DIG INTO INTERVENTION: FRACTION ADDITION AND SUBTRACTION SKILL BOOSTERS

Presented by MathLinks Author
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For more information about our core programs for middle school and intervention programs for grades 6-9, please visit:

www.mathandteaching.org

In this session, you will learn:

- How to design short practice routines to fill gaps for skills related to fraction operations.

PHILOSOPHY

Skill Boosters allow students to work on "holes" in their background without losing ground on current topics.

- Focus on whole and rational numbers
- Use of visual representations of mathematical ideas
- Short intervals (about 10 minutes in each session) are more to achieve fluency than concentrated work on one topic.
- Explicit and systematic instruction

From a meta-analysis from the What Works Clearninghouse

HOW TO CREATE SKILL BOOSTERS

1. Deconstruct into specific skills.
2. Create examples for each skill.
3. Make a pre/post assessment.
4. Create a schedule.
5. Write daily problems.
6. Establish an accountability plan.

DECONSTRUCT SKILLS FOR FRACTION ADDITION AND SUBTRACTION

Skill	diagram	mentally	compute
Add or subtract proper fractions	x	x	x
Subtract fraction from whole number	x	x	x
Add fractions	x		x
Subtract fractions	x		x
Locate fractions on a number line	x		

CREATE EXAMPLES FOR EACH FRACTION SKILL

Description	Problem prompts / examples
Proper + or – (diagram)*	Show with diagram : OR Compute: (Level 1) $\frac{2}{7}+\frac{4}{7}, \frac{5}{7}-\frac{2}{7}, \frac{3}{7}+\frac{5}{7}$
Proper + or – (compute)	(Level 2) $\frac{3}{8}+\frac{1}{4}, \frac{7}{8}+\frac{3}{4}, \frac{3}{8}-\frac{1}{4}$ (Level 3) $\frac{2}{5}+\frac{1}{4}, \frac{3}{5}+\frac{3}{4}, \frac{2}{5}-\frac{1}{4}$
Fract + or – (mentally)	Compute mentally: $2\frac{1}{3}+6+5\frac{2}{3}, 2\frac{3}{4}+4\frac{2}{7}+5\frac{1}{4}$
Whole – fract (diagram)*	Show with diagram : OR Compute mentally: (Level1) $1-\frac{1}{4}, 1-\frac{3}{4}$
Whole – fract (mentally)	(Level 2) $3-\frac{3}{4}$ (Think : $3-\frac{3}{4}=2+(1-\frac{3}{4})$) (Level 3) $4-1\frac{3}{4}$ (Think: $4-1\frac{3}{4}=3-\frac{3}{4}$)

MAKE A PRE/POST FRACTION ASSESSMENT

2. Compute. $\frac{3}{5}+1\frac{7}{9}+\frac{2}{5}$ diagram, mental math

A. $1\frac{12}{19}$ B. $1\frac{12}{45}$ C. $2\frac{12}{45}$ D. $2\frac{7}{9}$ E. None of these

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3. Find the sum. $2\frac{1}{12}+5\frac{3}{4}$ diagram, compute

A. $7\frac{1}{4}$ B. $7\frac{1}{3}$ C. $7\frac{5}{12}$ D. $7\frac{5}{6}$

---

4. Compute. $10-1\frac{7}{10}$ diagram, mental math

A. $9\frac{7}{10}$ B. $9\frac{3}{10}$ C. $8\frac{3}{10}$ D. $\frac{3}{10}$

CREATE A SCHEDULE

Skills rotation: Each week students practice four of the skills daily.

6 weeks	A	B	C	D (Review)
Week 1	Proper + or – (diagram)	Proper + or – (compute)	Fract + or – (mentally)	whole (mult) equiv (big 1)
Week 2	Whole – fract (diagram)	Whole – fract (mentally)	Fract + (diagram)	whole (div) equiv (mixed)
Week 3	Fract – (diagram)	Fract + (compute)	Fract + or – (mentally)	order of ops number lines (whole)
Week 4	Fract – (compute)	number line (fract)	Fract + (compute)	order fractions whole (div)
Week 5	Fract + (compute)	Fract – (Compute)	number line (fract)	equiv (big 1) notation

WRITE DAILY PROBLEMS

Example (Week 1): Write problems on board. Students do work in a notebook or on a provided template.

