

MDI Questions/Recording Sheet: Grade 8

Name _____ Teacher _____ Date _____

Green = grade level prompts; Yellow = prior grade level prompts

1_G8. Compare **Materials:** screening cards, symbols cards

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 placed the symbol, ask, “Can you read this for me?” Follow up: “How do you know?” For C and D ask, “For what values of x (or m) would this remain true? When could it change?”

A. -2^4 $(-2)^4$ B. 5^0 $\frac{1}{5}$ C. $(x^3)^2 < x^9$ D. $m^4 * m^3 > m^4 + m^3$

Abilities	Challenges/Strategies	Notes
<ul style="list-style-type: none"> <input type="checkbox"/> $-2^4 < (-2)^4$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $5^0 > \frac{1}{5}$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $(x^3)^2 < x^9$ <input type="checkbox"/> Able to give examples for and against <input type="checkbox"/> $m^4 * m^3 > m^4 + m^3$ <input type="checkbox"/> Able to give examples for and against 	<p>Incorrect Comparisons:</p> <ul style="list-style-type: none"> <input type="checkbox"/> $-2^4 \underline{\hspace{1cm}} (-2)^4$ <input type="checkbox"/> $5^0 \underline{\hspace{1cm}} \frac{1}{5}$ <input type="checkbox"/> $(x^3)^2 \underline{\hspace{1cm}} x^9$ <input type="checkbox"/> $m^4 * m^3 \underline{\hspace{1cm}} m^4 + m^3$ <input type="checkbox"/> Compares for positive numeric values only, ignores negatives or special cases <input type="checkbox"/> Unable to justify 	

Compare (1_G7) **Materials:** screening cards; symbol cards

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 placed the symbol ask, “Can you read this for me?” Follow up: “How do you know?”

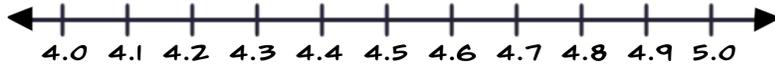
A. $-\frac{3}{4}$ $-\frac{1}{2}$ B. -2 $-\frac{13}{6}$ C. -4.6 $-4\frac{2}{3}$

Abilities	Challenges/Strategies	Notes
<ul style="list-style-type: none"> <input type="checkbox"/> $-\frac{3}{4} < -\frac{1}{2}$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $-2 > -\frac{13}{6}$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $-4.6 < -4\frac{2}{3}$ <input type="checkbox"/> Sound justification 	<ul style="list-style-type: none"> <input type="checkbox"/> Incorrect comparison <input type="checkbox"/> $-\frac{3}{4} \underline{\hspace{1cm}} -\frac{1}{2}$ <input type="checkbox"/> Incorrect comparison <input type="checkbox"/> $-2 \underline{\hspace{1cm}} -\frac{13}{6}$ <input type="checkbox"/> Incorrect comparison <input type="checkbox"/> $-4.6 \underline{\hspace{1cm}} -4\frac{2}{3}$ <input type="checkbox"/> Compares numeric value, ignores (-) 	

	<input type="checkbox"/> Unable to justify
--	--

2_G8. Number identification	Materials: screening cards
------------------------------------	-----------------------------------

Show the number line card and ask, "Where can these numbers be placed on the number line?"
Follow up: "How did you figure out your answer?"

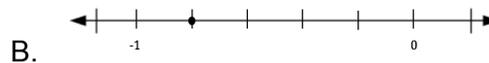


- A. $\sqrt{21}$ B. $\sqrt[3]{64}$ C. $4.\overline{31}$

Abilities	Challenges/Strategies	Notes
<p><input type="checkbox"/> Correct placements</p> <p><input type="checkbox"/> Sound justifications</p>	<p><input type="checkbox"/> Incorrect placements</p> <p style="text-align: center;">_____ , _____ , _____</p> <p><input type="checkbox"/> Unable to justify</p>	

Number Identification (2_G6)	Materials: screening cards
-------------------------------------	-----------------------------------

Show number line card and ask, "What number can name the location shown by the point on the number line?" Follow up: "How did you figure out your answer?"



