

SECURE MATERIAL – Reader Name: _____
Tennessee Comprehensive Assessment Program

TCAP/CRA

2014



7

Phase II

Video Game Ratings Task

Anchor Set

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Constructed Response Assessment


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.



A large rectangular box for writing an explanation. In the top-left corner, there is a small icon of a hand holding a pen.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.



A large rectangular box for drawing a number line and writing an explanation. In the top-left corner, there is a small icon of a hand holding a pen.



Constructed Response Assessment


Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$


Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c. Find and explain Li Wei's error.



A large empty rectangular box for writing the answer to question c.

- d. Show how to calculate Li Wei's new rating correctly.



A large empty rectangular box for writing the answer to question d.



Scoring Guide

The CCSS for Mathematical Content (3 points)

7.NS.A.1a Explains that since the sum of the changes in Li Wei's ratings during the four consecutive games is zero, Li Wei has not improved or lowered his score. _____

(1 Point)

7.NS.A.2x Explains why Li Wei's product is incorrect in part c. Students may do this by: _____

- indicating that the decimal is in the wrong place;
- indicating that $0.92 \times 9.5 = 9.2 \times 0.95 = 8.74$ and explaining that the decimal may have been misplaced in one of the factors;
- explaining that since the product $9 \times 9 = 81$, the product of $9.2 \times 9.5 > 81$; and explaining that the product of 9.2 (or 9.5) and any number greater than 1 will be greater than 9.2 (or 9.5), and so 8.4 cannot possibly be the product.

(1 Point)

7.NS.A.2z Determines the product of Li Wei's rating and 9.5 correctly, using a traditional or non-traditional algorithm. _____

(1 Point)

The CCSS for Mathematical Practice (1 point)

MP4 Constructs and uses a number line to calculate the difference between Li Wei's rating and Desai's rating by marking a point to represent each rating and calculating the distance between the two points. Students may explain how the number line is used to represent subtraction by: _____

- beginning at a point representing 9.6 and moving 9.2 units to the left to end at a point representing the difference of the two numbers, 0.4;
- beginning at a point representing 9.2 and moving 9.6 units to the left to end at a point representing the difference of the two numbers, -0.4 ;
- plotting points representing 9.2 and 9.6 and counting the distance between the two numbers, 0.4.

(1 Point)

(MP4: Model with mathematics.)

TOTAL POINTS: 4

The CCSS for Mathematical Content Addressed In This Task

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

7.NS.A.1a Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*

7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

The CCSS for Mathematical Practice*

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. **Model with mathematics.**
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

* Gray type indicates Mathematical Practices not addressed in this assessment.


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays

- a. The data below show the change to Li Wei's rating for four consecutive games.


$$+0.2, -0.4, +0.7, -0.5$$

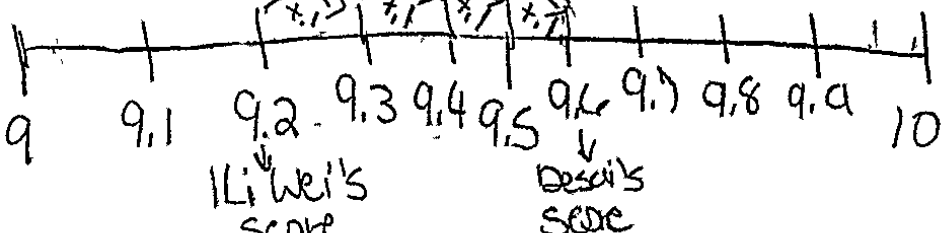
Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

 $+0.2 + -0.4 + 0.7 + -0.5 = 0$
no change

Li Wei's rating is the same because as his score decreased and increased to a point where the sum of all four games was zero. Consequently, his score would not change due to adding zero (points for the four games) to his score of 9.4. Another way to look at this is the following: if I start out with no money, then lose 4, and then get two added back the decreases and increases I have made with my money do not matter due to the initial change which is zero.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.

 $9.6 - 9.2$ There is a difference of .4 in Li Wei and Desai's scores. $.1 + .1 + .1 + .1 = .4$



The model I have made gives an accurate representation of this problem because from my diagram above you can visually see the difference in Li Wei's and Desai's score which is .4. This diagram helps ensure accuracy of the difference of scores.


Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c. Find and explain Li Wei's error.


 $9.2 \times 9.5 = 87.4$

Li Wei's error that he makes while calculating his new score is he moved the decimal places of either 9.2 or 9.5. correct way is shown below:

$$\begin{array}{r} 9.2 \text{ (two decimal places)} \\ \times 9.5 \\ \hline 460 \\ + 828 \\ \hline 8740 \end{array}$$

$8740 \rightarrow 87.40$

- d. Show how to calculate Li Wei's new rating correctly.

 How to calculate Li Wei's score correctly is shown below

$$\begin{array}{r} 9.2 \text{ (two decimal places)} \\ \times 9.5 \\ \hline 460 \\ + 828 \\ \hline 8740 \end{array}$$

$8740 \rightarrow$ Li Wei's new score is 87.4.