Wk 1	A	B	C	D (Review)
Day 1	Show with a diagram: $\frac{1}{4}+\frac{3}{4}$	Compute: $\frac{1}{4}+\frac{3}{4}$	Compute mentally: $1\frac{1}{4}+3\frac{3}{4}$	Compute: 65(17)
Day 2	Show with a diagram: $\frac{5}{6}-\frac{1}{6}$	Compute: $\frac{5}{6}-\frac{1}{6}$	Compute mentally: $3\frac{5}{6}-1\frac{1}{6}+\frac{1}{6}$	Find n: $\frac{3}{8}=\frac{n}{40}$
Day 3	Show with a diagram: $\frac{3}{4}+\frac{1}{2}$	Compute: $\frac{3}{4}+\frac{1}{2}$	Compute mentally: $2+\frac{3}{4}-1\frac{1}{4}$	Compute: (805)(3020)
Day 4	Show with a diagram: $\frac{1}{2}-\frac{1}{3}$	Compute: $\frac{1}{2}-\frac{1}{3}$	Compute mentally: $2\frac{1}{3}+6+5\frac{2}{3}$	Write in simplest form: $\frac{90}{60}$

Proper + or - diagram	Proper + or – compute	Fraction + or – mentally	Whole multiplication Big I equivalence

Same problem type daily for about a week

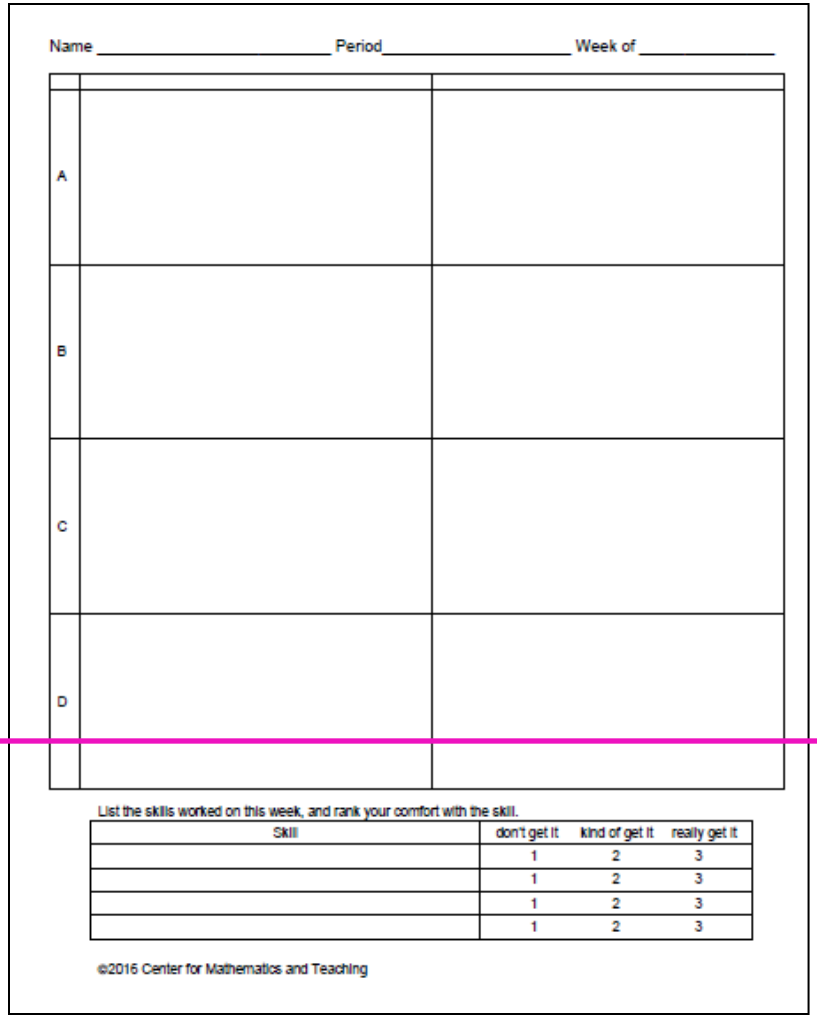
FOLLOW THE SCHEDULE

Skills rotation: Each week students practice four of the skills daily.