Abilities	Challenges/Strategies	Notes
<p>Identifies</p> <p><input type="checkbox"/> $\frac{4}{16}$ (four-sixteenths or equiv)</p> <p><input type="checkbox"/> $-\frac{4}{5}$ (negative four-fifths)</p>	<p>Unable to identify:</p> <p><input type="checkbox"/> $\frac{4}{16}$ (four-sixteenths or equiv)</p> <p><input type="checkbox"/> $-\frac{4}{5}$ (negative four-fifths)</p>	

--	--

3_G8. Operations with Scientific Notation	Materials: screening cards
--	-----------------------------------

Place a screening card in front of the student one at a time, and ask, “What is the answer to this problem?” If student expresses answer in standard form, follow up by asking, “What would that number be using scientific notation?” If needed, follow up: “How did you figure out your answer?”

A. $3.2 \times 10^6 + 4.8 \times 10^6$ B. $\frac{8 \times 10^5}{2 \times 10^8}$

Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> 8×10^6 <input type="checkbox"/> Sound justification <input type="checkbox"/> 4×10^{-3} <input type="checkbox"/> Sound justification	<input type="checkbox"/> Incorrect response _____ <input type="checkbox"/> Incorrect response _____	

Operations with Rational Numbers (2_G7)	Materials: screening cards available: two-color chips, number line
--	--

Place a screening card in front of the student one at a time, and ask, “What is the answer to this problem?” If needed, follow up: “How did you figure out your answer?” Have optional manipulatives available.

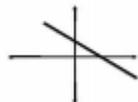
A. $-3 + 7$ B. $-5 - 1\frac{2}{3}$ C. $-\frac{1}{2} - -1\frac{3}{4}$

Abilities	Challenges/Strategies	Notes
Identifies <input type="checkbox"/> 4 <input type="checkbox"/> $-6\frac{2}{3}$ <input type="checkbox"/> $1\frac{1}{4}$ <input type="checkbox"/> Understands interaction of negative and positive values <input type="checkbox"/> Correctly works with fractions and/or mixed numbers <input type="checkbox"/> Explains approach/justifies thinking	Unable to identify: <input type="checkbox"/> 4 <input type="checkbox"/> $-6\frac{2}{3}$ <input type="checkbox"/> $1\frac{1}{4}$ <input type="checkbox"/> Computes with positive values, but doesn't take into account negative value <input type="checkbox"/> Challenged with fraction operations	

4_G8. Linear Functions

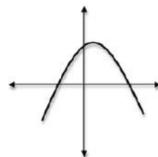
Materials: screening cards

Spread the 5 cards in the set out in front of the student and ask, "Which of these relationships show a linear function between 2 quantities?" If needed ask, "How do you know?"



A.

B. $y = 2x - 7$



C.

D. $4x^2 = y$

Input	Output
-2	7
-1	7
0	7
1	7

E.

Abilities

Challenges/Strategies

Notes

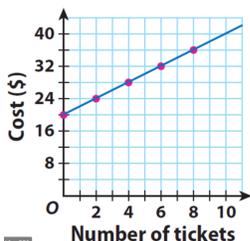
- Linear relationships for A, B, E
- Sound justification

- Unable to explain linear relationship for
- Equation
 - Graph
 - Table

Proportional Relationships (5_G7)

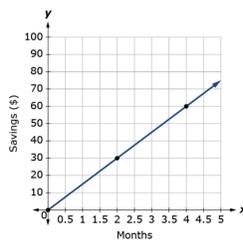
Materials: screening cards; available: paper and pencil

Spread the 6 cards in the set out in front of the student and ask, "Which of these relationships show a proportional relationship between 2 quantities?"



A. $3x = y$

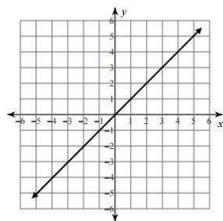
B.



C.

x	y
0	0
4	8
7	14

D.



E. $y = 2x + 5$

F.

Abilities

Challenges/Strategies

Notes

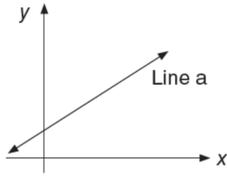
- Proportional relationships for A, C, D, F
- Sound justification

- Unable to explain proportional relationships for:
- Equation
 - Graph

	<input type="checkbox"/> Table
--	--------------------------------

5_G8. Graphs of Equations **Materials:** screening cards

Show the student the graph and ask “Which of these equations could represent line a? How do you know?” (Show students one equation at a time.)