Anchor 1

Litho 00107200109

Total Content Points: 3 (7.NS.A.1a, 7.NS.A.2x, 7.NS.A.2z)

Total Practice Points: 1 (MP4)

The student explains that Li Wei's rating remains the same because "the sum of all four games was zero" and includes correct calculations using the rating changes for all four games. The student also provides a detailed analogy (7.NS.A.1a). The student correctly explains that Li Wei's product is incorrect in Part C because Li Wei moved the decimal place of either 9.2 or 9.5 (7.NS.A.2x). The student determines the product of Li Wei's rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student correctly constructs a number line, correctly plots Li Wei's score (9.2) and Desai's score (9.6), correctly calculates the difference between Li Wei's score and Desai's score (0.4), and draws a series of arrows on the number line showing that the distance between 9.2 and 9.6 is .4 ($.1 + .1 + .1 + .1 = .4$) (MP4).

Total Awarded Points: 4 out of 4

Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

- a. The data below show the change to Li Wei's rating for four consecutive games.

$$+0.2, -0.4, +0.7, -0.5$$

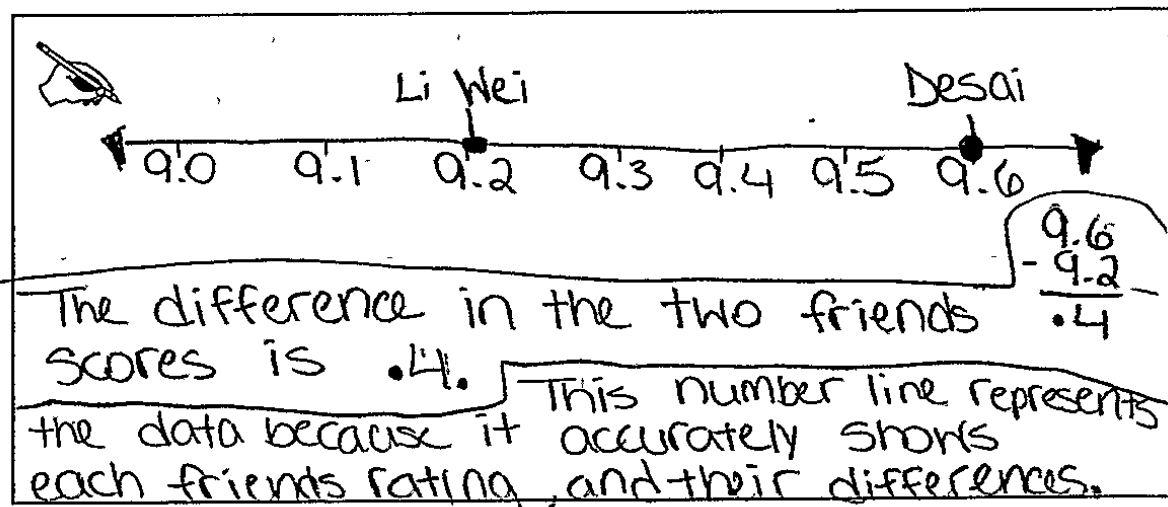
Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

Li Wei's rating is the same because when you add and subtract the ratings for his four consecutive games to or from his total rating, the rating stays the same.

Work | same

$$\boxed{9.4} + .2 = 9.6 - .4 = 9.2 + .7 = 9.9 - .5 = \boxed{9.4}$$

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.




Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$


Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c Find and explain Li Wei's error.

 Li Wei's error was very simple. Instead of multiplying 9.2×9.5 , he multiplied $.92 \times 9.5$. So, the error was the decimal place. By doing this, he got 8.74, instead of the correct 87.4.

<p>Li's mistake</p> $.92 \times 9.5 = 8.74$	$9.2 \times 9.5 = 87.4$
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- d Show how to calculate Li Wei's new rating correctly.

 To calculate Li Wei's new rating correctly, you must use the equation given above, which is:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

All you do is substitute Li's rating into the equation to get 87.4.

<p>Work</p>	$\text{New Rating} = \text{Current Rating} \times 9.5$ $\text{New Rating} = 9.2 \times 9.5$ $\text{New Rating} = 87.4$
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Anchor 2

Litho 00127200109

Total Content Points: 3 (7.NS.A.1a, 7.NS.A.2x, 7.NS.A.2z)

Total Practice Points: 0

The student explains that Li Wei's rating remains the same, includes correct calculations that start with Li Wei's original rating of 9.4, and then adds the rating changes for all four games, with a result of the original rating of 9.4 (7.NS.A.1a). The student correctly explains that Li Wei's product is incorrect in Part C because Li Wei multiplied 9.5 by .92 instead of 9.2, resulting in an incorrect rating of 8.74 (7.NS.A.2x). The student determines the product of Li Wei's rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student constructs a number line and correctly plots Li Wei's score (9.2) and Desai's score (9.6). The student correctly calculates the difference between Li Wei's score and Desai's score (0.4), but does not show that difference on the number line (no credit for MP4).

