

# **DIG INTO INTERVENTION: FRACTION EQUIVALENCE AND ORDERING SKILL BOOSTERS**

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## In this session, you will learn:

- How to design a short practice routines to fill gaps for skills related to fraction equivalence and ordering.



# 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 Clearinghouse



# 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 INTO FRACTION SKILLS

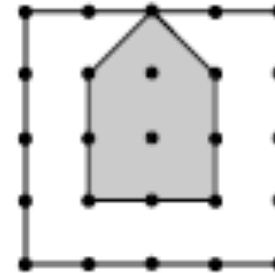
- Notation
- Fraction models
- Order fractions
- Equivalence with diagrams
- Equivalence with the “big 1”
- Equivalence with mixed numbers
- Number line applications

# CREATE EXAMPLES FOR EACH FRACTION SKILL

Description	Problem prompts / examples
notation	Write 4 divided by 10 in three different ways Write $\frac{4}{10}$ in three different ways Write $4 \div 10$ in three different ways Write $10 \overline{)4}$ in three different ways
fractions models	Draw a picture of $\frac{1}{4}$ using a set model. Draw a picture of $\frac{1}{4}$ using an area model. Draw a picture of $\frac{1}{4}$ using a linear model.
order fractions	Place $\frac{1}{2}$ , $\frac{1}{3}$ and $\frac{3}{4}$ on a number line. Explain reasoning.
equivalence with diagrams	Show that $\frac{1}{2} = \frac{2}{4}$ using a splitting diagram Show $\frac{1}{2} = \frac{2}{4}$ using replicating diagram Show $\frac{2}{4} = \frac{1}{2}$ using a grouping diagram.
equivalence with "big 1"	Use the "big 1" to find n: $\frac{3}{4} = \frac{n}{12}$ Use the "big 1" write $\frac{24}{28}$ in simplest form.
equivalence with mixed numbers	Write $3 \frac{3}{4}$ as the sum. Write $3 \frac{3}{4}$ as an improper fraction Write $\frac{8}{3}$ as a mixed number and as a sum.
number lines	Locate $5 \frac{1}{2}$ on a number line. Locate $-2 \frac{3}{4}$ on a number line. (if pkt 14 is done earlier)

# MAKE A PRE/POST FRACTION ASSESSMENT

8. If the large square is equal to one whole, what fraction does the shaded area represent?

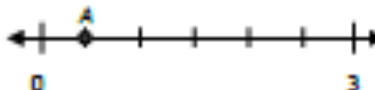


Fraction models

- A.  $\frac{5}{16}$       B.  $\frac{3}{8}$       C.  $\frac{5}{11}$       D.  $\frac{5}{1}$

9. What number does A represent?

Number line applications



- A. 1      B.  $\frac{1}{2}$       C.  $\frac{1}{3}$       D.  $\frac{1}{6}$       E. None of these

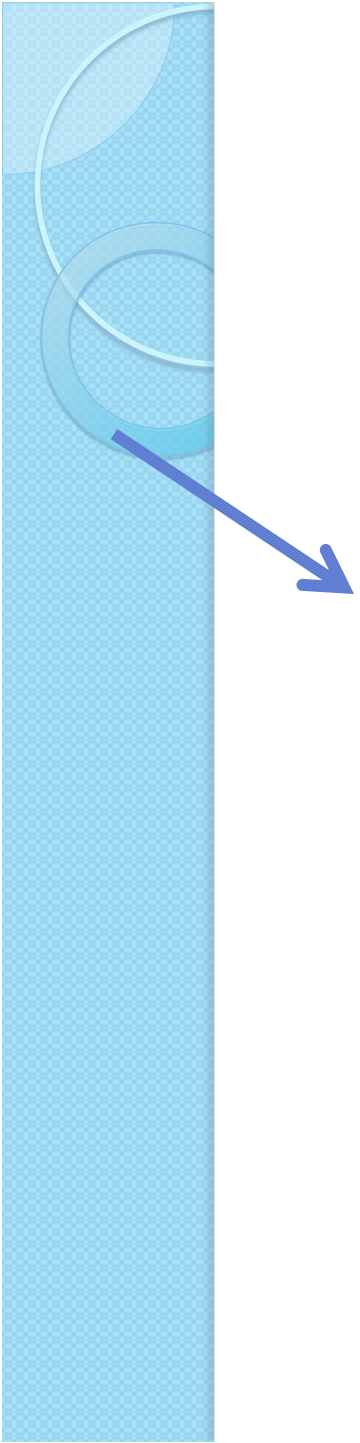
10. Which number is equivalent to  $\frac{15}{8}$ ?