1. $y = \frac{3}{4}x + 6$
2. $y = -5x + 3$
3. $y = 12x + 36$

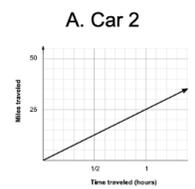
Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> Includes 1 and 3 <input type="checkbox"/> Excludes 2 <input type="checkbox"/> Sound justification	Unable to determine: <input type="checkbox"/> W/out labels on graph <input type="checkbox"/> + slope and +y intercept <input type="checkbox"/> How scale can impact the “look” of the graph	

6_G8. Comparing Unit Rates **Materials:** screening cards

Place the two cards in front of the student at the same time and say, “The graph shows the distance Car 1 was traveling at a certain speed and the equation shows the distance Car 2 was traveling at a certain speed. Which car was traveling at a greater speed? How do you know?” Follow up with the second set.

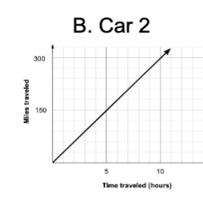
A. Car 1
 $d = 30t$

A. Car 2



B. Car 1
 $d = 50t$

B. Car 2



Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> A. Car 1 <input type="checkbox"/> Sound justification <input type="checkbox"/> B. Car 2 <input type="checkbox"/> Sound justification	<input type="checkbox"/> Unable to compare rates between graph and equation <input type="checkbox"/> Unable to determine rates in an equation <input type="checkbox"/> Unable to determine rates in a graph	

--	--

Unit Rates (6_G7)	Materials: screening cards
--------------------------	-----------------------------------

Place the problem cards in front of the student one at a time, and say, “What is the answer to this problem?” Once, the student responds, ask, “How do you know?”

A. Ana earns \$50 in 4 hours. How much does she earn per hour?
 B. Jayden earns \$36 in 3 hours. Does Ana or Jayden earn more?
 C. \$55 for 8 pounds of almonds, \$77 for 10 pounds of walnuts. Which costs less per pound?

Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> \$12.50 per hour <input type="checkbox"/> Sound justification <input type="checkbox"/> Sound justification that Ana earns more per hour, with Jayden earning \$12/hour <input type="checkbox"/> Almonds: \$7/lb Walnuts: \$7.70/lb <input type="checkbox"/> Sound justification that almonds cost less per pound	<input type="checkbox"/> Unable to find unit rates <input type="checkbox"/> Reasons based on total earned or costs, rather than unit rates <input type="checkbox"/> Unable to justify <input type="checkbox"/> Incorrect choices: _____	

7_G8. Solve linear equations	Materials: screening cards paper and pencil (optional)
-------------------------------------	--

Place the problem cards in front of the student one at a time and say, “Solve for x.” Once the student responds, ask, “How do you know?”

A. $-32 = 7x + 3$ B. $4(3x + 2) = 5x - 6$

Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> $x = -5$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $x = -2$ <input type="checkbox"/> Sound justification	<input type="checkbox"/> $x = \underline{\hspace{2cm}}$ <input type="checkbox"/> Unable to justify <input type="checkbox"/> $x = \underline{\hspace{2cm}}$ <input type="checkbox"/> Unable to justify	

Algebraic Expressions (7_G7)**Materials:** screening cards

Place the pair of expression cards in front of the student one at a time, and say, "Are these expressions equivalent?" Follow up with, "How do you know?"

A. $3x + 5 + 7x$ $10x + 5$ B. $4(x - 8)$ $4x - 8$ C. $-5(x - 8) + 2$ $-5x - 38$

Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> $3x + 5 + 7x$ equivalent $10x + 5$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $4(x - 8)$ not equivalent $4x - 8$ <input type="checkbox"/> Sound justification <input type="checkbox"/> $-5(x-8)+2$ not equivalent $-5x - 38$ <input type="checkbox"/> Sound justification	<input type="checkbox"/> Not Equivalent <input type="checkbox"/> Equivalent <input type="checkbox"/> Equivalent <input type="checkbox"/> Unable to justify	

8_G8. Systems of Linear Equations**Materials:** screening cards

Show students one system at a time and say, "Is there no solution, one solution, or infinitely many solutions? How do you know?"