6 weeks	A	B	C	D (Review)
Week 1	Proper + or – (diagram)	Proper + or – (compute)	Fract + or – (mentally)	whole (mult) equiv (big 1)
Week 2	Whole – fract (diagram)	Whole – fract (mentally)	Fract + (diagram)	whole (div) equiv (mixed)
Week 3	Fract – (diagram)	Fract + (compute)	Fract + or – (mentally)	order of ops number lines (whole)
Week 4	Fract – (compute)	number line (fract)	Fract + (compute)	order fractions whole (div)
Week 5	Fract + (compute)	Fract – (Compute)	number line (fract)	equiv (big 1) notation

Write daily problems for Week 2, etc…

ESTABLISH AN ACCOUNTABILITY PLAN



Name _____ Period_____ Week of _____

A		
B		
C		
D		

List the skills worked on this week, and rank your comfort with the skill.

Skill	don't get it	kind of get it	really get it
	1	2	3
	1	2	3
	1	2	3
	1	2	3

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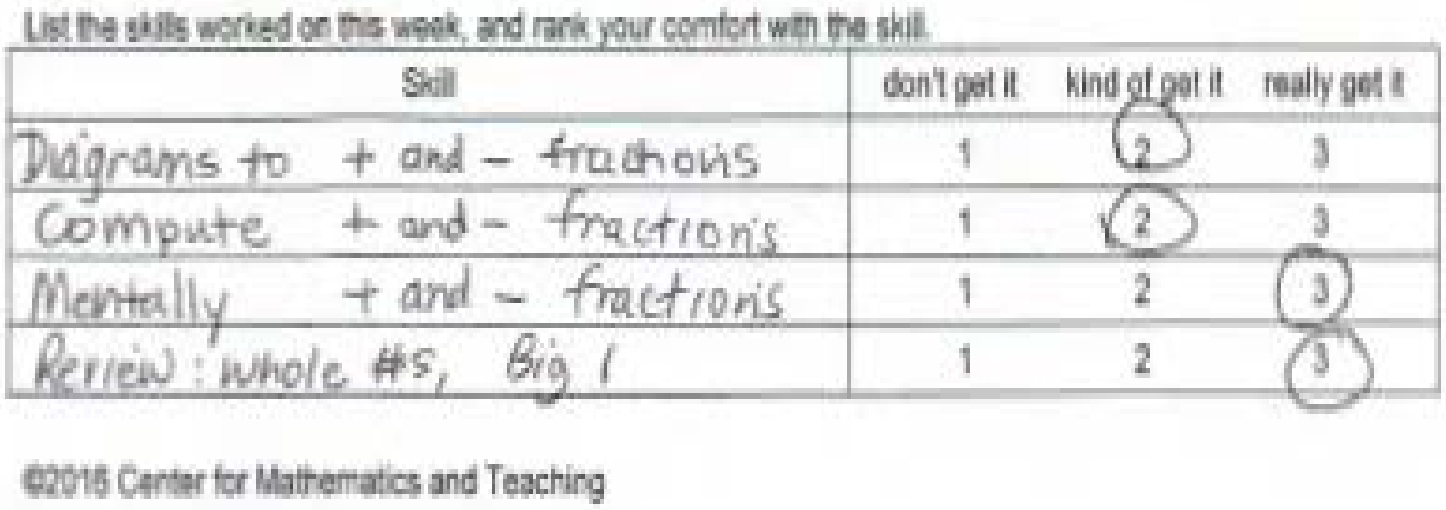
CONSIDER A SELF-MONITORING COMPONENT



List the skills worked on this week, and rank your comfort with the skill.