Equivalence with mixed numbers

- A.  $15 - 8$       B.  $1 + \frac{5}{8}$       C.  $1 + \frac{6}{8}$       D.  $1 + \frac{7}{8}$       E. None of these

# CREATE A SCHEDULE

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



5 weeks	A	B	C	D (Whole numbers)
Week 1	notation	fraction models	order fractions	mult by 10n, whole (add/subt)
Week 2	equiv (diagram)	equiv (big 1)	equiv (mixed #s)	identify factors, whole (mult)
Week 3	notation	equiv (diag)	number lines	LCM/GCF whole (div)
Week 4	equiv (big 1)	fraction models	order fractions	order of ops whole (mult)
Week 5	number lines	equiv (mixed #)	order fractions	whole (div) number line



# 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 (Whole numbers)
Day 1	Write 3 divided by 12 in three different ways	Draw $\frac{3}{4}$ using a set model.	Place $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{3}{4}$ on number line. Explain.	Compute: $500 + 82 - 75$
Day 2	Write 12 divided by 4 in three different ways	Draw $\frac{2}{5}$ using a linear model	Place $\frac{1}{5}$ , $\frac{1}{8}$ , $\frac{1}{4}$ on number line. Explain	Compute: $23 \times 1000$ , $23 \times 10$
Day 3	Write $\frac{4}{10}$ in three different ways	Draw $\frac{5}{9}$ using an area model	Place $\frac{3}{4}$ , $\frac{3}{5}$ , $\frac{3}{8}$ on number line. Explain.	Compute: $10002 - 45$
Day 4	Write $\frac{15}{2}$ in three different ways	Draw $1\frac{2}{3}$ using an area model.	Place $\frac{3}{4}$ , $\frac{7}{8}$ , $\frac{4}{5}$ on number line. Explain.	Compute: $532 \times 10,000$

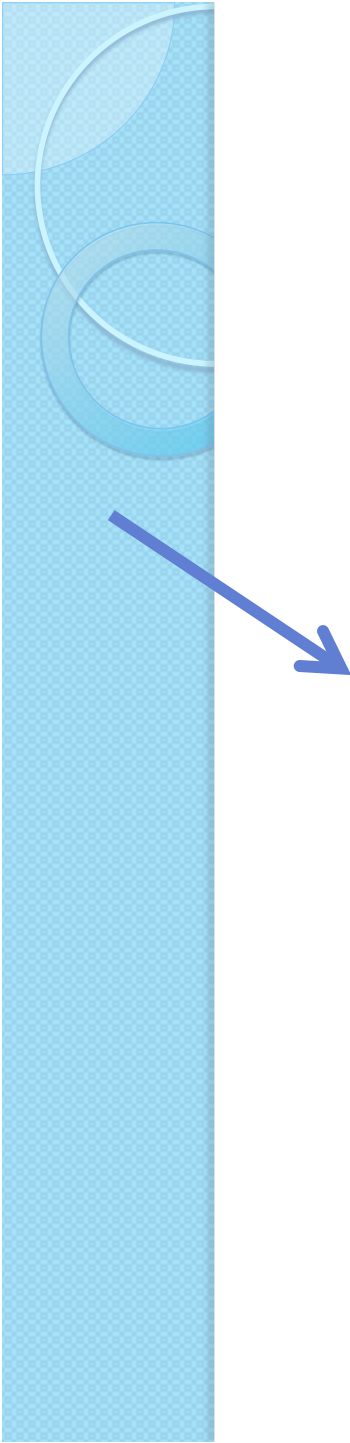
  

notation	fraction models	order fractions	mult by 10n, whole (add/subt)
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Same problem type daily for about a week

# FOLLOW THE SCHEDULE

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



5 weeks	A	B	C	D (Whole numbers)
Week 1	notation	fraction models	order fractions	mult by 10n, whole (add/subt)
Week 2	equiv (diagram)	equiv (big 1)	equiv (mixed #s)	identify factors, whole (mult)
Week 3	notation	equiv (diag)	number lines	LCM/GCF whole (div)
Week 4	equiv (big 1)	fraction models	order fractions	order of ops whole (mult)
Week 5	number lines	equiv (mixed #)	order fractions	whole (div) number line