A. $y = \frac{3}{5}x + 9$ B. $y = -7x + 16$ C. $5x - 7y = 3$
 $5y = 3x - 10$ $y = \frac{3}{4}x + 8$ $-15x + 21y = -9$

Abilities	Challenges/Strategies	Notes
<input type="checkbox"/> A. No solution <input type="checkbox"/> B. One solution <input type="checkbox"/> C. Infinitely many solutions <input type="checkbox"/> Sound justifications	<input type="checkbox"/> A. _____ <input type="checkbox"/> B. _____ <input type="checkbox"/> C. _____ <input type="checkbox"/> Unable to Justify	

9_G8 Word Problems

Materials: screening cards

Place the word problem card in front of the student and say, "Read the problem on this card." Next spread the remaining cards in the set out in front of the student and ask, which of these equations (or system of equations) could represent the problem? How do you know?"

- A. Laura is four years older than her sister Sally. Laura's brother is five years younger than Sally. The sum of all of their ages is 83. Let s represent Sally's age.

$$(s + 4 - 5) = 83$$

$$(s + 4) + s + (s - 5) = 83$$

$$3(s + 4 - 5) = 83$$

$$3s - 1 = 83$$

- B. 300 tickets for a concert were sold. Some VIP tickets cost \$20, while the rest of the tickets cost \$15. The concert made \$1,430 in ticket sales. Let v represent the VIP tickets and r represent the regular price tickets.

System A	$20r + 15v = 300$	$20v + 15r = 1,430$
System B	$r + v = 35$	$1,430 = 300(r + v)$
System C	$r + v = 300$	$20v + 15r = 1,430$

Abilities	Challenges/Strategies	Notes
<p>Represents situation A:</p> <p><input type="checkbox"/> $(s + 4) + s + (s - 5) = 83$</p> <p><input type="checkbox"/> $3s - 1 = 83$</p> <p><input type="checkbox"/> Sound justification</p> <p>Represents situation B:</p> <p><input type="checkbox"/> System C</p> <p><input type="checkbox"/> Sound justification</p>	<p><input type="checkbox"/> Incorrect choices</p> <p><input type="checkbox"/> unable to justify</p>	

Word Problems (8_G7)

Materials: screening cards;
available: paper and pencil

Place the word problem card in front of the student and say, "Read the problem on this card." Next spread the remaining cards in the set out in front of the student and ask,

- A. The length of a box is 3 more than twice its width. Let l represent the length of the box and w represent the width of the box. "Choose all of the equations that could represent the given situation." Follow up: How do you know?

$$l - 3 = 2w, \quad l + 3 = 2w, \quad l = 2w + 3, \quad l - 3/2 = 2, \quad \frac{1}{2} - 3 = w, \quad l = 2(w + 3)$$

- B. A puppy weighed 14 ounces at birth. It gains 2 ounces each week. Let x represent the number of weeks. How much does it weigh after x weeks? "Which of these cards is an equation that could represent the given situation?" Follow up: How do you know?

$$y = 14x + 2, \quad y = 2x + 14, \quad x = 2y + 14, \quad y - 4 = 2x, \quad y - 14/2 = x, \quad y/2 + 7 = x$$

Abilities	Challenges/Strategies	Notes
<p>Represents situation:</p> <p><input type="checkbox"/> $l - 3 = 2w$; sound just.</p> <p><input type="checkbox"/> $l = 2w + 3$; sound just.</p> <p><input type="checkbox"/> Does not represent situation: $l + 3 = 2w$; $l - 3/2 = 2$ $\frac{1}{2} - 3 = w$; $l = 2(w + 3)$</p> <p>Represents situation:</p> <p><input type="checkbox"/> $y = 2x + 14$; sound just.</p> <p><input type="checkbox"/> $y - 14 = 2x$; sound just.</p> <p><input type="checkbox"/> Does not represent situation: $y = 14x + 2$; $x = 2y + 14$ $y - 14/2 = x$; $y/2 + 7 = x$</p>	<p><input type="checkbox"/> Incorrect choices</p> <p><input type="checkbox"/> unable to justify</p>	