Total Awarded Points: 3 out of 4

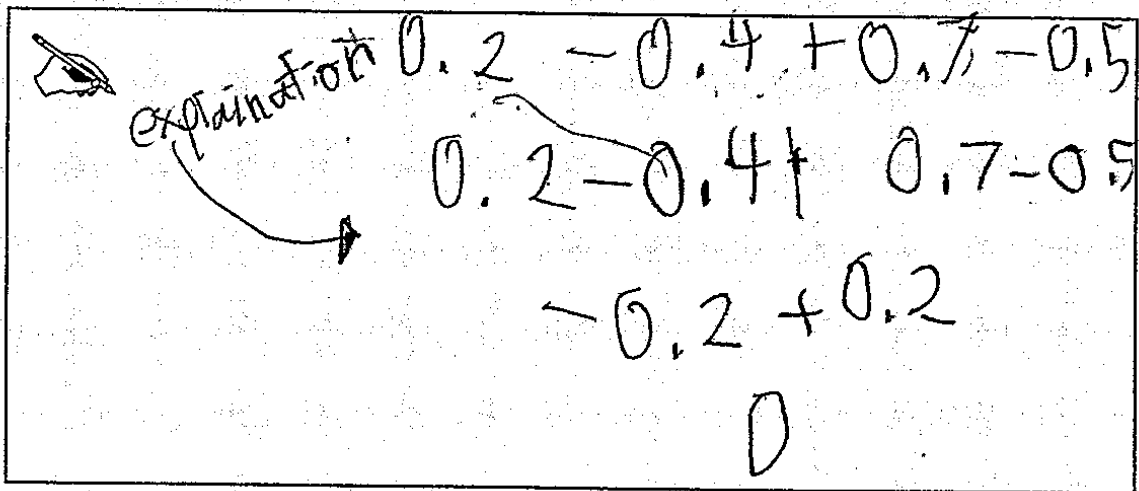
Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

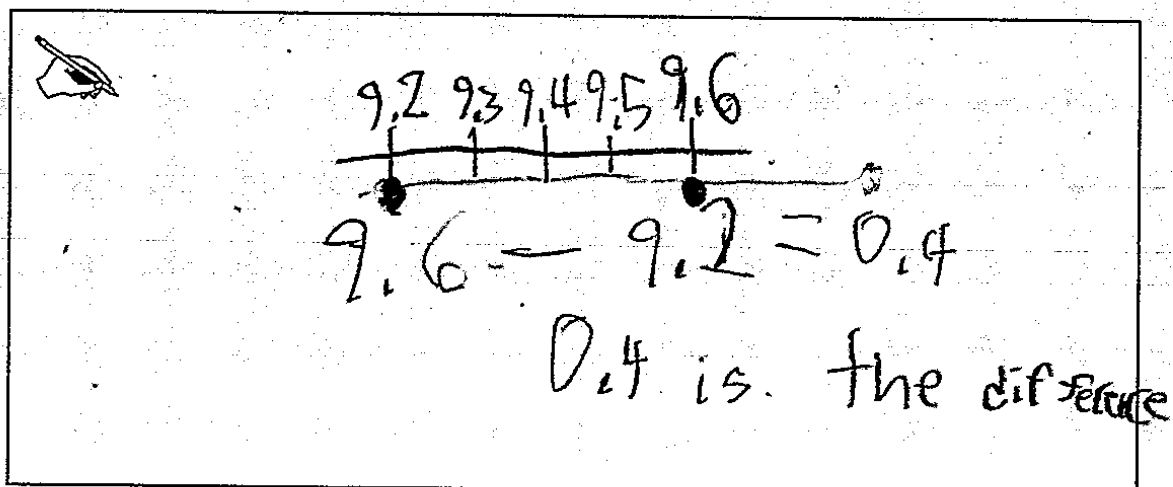
- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.



- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.




Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$


Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c. Find and explain Li Wei's error.



When he multiplied
he multiplied his current
score 0.95 instead of 9.5.

- d. Show how to calculate Li Wei's new rating correctly.



$9.2 \times 9.5 = 87.4$

Anchor 3

Litho 00167200127

Total Content Points: 3 (7.NS.A.1a, 7.NS.A.2x, 7.NS.A.2z)

Total Practice Points: 0

The student provides a mathematical demonstration that the sum of the changes in Li Wei's ratings is zero (7.NS.A.1a). The student correctly explains in Part C that Li Wei's product is incorrect because Li Wei multiplied 9.2 by .95 instead of 9.5 (7.NS.A.2x). The student determines the product of Li Wei's rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student constructs a number line and correctly calculates the difference of 0.4 between Li Wei's score and Desai's score ($9.6 - 9.2$). However, the student does not identify which point is Li Wei's rating and which point is Desai's rating and does not show the difference of 0.4 on the number line (no credit for MP4).

Total Awarded Points: 3 out of 4


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.


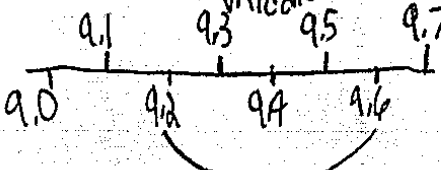
- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

 Because the total amount that increased his rating is equal to the total amount that decreased his rating.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.

  It represents the amount of ratings are between Li Wei and Desai.

Their difference is 3.


Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:


$$\text{New Rating} = \text{Current Rating} \times 9.5$$

Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c. Find and explain Li Wei's error.

