

## DO THE MATH TEACHER GUIDE SAMPLER

## DIVISION

This Sampler includes select pages from the Division Teacher Guide.
You'll see a sample of the:

(2) Section Overview
(3) Instructional Principals
© Letter from Marilyn Burns
(8) Planner
(8) Lessons
(3) Annotated WorkSpace
(8) Attitude Survey, Show What You Know

Objectives Tracker, Community News
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> Additional Resources

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Help At-Risk and Struggling Students Succeed in Math
Research shows that students with diverse needs succeed in learning mathematics through explicit, intentional teaching based on proven instructional strategies.

## TEACHING FOR UNDERSTANDTNG

Students benefit from instruction based on teaching for understanding. Step-by-step lessons help students develop understanding, learn mathematical skills, see relationships, and make connections.

- Learning experiences link concepts and skills to their mathematical representations and language.
Students use concrete and pictorial models to build a strong foundation in key mathematical concepts, operations, and strategies.
scaffolded content
Scaffolding of the content makes the mathematics more accessible to students.
Do The Math focuses on key content in mathematics so that students are not overwhelmed with extraneous materia
- The content is organized into manageable chunks.
The lessons are explicit about the relationships among these chunks.
- The instruction is carefully sequenced to help students build a solid foundation of understanding.
[圂 DIVISION MODELS


Pennies and dimes are divided by 10 are e divided by 10
to model grouping problems.
 Tiles represent the division of concrete objects into equal groups.


Number cubes
Number cubes
generate random generate random
numbers in division games.


Division Bingo cards Division Bingo cards
build students' butid students
fluency with division

The lessons engage students with each conce and skill in several ways, deepening their mathematics knowledge.

- Hands-on manipulatives give students concrete experiences with abstract ideas.
- The digital mTools give students the opportunity to translate concrete manipulative to pictorial representations.
- Classroom and digital partner games offer engaging experiences that reinforce mathematical understanding and skills. 图
- Children's literature provides a springboard for instruction.
- Contexts make abstract mathematical ideas accessible.

MATHEMATICAL THINKING
These standards help develop mathematical expertise and habits of mind in all students.

- Students persevere and solve problems and look for entry points to solutions.
- Students reason abstractly to make sense of quantities and their relationships in problem situations
Students use stated assumptions, definitions and previously established results to construct viable arguments.
Students model with mathematics to solve real-world and mathematical problems. - Students apply mathematical and practical tools strategically when solving problems.
- Students attend to precision, using mathematical language to communicate clearly and accurately.
- Students look closely to discern patterns or structure when solving problems. general methods and shotcuts.

Help Students Build Their

## Mathematical Reasoning

## CLASSROOM ROUTINES

Routines such as "think, pair, share" promote engagement and deepen student understanding

$$
\begin{aligned}
& \text { THNK } \\
& \text { Students collect their thoughts individually. } \\
& \text { PAIR } \\
& \text { Students discuss with a partner. } \\
& \text { SHARE } \\
& \begin{array}{c}
\text { Students report ideas to the whole group. } \\
\text { Expressing ideas and eearinother perspectives } \\
\text { help students clarity their thinking. }
\end{array}
\end{aligned}
$$

-The listening and speaking that occur during "think, pair, share" are especially valuable for English language learners.

- Teachers can pair English language learners with other students who speak the same first language to allow them to discuss concepts.
- Teachers can also pair a student with
early English skills and a student with strong English skills to encourage language development.


## independent student work

Assignments provide students with opportunities to practice, strengthen, and extend their learning.
WorkSpace ${ }^{\oplus}$ assignments are
carefully constructed to motivate students and maximize their success through games, assignments for reinforcement, and problem-solving situations.

- The digital experience gives students the flexibility to explore mathematical tools and games within and outside the classroom.



