

3_G4. Compare Decimals

Materials: screening cards; symbol cards- >, <, and = available: grid paper, base ten blocks

Place a card in front of the student one at a time, along with the symbol cards, and say: "Choose the comparison symbol that shows the relationship between these two numbers." Once they have placed the symbol ask, "Can you read this for me?" Then follow up with, "How do you know?"

- A. 0.16 0.2
- B. 0.25 0.19
- C. 0.4 0.40

Abilities	Challenges/Strategies	Notes
<input checked="" type="checkbox"/> 0.16 < 0.2 <input type="checkbox"/> sound justification <input checked="" type="checkbox"/> 0.25 > 0.19 <input type="checkbox"/> sound justification <input checked="" type="checkbox"/> 0.4 = 0.40 <input type="checkbox"/> sound justification	<input type="checkbox"/> Thinks more digits is greater <input type="checkbox"/> Place value difficulty <input type="checkbox"/> Incorrect comparison 0.16__ 0.2 <input type="checkbox"/> Incorrect comparison 0.25 < 0.19 <input type="checkbox"/> Incorrect comparison 0.4__ 0.40 <input checked="" type="checkbox"/> Does not read decimals using place value language (i.e. reads "point two five" or "point twenty-five" instead of twenty-five hundredths) <input type="checkbox"/> Unable to justify	<p>"Are decimals almost like fractions?"</p> <p>"How do I pronounce them?"</p> <p><input checked="" type="checkbox"/> Justifies based on generalization of fraction pieces/sizes.</p> <p>$\frac{1}{4} = \frac{1}{40}$ - learned that in math</p>

4_G4. Compare Fractions

Materials: screening cards; symbol cards- >, <, and =

Place a fraction comparison card and comparison symbol cards in front of the student one at a time and say, "Choose the comparison symbol that shows the relationship between these two fractions." Once they have placed the symbol ask, "Can you read this for me?" Then follow up with, "How do you know?"

- A. $\frac{5}{9}$ $\frac{5}{12}$
- B. $\frac{6}{8}$ $\frac{3}{4}$
- C. $\frac{4}{5}$ $\frac{6}{7}$

Abilities	Challenges/Strategies	Notes
<input checked="" type="checkbox"/> $\frac{5}{9} > \frac{5}{12}$ <input checked="" type="checkbox"/> $\frac{6}{8} = \frac{3}{4}$ SC <input checked="" type="checkbox"/> $\frac{4}{5} < \frac{6}{7}$ SC <input type="checkbox"/> Compares to benchmarks $\frac{1}{2}$ or 1	<input type="checkbox"/> Whole number overgeneralization (looks for largest or smallest number) <input type="checkbox"/> Thinks if numbers are not the same fractions must not be equivalent <input type="checkbox"/> No use of benchmarking (comparing to common fractions like $\frac{1}{2}$) <input type="checkbox"/> Creates visual representation of fractions <input checked="" type="checkbox"/> Reasons about number of pieces and piece size <input type="checkbox"/> Other	<p>"I get the bigger/less than symbol confused."</p> <p>smaller denominator - larger pieces</p> <p>$\frac{3}{4}$ is bigger than $\frac{4}{8}$ because $\frac{3}{4}$ is 1 away and $\frac{4}{8}$ is 2 away from 1.</p> <p>self-corrected visual model and 4 is half of 8</p>

5_G4. Operations with Whole Numbers

Materials screening cards;
available: paper and pencil

Place card in front of the student and ask, "What is the answer to this problem?"
If needed, follow up: "How did you figure out your answer?"