 When he multiplied his current rating of 9.2 by 9.5 he received 87.4. Instead of leaving it like that he placed the decimal behind the 8.

- d. Show how to calculate Li Wei's new rating correctly.


$$\begin{array}{r} 9.2 \\ \times 9.5 \\ \hline 460 \\ 828 \\ \hline 87.40 \end{array}$$

Anchor 4

Litho 00047200127

Total Content Points: 3 (7.NS.A.1a, 7.NS.A.2x, 7.NS.A.2z)

Total Practice Points: 0

The student explains that Li Wei's total increase in ratings equals his total decrease in ratings, which is another way of stating that together, the total increases and decreases equal zero (7.NS.A.1a). The student correctly explains that Li Wei's product is incorrect in Part C because Li Wei moved the decimal place ("Instead of leaving it like that he placed the decimal behind the 8") (7.NS.A.2x). The student determines the product of Li Wei's rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student constructs a number line and attempts to show the difference between 9.2 and 9.6 visually on the number line. However, the student miscalculates the difference between 9.2 and 9.6 as 0.3 and also fails to identify which point represents the Li Wei's rating and which point represents Desai's rating (no credit for MP4).

Total Awarded Points: 3 out of 4

Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

- a. The data below show the change to Li Wei's rating for four consecutive games.

$$+0.2, -0.4, +0.7, -0.5$$

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

9.4
+0.2

9.6
-0.4

9.2
+0.7

9.9
-0.5

9.4

His rating is the same because of his game scores. First, he went up 0.2 rating which led to 9.6, then he went down 0.4, which led to 9.2. Next, he went up 0.7, which led to 9.9, then down 0.5, which led to his original 9.4.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.

The difference in the scores is Desai has 0.4 more than Li wei or Li wei has 0.4 less than Desai

I modeled this problem by showing all the possibilities of decimal formation of 9-10.

the I marked where the two score, and showed the difference. I also showed addition (How much he got more than Li wei)

Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

c Find and explain Li Wei's error.

$$\begin{array}{r}
 9.2 \\
 \times 9.5 \\
 \hline
 460 \\
 + 8280 \\
 \hline
 8740
 \end{array}$$

His error was that he put the decimal in the wrong place. Instead of going over 2 decimal places he went over 3.

d. Show how to calculate Li Wei's new rating correctly.

When doing this you keep the # in the ones place but put the tens over the whole. It supposed to be on.

$$\begin{array}{r}
 29.2 \\
 \times 9.5 \\
 \hline
 1460 \\
 + 2580 \\
 \hline
 274.0
 \end{array}$$

Ignore decimal when do if you hand. unto the end of the promi before you put an 0 before v start e incre pres the # photo of 8092 8740

First, you set up the equation. Next, you multiply the bottom decimal #, 5 by 2 which will give you .10. Then you keep the 0, and put the whole # over the top whole # 9. After that, you multiply the top whole # 9 by 5 to get 45.0 then you add 2 because 2 was over the top whole # 9 to get 47. Next, you multiply the bottom whole # 9 by 2 to get 18. you keep the 8, and put 1 over the bottom whole # 9. Then you multiply the bottom whole # 9 by 2 the top whole # 9 forget 81 then add one because

Anchor 5

Litho 00447200112

Total Content Points: 3 (7.NS.A.1a, 7.NS.A.2x, 7.NS.A.2z)

Total Practice Points: 0

The student explains that “his rating is the same because of his game scores,” and then provides a running tally of the scores, demonstrating that the final score is 9.4. In the column on the left-hand side, the student adds the same numbers, mistakenly arriving at 0, which neither adds nor detracts from the already achieved point (7.NS.A.1a). In Part C, the student correctly explains that Li Wei’s product is incorrect because Li Wei put the decimal in the wrong place, going three places to the left instead of two (7.NS.A.2x). The student determines the product of Li Wei’s rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student constructs a number line, plots Li Wei’s score (9.2) and Desai’s score (9.6), and displays on the number line the difference between Li Wei’s score and Desai’s score (0.4). However, the student has constructed the number line in descending order; it must be in ascending order to receive credit (no credit for MP4).

Total Awarded Points: 3 out of 4

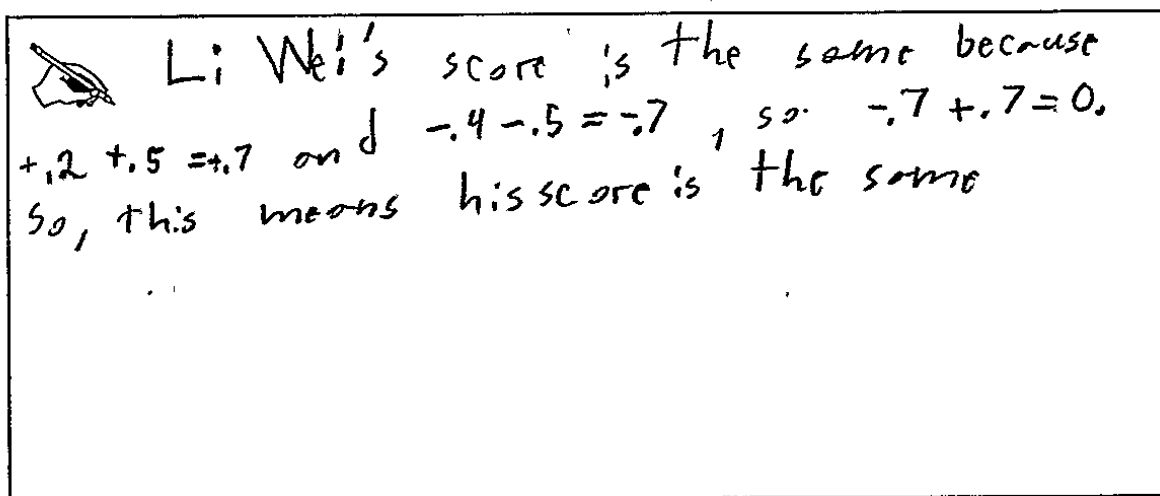
Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