## Vocabulary and language

Explicit vocabulary instruction helps students communicate effectively about the math they are learning. Vocabulary is introduced after students experience concepts. Vocabulary lessons
follow a consistent routine-the teacher write follow a consistent routine-the teacher writes and provides an example; students see, hear, say, and write it; and the vocabulary is then incorporated throughout the lessons to support students' learning
Key mathematical and academic vocabulary is highlighted at the start of each lesson, and is highlighted at the start of each
A glossary in the WorkSpace provides students with a reference for definitions.


ASSESSMENT AND DIFFERENTIATION
Ongoing assessment is built into the program to help teachers meet individual student needs.
During lessons, teachers observe students working in the whole group, with partners, and independently.

- Specific guidance for how to promote understanding and address student misconceptions is integrated into all lessons. - Suggestions for differentiating instruction are included after every "Assessing Student Understanding" lesson, both for students who need additional help and those who are ready for a challenge.



## FROM MARILYN BURNS

## Dear Colleague,

R Remainder of One begins this module. This book Reading aloud the story of Joe, a soldier bug who is part of the 25th Squadron. Joe loved to march with his squadron when they paraded to make didn't have proud. But when the 25 bugs in the troop lined up But the queen, who liked a partner and had to march by himself at the end Baside. He wasn't happy to things tidy, was not pleased and Joe had find himself labeled remainder of one!
The same problem arose when the squadron marched in threes and then in The same probs. Finally, when the troop organized in fives, Joe was included. The story fours. Fina and excellent review for writing division equations; recording and provides an exceltent rers; and reviewing the division vocabulary of dividend,
divisor, quotient, remainder, and divisible.

$$
\left.\right|_{\text {dividend divisor }} ^{25} \div 4=\left.\right|_{\text {quotient }} ^{6} \stackrel{R}{r e m a i n d e r ~}_{\mathrm{R} 1}^{2}
$$

$$
x \times x \times x x
$$

$x \quad x \times x \times x x$
$x x x x x x$
$x x x x x$
XXXXXX
25th Squadron marching in rows of 4
Students then investigate Joe's chances of marching in different formations Students then investigate Joe's chances of the 20th, 24th, 30th, 32nd, and if he jo
40th.

Following these experiences, students learn to play the game of Target 1000, which provides them practice
multiplying by multiples multiplying by multiples of 10 up to 100 , a skill that is essential for successfully solving division proble that with greater numbers. To play, students tak problems each time rolling a 1-6 number cudents take six turns, number that comes up by a multipe, multiplying the the scores for each turn.

1020304050 60 708090100
$4 \times 50=200 \quad$ Score
$4 \times 50=200$
$5 \times 60=300$
$1 \times 100=100$
500
600
Their goal is to get as close to 1000 as possible without going ove Also, students may use each multiple of 10 only once in their six tre.


66 The book A Remainder of One provides an excellent of One provides an excellent review for writing division
equations; recording and equations; recording and interpreting remainders; and reviewing the division vocabulary of dividend, divisor, quotient, remainder, and divisible. 95


In Lessons 1-5, students...
-Write related multipicaction
and division equations.
 -Calculate the quotients and remainders for two-digit divisors.
-Multiply one-digit numbers by multiples of 10 from 10
-Communicate ideas w key math vocabulary:
division equation, divide division equation, dividend,
divisor, quotient, remainder, and divisible.
$\qquad$

Write Division Equations

## Target 1000



ve students complete the page.
(4) Students complete WorkSpace pages 6 and 7.


SUPPORTING INSTRUCTION The intent of these assignments is to teifforce for
students how thinking about muttiplication can be susefu for solving division problems. Limiting thes crobiems to divisisors of $2,3,4$, and 5 with dividend
up to 40 makes the numbers accessibh students' focus on using the connection between division and multiplication.



Assess
Use the annotated pages to correct WorkSpace
Use the annotated.
pages 11 and 12 .


Note the progress of each student in the appropriate
rows on the tracking chart found on page 142 of this Nows on the tracking chart found on page 142 of this guide.