- A. $765 + 218$
- B. $5,600 \div 7$
- C. 43×21

Abilities	Challenges/Strategies	Notes
<p><input checked="" type="checkbox"/> $765+218= (983)$ Model- partial sum – standard – compensation- other</p> <p><input checked="" type="checkbox"/> $5,600 \div 7= (800)$ strategy: <i>Not Fluent</i></p> <p><input checked="" type="checkbox"/> $43 \times 21+ (903)$ Model- partial products – standard – compensation- other</p>	<p><input type="checkbox"/> $765+218=$ _____ Strategy attempted: <i>Standard algorithm</i></p> <p><input type="checkbox"/> $5,600 \div 7$ Strategy attempted:</p> <p><input type="checkbox"/> 43×21 Strategy attempted: <i>area model; partial product strategy</i></p> <div style="text-align: center;"> $\begin{array}{r} 40 \\ 3 \\ \hline 60 \end{array} \begin{array}{r} 20 \\ 1 \\ \hline 03 \end{array}$ </div>	<p><i>paper pencil ; partial quotient strategy</i></p>

Estimating Sums and Differences (3_G3)

Materials: Screening cards

- A. Place $126 + 597$ in front of student. "Do you think the answer to this problem is more than 700 or less than 700?" Follow up: "How did you figure out your answer?"
- B. Place $1,354 - 426$ in front of student. "Do you think the answer to this problem is more than 1,000 or less than 1,000?" Follow up: "How did you figure out your answer?"

Abilities	Challenges/Strategies	Notes
<p><input type="checkbox"/> $126+597$ (more)</p> <p><input type="checkbox"/> sound justification</p> <p><input type="checkbox"/> $1354-426$ (less)</p> <p><input type="checkbox"/> sound justification</p>	<p><input type="checkbox"/> Incorrect (+) estimate</p> <p><input type="checkbox"/> Unable to justify (+)</p> <p><input type="checkbox"/> Incorrect (-) estimate</p> <p><input type="checkbox"/> Unable to justify (-)</p>	

6_G4. Addition & Subtraction Strategies (Fractions)

Materials: screening cards available: paper and pencil

Place card in front of the student and ask, "What is the answer to this problem?"
If needed, follow up with "How did you figure out your answer?"

- A. $\frac{2}{7} + \frac{4}{7}$
- B. $1\frac{3}{10} + 4\frac{7}{10}$
- C. $8\frac{5}{8} - 2\frac{3}{8}$

Abilities	Challenges/Strategies	Notes
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> $\frac{2}{7} + \frac{4}{7} = \frac{6}{7}$ <input checked="" type="checkbox"/> $1\frac{3}{10} + 4\frac{7}{10} = 5\frac{10}{10}$ or 6 <input checked="" type="checkbox"/> $8\frac{5}{8} - 2\frac{3}{8} = 6\frac{2}{8}$ or $6\frac{1}{4}$ <input checked="" type="checkbox"/> Explains approach 	<ul style="list-style-type: none"> <input type="checkbox"/> Adds numerators <input type="checkbox"/> Adds denominators <input type="checkbox"/> Adds both <input checked="" type="checkbox"/> Other 	<p><i>Knows denominator needs to be the same to add. 10</i></p> <p><i>5 no 6 because 10 is one</i></p> <p><i>Does not say "and" between whole number and fraction "six two eighths"</i></p>

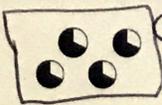
the

7_G4. Multiplication of Fractions

Materials: screening cards

Place the card $4 \times \frac{2}{3}$ in front of the student and say, "Take a look at this card." Next, spread the remaining cards in the set out in front of the student and ask,

- A. "Which of these cards is another way to show or represent $4 \times \frac{2}{3}$?"
- B. Point to the $4 \times \frac{2}{3}$ card and ask, "What is the answer to this problem?" If needed, follow up with, "How did you figure out your answer?"