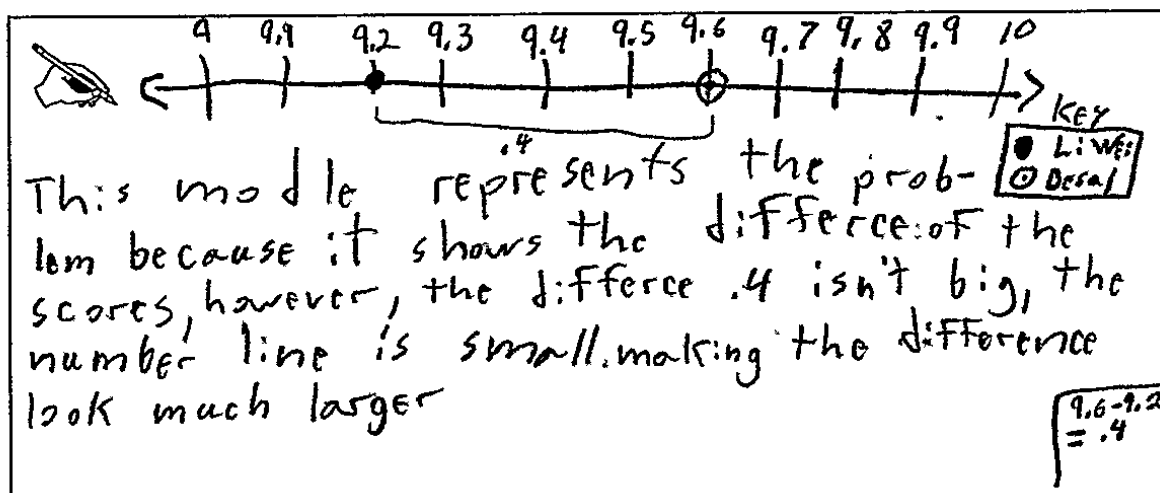
- a. The data below show the change to Li Wei's rating for four consecutive games.

$$+0.2, -0.4, +0.7, -0.5$$

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

 Li Wei's score is the same because $+0.2 + 0.5 = +0.7$ and $-0.4 - 0.5 = -0.9$, so $-0.9 + 0.7 = -0.2$. So, this means his score is the same.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.

 This model represents the problem because it shows the difference of the scores, however, the difference .4 isn't big, the number line is small, making the difference look much larger.

$$\begin{array}{r} 9.6 - 9.2 \\ = .4 \end{array}$$

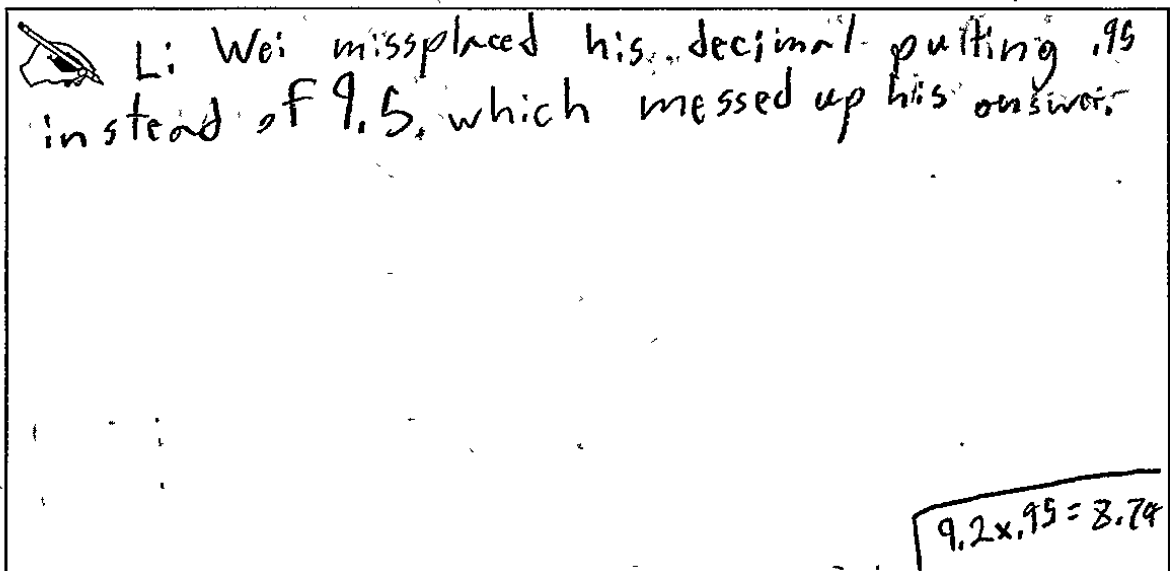
Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

