 3-5 Weeks 5-6
Use notebook paper to complete these activities. Do one each day!

Monday	Tuesday	Wednesday	Thursday	Friday
Who is your favorite book or movie character? Write or draw what would happen if you met them in real life.	Look at the food in your home. Create a pretend menu for lunch. **Example**: Pretzel and jelly sandwich with a side of tuna fish: $4.67 Chocolate chip scrambled eggs with salsa ice cream: $5.99	Unscramble these animal names, then draw the animal. caro rwmo cnaotu rumle	Make a t-chart of healthy and unhealthy foods in your home.	Create your own superhero. Draw and label a costume and superpowers. Write about a time the superhero saved someone.
Monday	Tuesday	Wednesday	Thursday	Friday
Use boxes or books to create a ramp. Find five things to roll down the ramp. What rolls the farthest? What rolls the shortest?	Design a plan for your dream neighborhood. Draw and label a map of the homes, streets, and businesses you would have.	Create a commercial for your new neighborhood. Tell what makes it special and why people should move there.	Listen to any song. Write down any similes you hear. Ex: "I came in LIKE a wrecking ball."	Choose two animals, like a horse and an alligator. Imagine what they would look like if they were put together. Draw it, and write about its habitat, predators, and prey.

Earth Day

Celebrating 50th Year Anniversary of Earth Day on April 22, 2020

Earth Day Challenge

Earth Day is an annual event celebrated around the world on April 22 to demonstrate support for environment protection. Earth Day was founded in the United Stated by United State Senator Gaylord Nelson as a "national teach-in on the environment" that was first held on April 22, 1970. On Earth Day, people do things to help the environment. They clean beaches, recycle cans, bottles, and newspapers, donate money to environmental groups, sign petitions, and teach others about the importance of protecting the environment.

What Can You Reduce?

What Can You Reuse?

What Can You Recycle?

Earth Day Pledge

Celebrating 50th Year Anniversary of Earth Day on April 22, 2020

My name is:_____

I promise that I will try to

1. _____

2. _____

3. _____

Some ideas to consider:

- use less water.
- use less electricity.
- spend more time in nature.
- use both sides of paper.
- only buy things that I truly need.
- eat more vegetables.
- use rechargeable batteries.
- grow vegetables in my garden.
- plant a tree.
- recycle and reuse items.