Moving Students from the Red Zone in Math

Information, Resources, and Strategies for the Classroom

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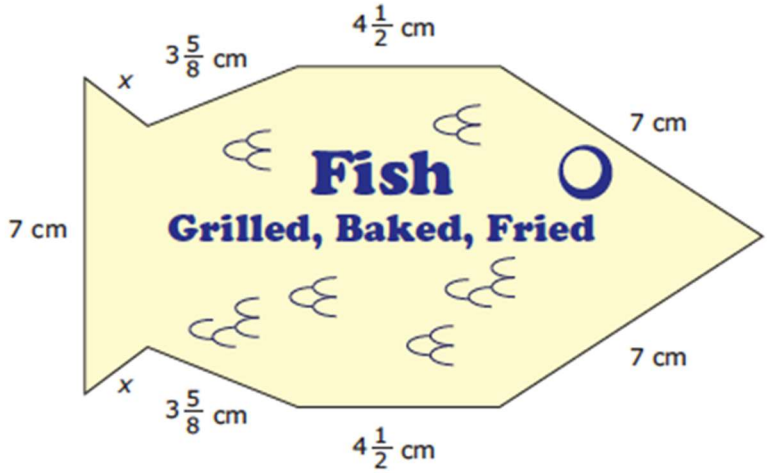
What Do Students Need to Know and Do?

A painter uses the outline of a fish on a restaurant sign. The perimeter of the outline is $40\frac{3}{4}$ centimeters (cm).



What is the missing length, x cm, of the outline?

Ⓐ $\frac{7}{8}$

Ⓑ $1\frac{3}{4}$

Ⓒ $3\frac{1}{2}$

Ⓓ $5\frac{1}{4}$

It’s Your Turn!

One secret I have about math is ...

My best experience with math was when . . .

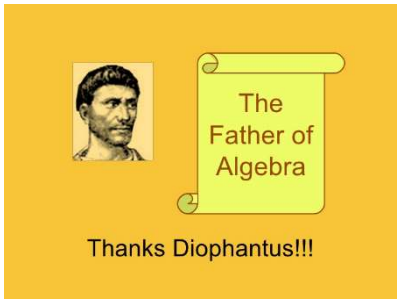
My worst experience with math was when . .

What's Your Answer?

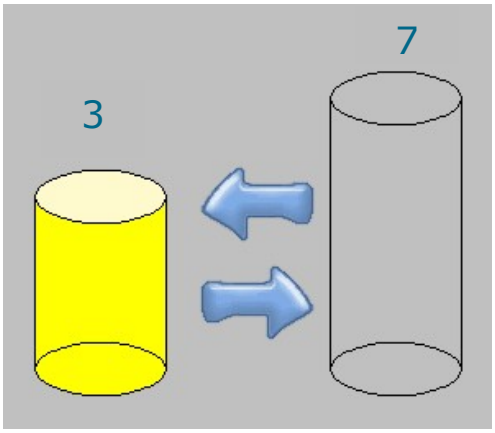
A little boy goes shopping and purchases 12 tomatoes. On the way home, all but 9 get mushed and ruined. How many tomatoes are left in a good condition?

Eggs are $0.12 a dozen. How many eggs can you get for a dollar?

The Diophantus Riddle



Diophantus' youth lasted one sixth of his life. He grew a beard after one twelfth more. After one seventh more of his life, he married. 5 years later, he and his wife had a son. The son lived exactly one half as long as the father, and Diophantus died four years after his son.
How many years did Diophantus live?



You are standing by the duck pond with two pails. One holds 7 gallons and the other holds 3 gallons. Neither one of them has gallon markings on the side. How can you get exactly 5 gallons of water in the big pail?