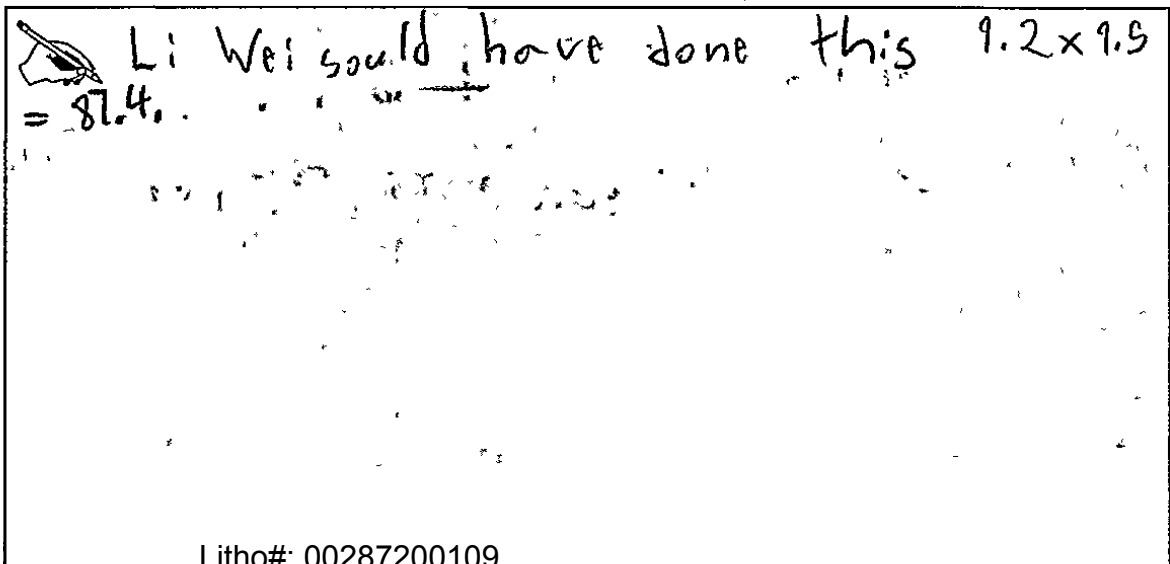
- c Find and explain Li Wei's error



Li Wei misplaced his decimal putting .95 instead of 9.5, which messed up his answer.

$9.2 \times .95 = 8.74$

- d. Show how to calculate Li Wei's new rating correctly.



Li Wei should have done this $9.2 \times 9.5 = 87.4$.

Litho#: 00287200109

Anchor 6

Litho 00287200109

Total Content Points: 2 (7.NS.A.2x, 7.NS.A.2z)

Total Practice Points: 1 (MP4)

The student attempts to show how the positive and negative ratings cancel each other out, but makes two errors. He transcribes incorrectly, combining $+2$ and $+5$ instead of $+2$ and $+7$. He also adds incorrectly, combining -4 and -5 to get -7 instead of -9 (no credit for 7.NS.A.1a). In Part C, the student correctly explains that Li Wei's product is incorrect because Li Wei multiplied 9.2 by $.95$ instead of 9.5 (7.NS.A.2x). The student determines the product of Li Wei's rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student correctly constructs a number line, correctly plots Li Wei's score (9.2) and Desai's score (9.6) using a key, correctly calculates the difference between Li Wei's score and Desai's score (0.4), and shows that difference on the number line ($.4$) (MP4).

Total Awarded Points: 3 out of 4


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

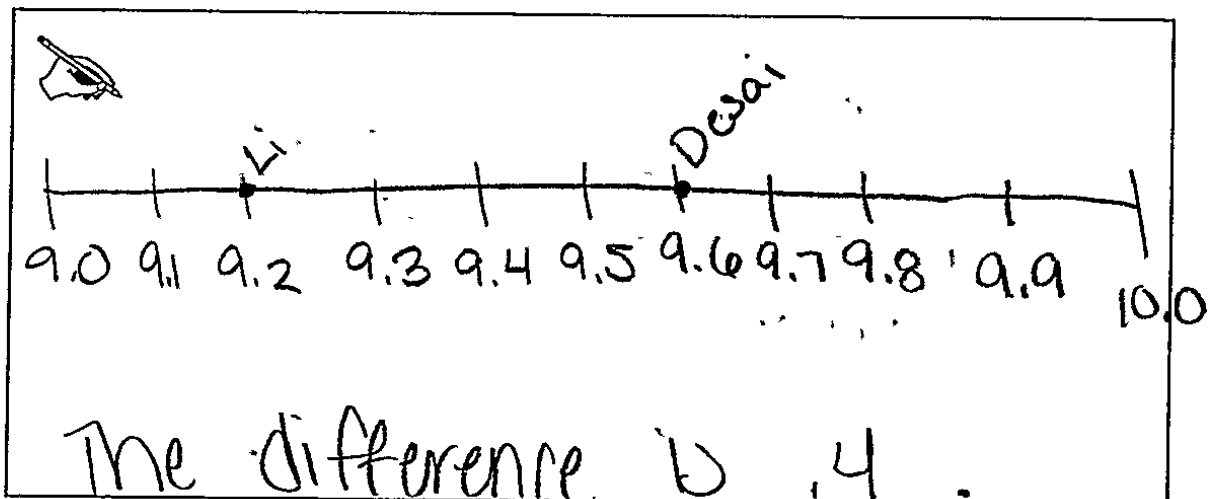
- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same