## Reevaluating Student Placement

As you review each student's work from these four
lessons and the assessment, you may suspect that lessons and the assessment, you may suspect that a student does not thave the foundations he or she
needs to be successful in this module. You can use the End-of-Module Assessment from Do The Math: Divivion B to find out if the student has the necessary prerequisite skills. If the student does
not score 80\% on this assessment, or struggles to complete it, he or she will need additional prerequisite concepts and skills.

Differentiating Instruction Although the lessons are carefully scaffolded and
paced at a rate more likely to give students a chance paced at a rate more likely to give students a chance
for optimal learning, there will be instances when for optimal learning, there will be instances when
students are still struggling and need extra support. Also, there will be instances when students would
benefit from additional challenges or practice. Try the benefit from additional
teaching ideas below.
For Students Who Need More Support

- If students have difificulty with dividing, provide additional
- If students have difificulty with dividing, provide add
support.
- Provide students with pennies or other counters.
- Have students arrange them in equal groups of $2,3,4$ - Have st
and 5.
- Guide students to write each division equation
- Play Leftovers with students to provide additional practice
dividing. 喑 dividing. (8)
- Game rules can be found in the Do The Math digital
resources. 道

For Students Ready for a Challenge

- Have students investigate squadrons of greater numbers, such as $45,50,60$, and 100 .
-Have students play Division Bingo. [0.0
- Students may play alone or with a partner.
- Game rues can be found in the Do The Math digital
resources.


## -

$>$ Fill in the circle of the answer that best fits you.

1. I like math.

O not at all
O a little
O some, but it's not my favorite
O it's my favorite subject

## 2. I am good at math.

O not at all
O not very good
O fairly good
O very good
3. I need good math skills so I can get
a good job when I am older.
O agree a lot
O agree a little
O disagree a little
O disagree a lot be solved using different strategies.
O agree a lot
O agree a little
O disagree a little
O disagree a lot
Which of these do you agree with? You may choose more than one answer.
7. When math is challenging,

O take on the challenge.
O give up easily.
O put in a little effort.
O put in a lot of effort.
O ask my teacher for help.
> Write an answer to each question.
8. What do you like most about math? Explain.
4. I can get better in math if I work hard

O agree a lot
O agree a little
O disagree a little
O disagree a lot

## 5. I like solving different problems.

O agree a lot
O agree a little
O disagree a little
O disagree a lot

Write Division Equations

Students complete "Show What You Know" assignments every fifth understanding of the concepts and skills from the previous four lessons.

## Show What You Know

DIRECTIONS
> Write a multiplication equation.
> Write the answer to the division problem.
> Answer the question.

18th Squadron

| (1) Groups of 2 | (2) Groups of 3 |
| :---: | :---: |
| $18 \div 2=9$ | $18 \div 3=6$ |
| $9 \times 2=18$ | $6 \times 3=18$ |
| Is 18 divisible by 2? yes | Is 18 divisible by 3? yes |
| (3) Groups of 4 | (4) Groups of 5 |
| $18 \div 4=4 \mathrm{R} 2$ | $18 \div 5=3 \mathrm{R} 3$ |
| $4 \times 4=16$ | $3 \times 5=15$ |
| Is 18 divisible by 4? no | Is 18 divisible by 5? no |

Show What You Know
DIRECTIONS
> Write the answer for each equation.

| (1) $5 \times 60=300$ | (2) $2 \times 100=200$ |
| :---: | :---: |
| (3) $3 \times 20=60$ | (4) $6 \times 80=480$ |
| (5) $4 \times 90=360$ | (6) $1 \times 40=40$ |
| (7) $5 \times 70=350$ | (8) $6 \times 70=420$ |

> Fill in the blanks

| (9) $25 \div 8=3 \mathrm{R} 1$ | (10) $16 \div 3=5 \mathrm{R} 1$ |
| :---: | :---: |
| dividend 25 | dividend 16 |
| divisor 8 | divisor 3 |
| quotient 3 | quotient 5 |
| remainder $\quad \underline{1}$ | remainder 1 |

(11)


UPDATE: Students listen to a reading of $A$ Remainder of One, a book that presents situations that can be represented with division problems. Students solve division problems by writing the related multiplication