Frayer Model

Frayer Model

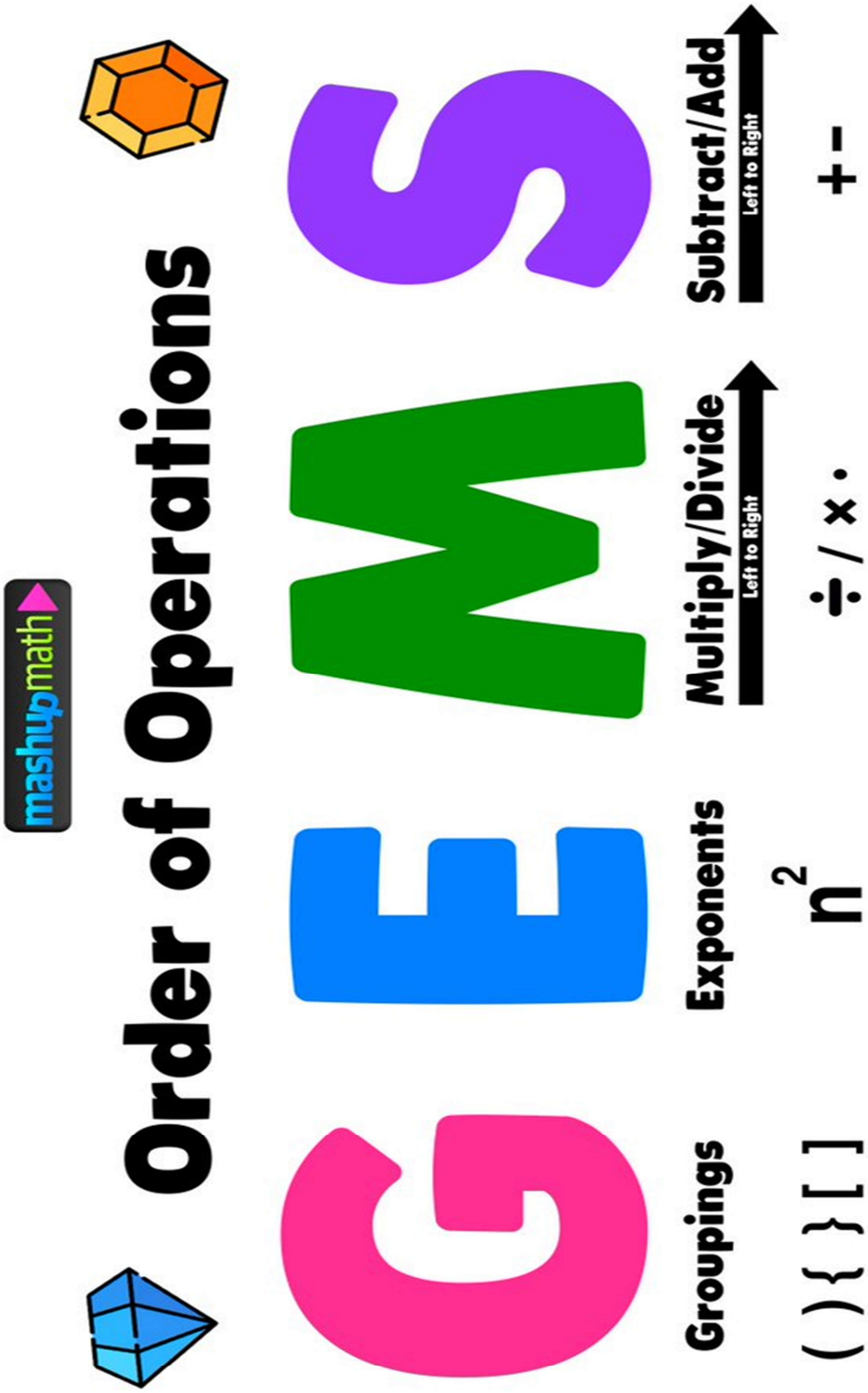
Definition in your own words	Facts/characteristics
Examples	**Nonexamples**

Word

Test Your Math Fluency

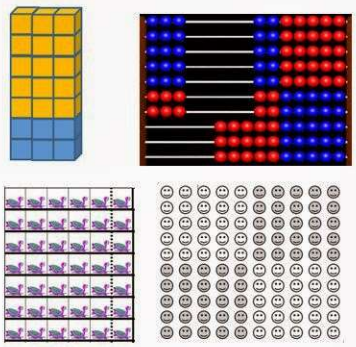
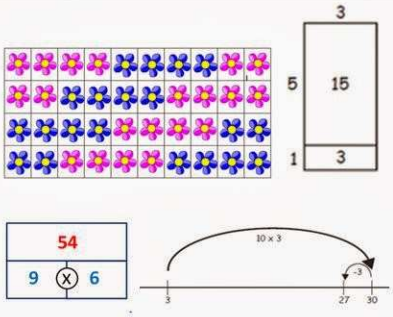
In the following simple math problems, a plus (+) sign means to multiply, a divide (÷) sign means to add, a minus (–) sign means to divide, and a times (×) sign means to subtract. Complete the problems.