 Because $0.2 - 0.4 + 0.7 - 0.5 = 0$
Therefore he started at 0 and is ending at 0.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.




Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$


Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c. Find and explain Li Wei's error

 $9.5 \times 9.2 = 87.4$

Li Wei messed up on his new rating. The new rating would be 87.4 not 8.74. Li put the decimal in the wrong place.

- d. Show how to calculate Li Wei's new rating correctly

 He needs to put

$$9.5 \times 9.2 = 8.74$$

instead of 9.2 put

92.

Litho#: 00187200109

Anchor 7

Litho 00187200109

Total Content Points: 2 (7.NS.A.1a , 7.NS.A.2x)

Total Practice Points: 0

The student explains that Li Wei's rating is the same because the sum of the changes in his ratings equals zero. "Therefore he started at 0 and is ending at 0" is incorrect when referring to the overall ratings (which start and end at 9.4), but the response is conceptually correct in reference to the changes in the ratings (7.NS.A.1a). In Part C, the student correctly explains that Li Wei's product is incorrect because Li Wei put the decimal in the wrong place (7.NS.A.2x). The student determines the product of Li Wei's rating incorrectly, multiplying 9.5 by .92 instead of 9.2 in Part D for the incorrect rating of 8.74. The student provided the correct answer, $9.5 \times 9.2 = 87.4$, in Part C, but cannot receive credit because an incorrect answer was provided in Part D (no credit for 7.NS.A.2z). The student constructs a number line and correctly plots Li Wei's score (9.2) and Desai's score (9.6). The student states that the difference between Li Wei's score and Desai's score is 0.4, but does not show that difference on the number line (no credit for MP4).

Total Awarded Points: 2 out of 4


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

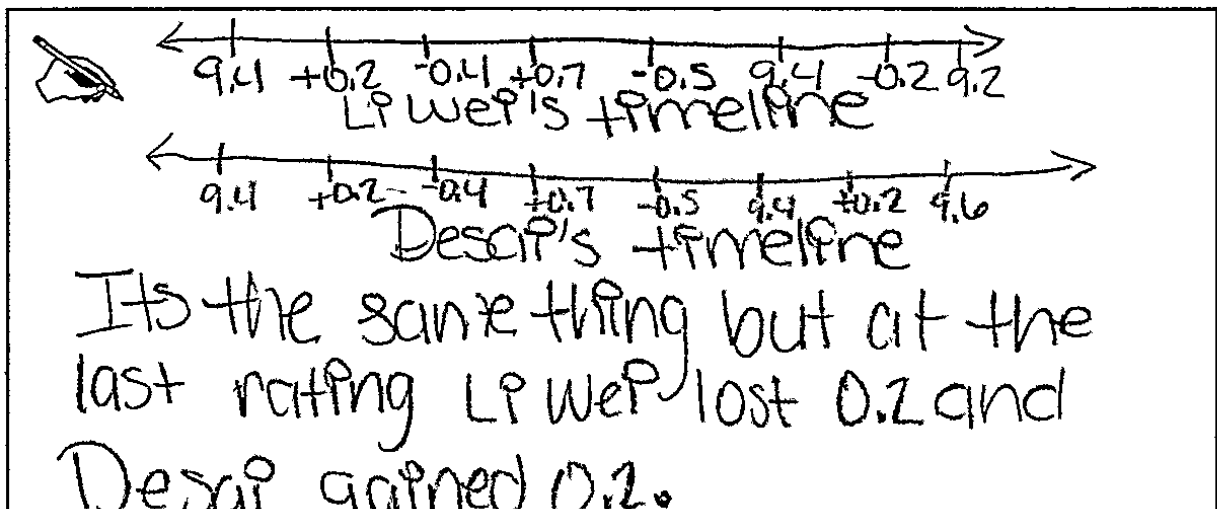
- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

 Because you are adding and then subtracting more than you added. So the subtracting drops the ratings back down to what they was at first. You are subtracting more than you added.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.



