

## Teacher Math Knowledge for Teaching Assessment

### Instructions:

Please complete this brief assessment to help us better understand the role that teachers' math knowledge can have on supporting student learning. Note that the information you provide here will fall under the confidentiality and data protection requirements of the Institute of Education Sciences (The Education Sciences Reform Act of 2002, Title I, Part E, Section 183), and the data collected will be securely protected. You may opt out of responding to a question or the entire instrument at any time without any consequences. None of your responses will be individually attributed to you or your school/district. Your responses will be used for statistical purposes only.

1.

An item on a quiz requires students to draw a picture to show  $\frac{1}{6}$ . Students draw the following:



1. Which of the following would you accept as correct responses?

- a) I and II only
- b) I and IV only
- c) I, II, and III only
- d) All are correct responses

2.

Ms. Dubois's attention was caught by the following item on the state test:

Which number is the largest?

0.240      0.30      0.08      0.7

She worried that students might make a common mistake on this problem. Which is likely to be the most common incorrect answer among her students? (Select ONE answer.)

- a) 0.240
- b) 0.30
- c) 0.08
- d) These incorrect answers should be about equally popular.

3.

Mrs. James is teaching subtraction to her students. She notices that students have trouble with problems like the one below:

Joshua has 350 Pokemon cards. His friend Javier has 210 Pokemon cards.  
How many more cards does Joshua have than Javier?

She wants to give students more practice. Which of the following problems are similar in structure to the one above? (Select YES, NO, or I'M NOT SURE for each.)

- a) Kiara has 11 dimes. She gave 4 dimes to Jackie. How many dimes does Kiara have now?
- b) Penelope has 11 carrots. She gave some to Todd. How many did she give to Todd?
- c) Dominic has 11 flowers. 7 of them are red and the rest of yellow. How many yellow flowers does Dominic have?
- d) Aria's pencil is 11 inches long. Maxwell's pencil is 4 inches long. How much longer is Aria's pencil than Maxwell's?

4.

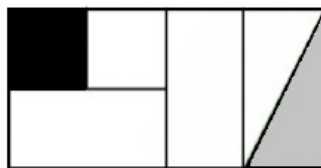
Ms. Wu's students were asked to determine which is larger:  $\frac{5}{18}$  or  $\frac{10}{21}$ . Her students agreed that  $\frac{10}{21}$  was larger but gave different reasons why. Which of the following student statements demonstrates correct reasoning? (Select CORRECT REASONING, INCORRECT REASONING, or I'M NOT SURE for each.)

- a) Eighteenths are larger than twenty-firsts, but there are fewer, so  $10/21$  is larger.
- b)  $5/18$  and  $10/21$  are both less than half, but  $5/18$  is more less than half than  $10/21$  is less than half, so  $5/18$  is smaller.
- c)  $5/18$  is the same as  $10/36$ . I know that thirty-sixths are smaller than twenty-firsts, so  $5/18$  is smaller.
- d)  $10/21$  has more pieces than  $5/18$ , and the pieces are larger, so  $10/21$  is larger.
- e)  $5/18$  is smaller than  $1/3$ ,  $10/21$  is larger than  $1/3$ , so  $10/21$  is larger.

5.

Ms. Bishop's class is discussing the following problem.

What fraction of the big rectangle is shaded gray?



Diego says the answer is one-half. When Ms. Bishop asks Diego to explain his answer, Diego responds:

Because they both are equal. They both are equal, and one-half of it is shaded in and the other half is not.

Which description of Diego's thinking is most consistent with his response? (Select ONE answer.)

- a) Diego doesn't understand the definition of fraction.
- b) Diego is thinking that the grey shaded part is a fraction of the big rectangle and is using "one-half" as a generic name for a fractional part.
- c) Diego has interpreted the whole or unit differently than intended.
- d) Diego is thinking that the two shaded parts are equal.

6.

Ms. Petit's textbook contains the following problem:

*Lydia went to Pet Palace. She bought 28 koi. How many more does she need to fill her pond with 100 koi?*

Ms. Petit wants to adapt the problem above to include a context that is more familiar to her students. Which of the following adaptations best maintains the structure of the original problem? (Select ONE answer.)

- a) Lydia bought 100 pencils. She gave away 28 of those pencils. How many pencils does she have left?
- b) Lydia bought 100 pencils. She gave away some of those pencils. She has 28 pencils left. How many pencils does she have left?
- c) Lydia wants 100 pencils. So far, she has collected 28 pencils. How many will she need to collect before she reaches her goal?
- d) Lydia has some pencils. She bought 28 more pencils. Now she has 100 pencils. How many pencils did she have to start?

7.

A group of Ms. Lester's students was following a set of directions to move a paper frog along a number line. Their last direction took them to  $\frac{1}{2}$ .

Their next direction says:

Go  $\frac{1}{3}$  of the way to  $\frac{3}{4}$ . What number will the frog land on?

7. The students disagreed about where the frog would land. Which answer should Ms. Lester accept as correct?

- a)  $\frac{1}{12}$
- b)  $\frac{2}{3}$
- c)  $\frac{7}{12}$
- d)  $\frac{5}{6}$
- e)  $\frac{1}{4}$

8.

Mr. Delgado's class has been working on comparing decimals. Makayla claims that  $12.17 > 12.4$ . Which option represents the most likely reason for Makayla's error? (Select ONE answer.)

- a) Makayla thinks that because there were two digits to the right of the decimal point instead of one, 12.17 must be greater than 12.4.
- b) Makayla is comparing the numbers as if they were 1217 and 124.
- c) Makayla is comparing the digits after the decimal point and sees that 17 is greater than 4.
- d) Makayla is comparing the final digits, the 7 and the 4.

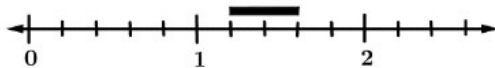
9.

Mr. Estrada wants to increase students' flexibility with fractions, and to do so, he decides to show students a variety of models to represent  $\frac{2}{5}$ . He looks through several sets of curricula to find examples but isn't sure whether the ones he sees are all mathematically accurate.

Example 1:



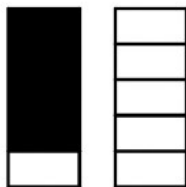
Example 2:



Example 3:



Example 4:



Which of the examples can be used to model  $\frac{2}{5}$ ? (Select CAN USE, CANNOT USE, or I'M NOT SURE for each.)

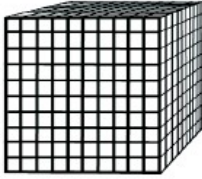
b) Example 2

c) Example 3

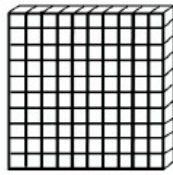
d) Example 4

10.

Ms. Herrera is thinking about how to represent the number 0.240 with the following manipulatives:



block



flat



rod



cube

She knows there are several ways to do so. Which of the following manipulatives could Ms. Herrera use to represent 0.240? (Select COULD USE, COULD NOT USE, or I'M NOT SURE for each.)

- a) Two flats, four cubes
- b) Two hundred cubes, four rods
- c) Two cubes, four rods
- d) Two blocks, four flats
- e) Two flats, forty rods