Abilities	Challenges/Strategies	Notes
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Selects the three correct representations. <p><i>(3)</i> $8 \times \frac{1}{3}$? $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3}$ <i>(1)</i></p> <p>and  <i>(2)</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> $4 \times \frac{2}{3} = \frac{8}{3}$ or $2\frac{2}{3}$ <input type="checkbox"/> sound justification 	<ul style="list-style-type: none"> <input type="checkbox"/> Difficulty with groups of <input type="checkbox"/> Difficulty with equivalent expression <input type="checkbox"/> Difficulty with repeated addition <input type="checkbox"/> Difficulty interpreting number line <input type="checkbox"/> Other 	<p><i>Instantly saw repeated addition and visual model; hesitated w/ $8 \times \frac{1}{3}$</i></p> <p><i>Tried to change $\frac{8}{3}$ into a mixed numeral through by seeing how many 3's in 8 but lost track of steps.</i></p>

8_G4. Fraction Word Problems

Materials Screening cards; paper and pencil; available: fraction pieces or bars, number lines, grid paper

Place card in front of the student and ask the student to read the problem aloud and then solve it. For each problem, ask follow up question: "How did you figure out your answer?" If the student does not express the answer as a mixed numeral, follow up: "Is there another way to express this answer?"

- A. There are 2 containers of paint with $\frac{3}{5}$ of a gallon in each container. How many gallons of paint are there?
- B. Trina's watering can has 2 gallons of water in it. After she waters her plants, there is $\frac{3}{4}$ of a gallon of water in the watering can. How much water did she use?
- C. There are 7 children sitting at the table. Paulina gives $\frac{1}{2}$ of an apple to each of them. How many apples does she give out?

Abilities	Challenges/Strategies	Notes
<p><input checked="" type="checkbox"/> $2 \times \frac{3}{5} = 1 \frac{1}{5}$ or $\frac{6}{5}$</p> <p><input checked="" type="checkbox"/> Correct unit (gallons)</p> <p><input checked="" type="checkbox"/> Strategy: visual model, <u>additive</u>; standard multiplication</p> <p><input checked="" type="checkbox"/> $2 - (1 \frac{1}{4} \text{ or } \frac{5}{4}) = \frac{3}{4}$ $2 - \frac{3}{4} = 1 \frac{1}{4}$</p> <p><input checked="" type="checkbox"/> Strategy: <u>regrouping</u>, adding up, expressing as improper fractions & using algorithm.</p> <p><input type="checkbox"/> $7 \times \frac{1}{2} = 3 \frac{1}{2}$ or $\frac{7}{2}$</p> <p><input type="checkbox"/> Correct unit (apples)</p> <p><input type="checkbox"/> Strategy: $\frac{1}{2}$ of 7; algorithm</p>	<p><input type="checkbox"/> $2 \times \frac{3}{5} = \underline{\quad}$</p> <p>Strategy attempted:</p> <p><input type="checkbox"/> Incorrect unit</p> <p><input type="checkbox"/> $2 - \underline{\quad} = \frac{3}{4}$</p> <p>Strategy attempted:</p> <p><input type="checkbox"/> Incorrect unit (forgot to ask!)</p> <p><input type="checkbox"/> $7 \times \frac{1}{2} = \underline{\quad}$</p> <p>Strategy attempted: $7 - \frac{1}{2} = 6 \frac{1}{2}$; Had student reread and explain what it would look like going around the table.</p> <p><input type="checkbox"/> Incorrect unit</p>	<p>$\frac{3}{5} + \frac{3}{5} = \frac{6}{5}$</p> <p>$2 - \frac{3}{4} = 1 \frac{1}{4}$ subtraction</p> <p>"Oh, so I give $\frac{1}{2}, \frac{1}{2}, \frac{1}{2} \dots$ until I get to 7 people". Oh, I get it</p> <p>Does this show that?</p> <p>Oh, wait! I got it.</p> <p>Used $7 \times \frac{1}{2} =$ (I don't know how to do that)</p> <p>easier: $\frac{1}{2} + \frac{1}{2} \dots$ repeated addition (skip) counted</p>

Name Student A Age _____ Date Spring 2018
 School _____ Grade _____ Teacher _____

EMDI Scoring Guide: Grade 4

- 4: **ON TARGET** Shows automaticity and/or uses appropriate strategy for grade level; able to explain thinking and makes no mistakes or self corrects without prompting.
- 3: **CLOSE TO TARGET** Has good core understanding but it is not completely developed; growing fluency and ability to explain thinking; may need prompting.
- 2: **BELOW TARGET** Shows some understanding but has gaps or flaws in thinking, fluency and explanation.
- 1: **VERY BELOW TARGET** Shows little to no understanding.