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
notation	1	2	3
fraction models	1	2	3
order fractions	1	2	3
whole number review	1	2	3

# HANDOUT

## SKILL BOOSTERS: FRACTION CONCEPTS

Description	Problem prompts / examples	Reference Gr 6, RG1
notation	Write 4 divided by 10 in three different ways. Write $4 \div 10$ in three different ways. Write $10 \overline{)4}$ in three different ways.	pg 18
fractions models	Draw a picture of $\frac{1}{4}$ using a set model. Draw a picture of $\frac{1}{4}$ using an area model. Draw a picture of $\frac{1}{4}$ using a linear model.	pg 29-30
order fractions	Place $\frac{1}{6}$ , $\frac{1}{3}$ and $\frac{3}{4}$ on a number line. Explain reasoning.	pg 31
equivalence with diagrams	Show that $\frac{1}{6} = \frac{2}{12}$ using a splitting diagram. Show $\frac{1}{6} = \frac{2}{12}$ using a replicating diagram. Show $\frac{2}{12} = \frac{1}{6}$ using a grouping diagram.	pg 33-34
equivalence with "big 1"	Use the "big 1" to find $n$ : $\frac{1}{6} = n/12$ . Use the "big 1" write $24/28$ in simplest form.	pg 32
equivalence with mixed numbers	Write $3 \frac{1}{6}$ as the sum. Write $3 \frac{1}{6}$ as an improper fraction. Write $8/3$ as a mixed number and as a sum.	pg 34-35
number lines	Locate $5 \frac{1}{6}$ on a number line. Locate $-2 \frac{1}{6}$ on a number line. (if pkt 14 is done earlier)	pg 34

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

6 weeks	A	B	C	D (Whole numbers)
Week 1	notation	fraction models	order fractions	mult by 10n, whole (add/subt)
Week 2	equiv (diagram)	equiv (big 1)	equiv (mixed #s)	Identify factors, whole (mult)
Week 3	notation	equiv (diag)	number lines	LCM/GCF whole (div)
Week 4	equiv (big 1)	fraction models	order fractions	order of ops whole (mult)
Week 5	number lines	equiv (mixed #)	order fractions	whole (div) number line

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

Wk 1	A	B	C	D (Whole numbers)
Day 1	Write 3 divided by 12 in three different ways	Draw $\frac{1}{6}$ using a set model.	Place $\frac{1}{6}$ , $\frac{1}{3}$ , $\frac{1}{4}$ on number line. Explain.	Compute: $500 \div 82 = 75$
Day 2	Write 12 divided by 4 in three different ways	Draw $\frac{2}{5}$ using a linear model.	Place $\frac{1}{5}$ , $\frac{1}{8}$ , $\frac{1}{4}$ on number line. Explain.	Compute: $23 \times 1000$ , $23 \times 10$
Day 3	Write $4 \div 10$ in three different ways	Draw $\frac{5}{9}$ using an area model.	Place $\frac{1}{6}$ , $\frac{3}{5}$ , $\frac{3}{8}$ on number line. Explain.	Compute: $10002 \div 45$
Day 4	Write $15 \div 2$ in three different ways	Draw $1 \frac{2}{3}$ using an area model.	Place $\frac{1}{6}$ , $\frac{7}{8}$ , $\frac{4}{5}$ on number line. Explain.	Compute: $532 \times 10,000$

Name \_\_\_\_\_ Period \_\_\_\_\_ Week of \_\_\_\_\_

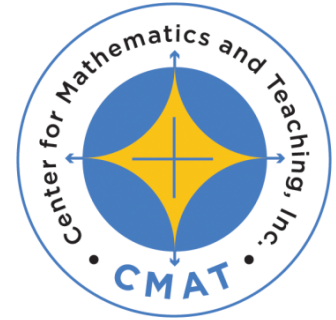
A		
B		
C		
D		

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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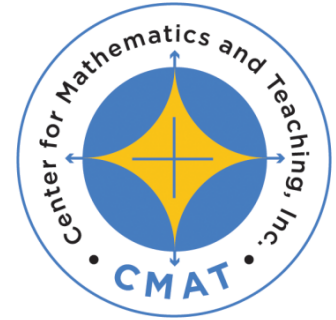
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# THANK YOU!

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