17 x 2 =	8 + 2 =
14 ÷ 7**=**	15 x 3
8 + 2 =	14 – 7 =
9 + 11 =	6 x 5 =
4 x 3 =	8 + 3 =
6 ÷ 2 =	7 x 2 =
9 – 3 =	9 + 2 =
7 x 4 =	8 – 4 =
4 + 4 =	9 + 6 =
8 – 4 =	1 ÷ 1 =
12 x 2 =	8 x 7 =
20 – 1 =	13 – 1 =
9 – 1 =	16 – 4 =
5 + 6 =	9 x 2 =
2 x 1 =	9 ÷ 9 =
10 – 5 =	6 x 2 =
12 + 2 =	8 + 4 =
6 ÷ 6 =	10 – 2 =
8 + 5 =	4 – 1 =
6 + 6 =	18 – 3 =
17 x 2 =	8 + 2 =
14 ÷ 7 =	15 x 3 =



https://mashupmath.com/free-math-worksheets

C-R-A

Concrete	Representational	Abstract
Students manipulate hands-on, concrete materials	Students draw and observe diagrams, or watch the teacher touching and moving hands-on materials	Numbers and mathematical symbols
		x 4 Patterns 4 8 12 16 20 24 28 32 36 40 8 x 5 (4 x 2) x 5 4 x (2 x 5) 4 x 10 40 45 ÷ 5 (50-5) ÷ 5 (50÷5) - (5÷5) 10-1 9

Fractions Tiles Template

Black Line Fraction Strips With Labels

$\frac{1}{2}$	$\frac{2}{2}$

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

$\frac{1}{4}$	$\frac{2}{4}$	$\frac{3}{4}$	$\frac{4}{4}$

$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{5}{5}$

$\frac{1}{6}$	$\frac{2}{6}$	$\frac{3}{6}$	$\frac{4}{6}$	$\frac{5}{6}$	$\frac{6}{6}$

$\frac{1}{7}$	$\frac{2}{7}$	$\frac{3}{7}$	$\frac{4}{7}$	$\frac{5}{7}$	$\frac{6}{7}$	$\frac{7}{7}$

$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$	$\frac{5}{8}$	$\frac{6}{8}$	$\frac{7}{8}$	$\frac{8}{8}$

$\frac{1}{9}$	$\frac{2}{9}$	$\frac{3}{9}$	$\frac{4}{9}$	$\frac{5}{9}$	$\frac{6}{9}$	$\frac{7}{9}$	$\frac{8}{9}$	$\frac{9}{9}$

$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$	$\frac{5}{10}$	$\frac{6}{10}$	$\frac{7}{10}$	$\frac{8}{10}$	$\frac{9}{10}$	$\frac{10}{10}$

$\frac{1}{11}$	$\frac{2}{11}$	$\frac{3}{11}$	$\frac{4}{11}$	$\frac{5}{11}$	$\frac{6}{11}$	$\frac{7}{11}$	$\frac{8}{11}$	$\frac{9}{11}$	$\frac{10}{11}$	$\frac{11}{11}$

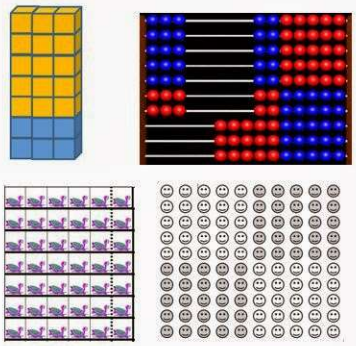
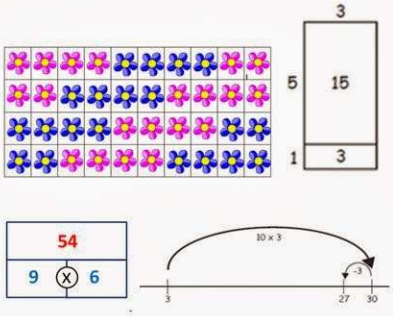
$\frac{1}{12}$	$\frac{2}{12}$	$\frac{3}{12}$	$\frac{4}{12}$	$\frac{5}{12}$	$\frac{6}{12}$	$\frac{7}{12}$	$\frac{8}{12}$	$\frac{9}{12}$	$\frac{10}{12}$	$\frac{11}{12}$	$\frac{12}{12}$