Skill	don't get it	kind of get it	really get it
Diagrams to + and − fractions	1	2	3
Compute + and − fractions	1	2	3
Mentally + and − fractions	1	2	3
Review: whole #s, Big 1	1	2	3

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HANDOUT

SKILL BOOSTERS: FRACTION ADDITION AND SUBTRACTION

*Students may be asked to draw pictures first, or asked to draw pictures as an intervention if they get the problems incorrect.

Description	Problem prompts / examples	Reference Gr 8, RG1
Proper + or – (diagram)*	Show with diagram : OR Compute: (Level 1) $\frac{2}{7}+\frac{4}{7}, \frac{5}{7}-\frac{2}{7}, \frac{3}{7}+\frac{5}{7}$ (Level 2) $\frac{3}{8}+\frac{1}{4}, \frac{7}{8}+\frac{3}{4}, \frac{3}{8}-\frac{1}{4}$ (Level 3) $\frac{2}{5}+\frac{1}{4}, \frac{3}{4}+\frac{3}{5}, \frac{2}{5}-\frac{1}{4}$	pg 37, 38
Proper + or – (compute)		
Fract + or – (mentally)	Compute mentally: $2\frac{1}{3}+6+5\frac{2}{3}$; $2\frac{3}{4}+4\frac{2}{7}+5\frac{1}{4}$	pg 39
Whole – fract (diagram)*	Show with diagram : OR Compute mentally: (Level1) $1-\frac{1}{4}$, $1-\frac{3}{4}$ (Level 2) $3-\frac{3}{4}$ (Think : $3-\frac{3}{4}=2+(1-\frac{3}{4})$) (Level 3) $4-1\frac{3}{4}$ (Think: $4-1\frac{3}{4}=3-\frac{3}{4}$)	pg 39
Whole – fract (mentally)		
Fract + (diagram)*	Show with diagram: OR Compute (as mixed numbers): OR Compute (as improper fractions: (Level 1) $1\frac{1}{8}+2\frac{3}{4}$, $1\frac{7}{8}+2\frac{3}{4}$ (Level 2) $2\frac{1}{3}+5\frac{2}{5}$, $3\frac{2}{3}+5\frac{4}{5}$	pg 40,43
Fract + (compute)		
Fract – (diagram)*	Show with diagram: OR Compute (as mixed numbers): OR Compute (as improper fractions: (Level 1) $5\frac{2}{3}-3\frac{1}{6}$, $5\frac{2}{3}-3\frac{2}{5}$ (Level 2) $5\frac{1}{3}-3\frac{2}{5}$, $5\frac{1}{2}-1\frac{3}{5}$	pg 41-43
Fract – (compute)		
number line (fract)	Find A: $\frac{1}{2}$ A 2	

SKILL BOOSTERS: FRACTION ADDITION AND SUBTRACTION (Continued)

Skills rotation: Each week students practice four of the skills daily.

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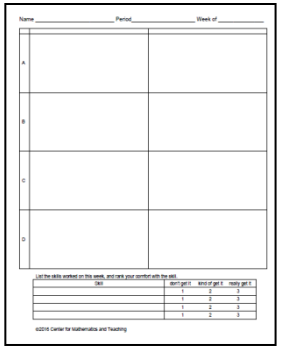
Day 4	Show with a diagram: $\frac{1}{2}-\frac{1}{3}$	Compute: $\frac{1}{2}-\frac{1}{3}$	Compute mentally: $2\frac{1}{3}+6+5\frac{2}{3}$	Write in simplest form: $\frac{90}{60}$



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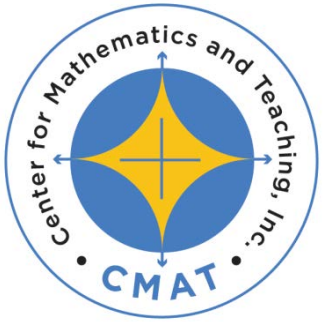

OUR PROGRAMS:

- Comprehensive 6-8 curriculum
- Customized intervention grades 6-9
- Special education programs
- Supplemental programs
- Professional development

For more information, please visit our website at www.mathandteaching.org

THANK YOU!

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