*NOTE: Only grade level items are included on the scoring guide. (Foundational skills not are included.)

ITEM 1 Rounding: Place Value	A. Rounds 4,546 to the nearest 100. (4,500)	1	2	3	4	Total 4 / 8
	B. Rounds 48.67 to the nearest tenth. (48.7)	1	2	3	4	
<i>Has not worked with decimals.</i>						

ITEM 2 Decimal Fraction Identification	A. Writes 6/10 as a decimal. (0.6)	1	2	3	4	Total 0 / 12
	B. Writes 54/100 as a decimal. (0.54)	1	2	3	4	
	C. Writes 0.07 as a fraction (7/100)	1	2	3	4	
<i>No experience with decimals.</i>						

ITEM 3 Compare Decimals	A. $0.16 < 0.2$	1	2	3	4	Total 5 / 12
	B. $0.25 > 0.19$	1	2	3	4	
	C. $0.40 = 0.4$	1	2	3	4	
<i>Thinks of decimals like fractional pieces.</i>						

Name Student A Age _____ Date Spring 2018
 School _____ Grade _____ Teacher _____

ITEM 4 Compare Fractions	A. $5/9 > 5/12$	1	2	3	(4)	Total 10/12
	B. $6/8 = 3/4$	1	2	(3)	4	
	C. $4/5 < 6/7$	1	2	(3)	4	

Though not solid with the symbols, student has basic concepts of how to compare fractions.

ITEM 5 Whole Number Operations	A. $765 + 218$ (983)	1	2	(3)	(4)	Total 10/12
	B. $5,600 \div 7$ (800)	1	2	(3)	4	
	C. 43×21 (903)	1	2	(3)	4	

Has strategies to solve, but could be more fluent. Needed paper/pencil for all of them. Stuck to standard algorithm or partial quotient/product. All correct.

ITEM 6 Addition Subtraction Fractions	A. $2/7 + 4/7$ (6/7)	1	2	3	(4)	Total 12/12
	B. $1 \frac{3}{10} + 4 \frac{7}{10}$ (5 $\frac{10}{10}$ or 6)	1	2	3	(4)	
	C. $8 \frac{5}{8} - 2 \frac{3}{8}$ (6 $\frac{2}{8}$ or 6 $\frac{1}{4}$)	1	2	3	(4)	

Solid understanding and able to explain.

ITEM 7 Multiplying Fractions	A. Selects 3 cards that represent $4 \times 2/3$.	1	2	(3)	4	Total 7/8
	B. Solves $4 \times 2/3$. (8/3 or 2 $\frac{2}{3}$)	1	2	3	(4)	

Selected 3 cards, though was not sure about $8 \times \frac{1}{3}$.

Name Student A Age _____ Date Spring 2018
 School _____ Grade _____ Teacher _____

ITEM 8 Fraction Word Problems	A. $2 \times \frac{3}{5} = \frac{6}{5}$ or $1 \frac{1}{5}$ gallons)	1	2	3	4	Total 9 / 12
	B. $2 - \frac{1}{4} = \frac{7}{4}$ ($\frac{5}{4}$ or $1 \frac{1}{4}$ gallons)	1	2	3	4	
	C. $7 \times \frac{1}{2} = \frac{7}{2}$ or $3 \frac{1}{2}$ apples)	1	2	3	4	

A. Additive
 B. Subtraction
 C. Needed prompting, but got the answer.

missing labels on B & C.
 Teacher did not ask.

Grade 4 Results									
Category	1	2	3	4	5	6	7	8	Total
Earned Points	4	0	5	10	10	12	7	9	57
Possible Points	8	12	12	12	12	12	8	12	88

65%

Comments:

- Needs instruction with decimals.
- Could benefit from Whole Number Mental Math - Math talks.
- Continue developing understanding of multiplying whole number and fraction to move beyond additive strategy.