Free Math Worksheets at http://www.math-drills.com

There's More than One Way to Use a Multiplication Table!

x	1	2	3	4	5	6	7	8	9	10	11	12
1	*1*	2	3	4	5	6	7	8	9	10	11	12
2	2	*4*	6	8	10	12	14	16	18	20	22	24
3	3	6	*9*	12	15	18	21	24	27	30	33	36
4	4	8	12	*16*	20	24	28	32	36	40	44	48
5	5	10	15	20	*25*	30	35	40	45	50	55	60
6	6	12	18	24	30	*36*	42	48	54	60	66	72
7	7	14	21	28	35	42	*49*	56	63	70	77	84
8	8	16	24	32	40	48	56	*64*	72	80	88	96
9	9	18	27	36	45	54	63	72	*81*	90	99	108
10	10	20	30	40	50	60	70	80	90	*100*	110	120
11	11	22	33	44	55	66	77	88	99	110	*121*	132
12	12	24	36	48	60	72	84	96	108	120	132	*144*

C-R-A – Essential for Understanding

Concrete	Representational	Abstract
Students manipulate hands-on, concrete materials	Students draw and observe diagrams, or watch the teacher touching and moving hands-on materials	Numbers and mathematical symbols
		x 4 Patterns 4 8 12 16 20 24 28 32 36 40 8 x 5 (4 x 2) x 5 4 x (2 x 5) 4 x 10 40 45 ÷ 5 (50-5) ÷ 5 (50÷5) - (5÷5) 10-1 9

Purposeful Questions

Question type	Description	Examples
Gathering information	Students recall facts, definitions, or procedures.	• When you write an equation, what does the equal sign tell you? • What is the formula for finding the area of a rectangle?
Probing thinking	Students explain, elaborate, or clarify their thinking, including articulating the steps in solution methods or the completion of a task.	• As you drew that number line, what decisions did you make so that you could represent 7 fourths on it? • Can you show and explain more about how you used a table to find the answer to the Smartphone Plans task?
Making the mathematics visible	Students discuss mathematical structures and make connections among mathematical ideas and relationships	• What does your equation have to do with the band concert situation? • How does that array relate to multiplication and division?
Encouraging reflection and justification	Students reveal deeper understanding of their reasoning and actions, including making an argument for the validity of their work.	• How might you prove that 51 is the solution? • How do you know that the sum of two odd numbers will always be even?

Resources from the World Wide Web

Mathematical Reasoning

Annenberg Learner. Courses of study in such areas as algebra, geometry, and real-world mathematics. The Annenberg Foundation provides numerous professional development activities or just the opportunity to review information in specific areas of study. http://www.learner.org/index.html

Florida IPDAE. Lesson plans for both ABE and GED®-level mathematics developed by Florida adult educators. http://www.floridaipdae.org

Free Resources for Educational Excellence. Teaching and learning resources from a variety of federal agencies. This portal provides access to free resources. http://free.ed.gov/index.cfm

Get the Math. How algebra is used in real-world situations. http://www.thirteen.org/get-the-math/

Khan Academy. A library of over 2,600 videos covering everything from arithmetic to physics, finance, and history and 211 practice exercises. http://www.khanacademy.org/

The Math Dude. A full video curriculum for the basics of algebra. http://www.montgomeryschoolsmd.org/departments/itv/MathDude/MD_Downloads.shtm

Media4Math. This site provides you with information/articles of how math is used in the real world. http://www.media4math.com/MathInTheNews.asp

PBS Teacher Source. Lesson plans and lots of activities are included in the teacher section of PBS. http://www.pbs.org/teachers

Real-World Math. Ideas for how math is used in today's world. http://www.realworldmath.org/

Teacher Guide for the TI-30XS MultiView™ Calculator – A guide to assist you in using the new calculator, along with a variety of lesson plans for the classroom. http://education.ti.com/en/us/guidebook/details/en/62522EB25D284112819FDB8A46F90740/30x_mv_tg

http://education.ti.com/calculators/downloads/US/Activities/Search/Subject?s=5022&d=1009

TES. With more than 2.3 million registered online users in over 270 countries and territories, TES provides a wealth of free resources in all academic areas. http://www.tes.co.uk/