Litho#: 00617200112

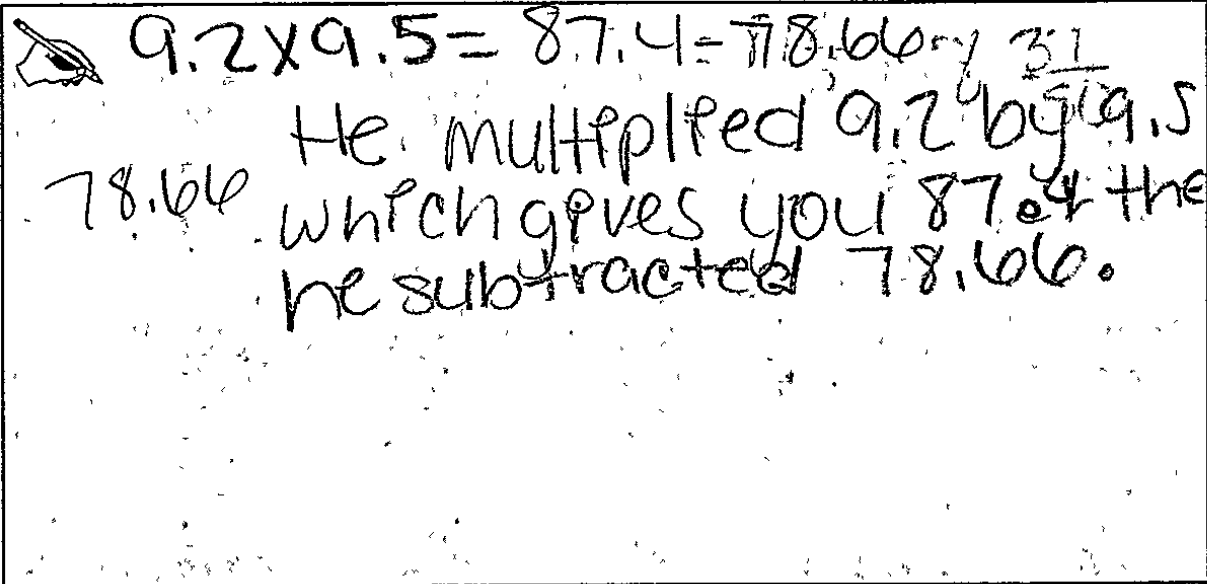
Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

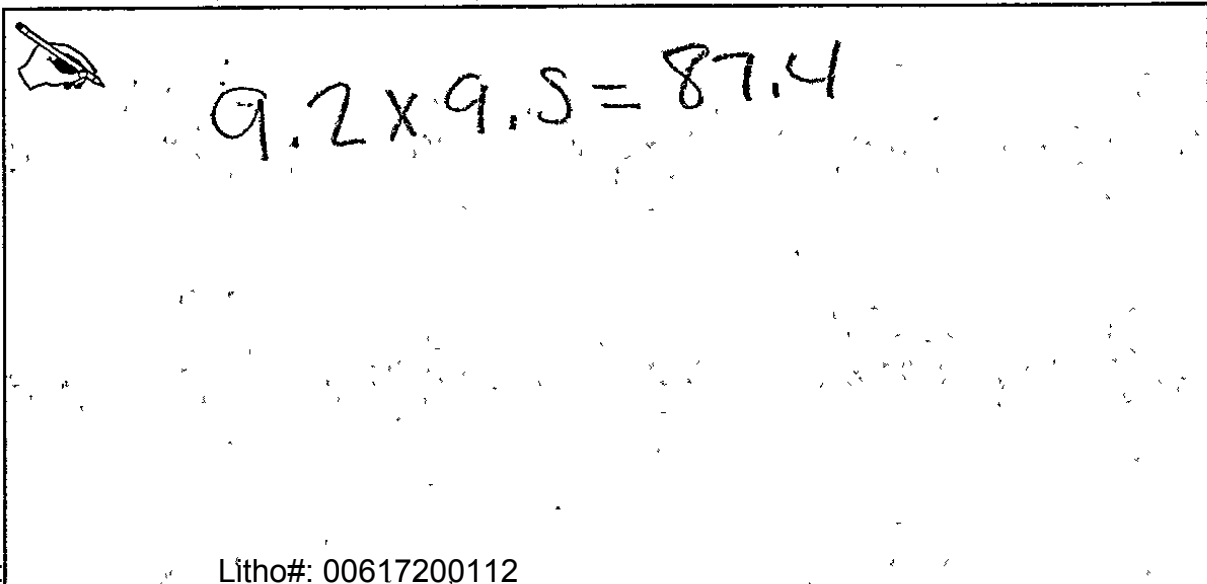
- c. Find and explain Li Wei's error.



$9.2 \times 9.5 = 87.4 = 78.66$

He multiplied 9.2 by 9.5 which gives you 87.4 then he subtracted 78.66.

- d. Show how to calculate Li Wei's new rating correctly



$9.2 \times 9.5 = 87.4$

Litho#: 00617200112

Anchor 8

Litho 00617200112

Total Content Points: 1 (7.NS.A.2z)

Total Practice Points: 0

The student incorrectly explains that “you are subtracting more than you added” (no credit for 7.NS.A.1a). In Part C, the student incorrectly explains that Li Wei’s product is incorrect because 78.66 was subtracted from 87.4, which is not reasonable (no credit for 7.NS.A.2x). The student determines the product of Li Wei’s rating and 9.5 correctly by multiplying 9.2 by 9.5 in Part D for the correct rating of 87.4 (7.NS.A.2z). The student constructs two separate number lines, one for Li Wei and one for Desai, and attempts to plot the changes in ratings by creating a scale that has changes in ratings interspersed with overall ratings (no credit for MP4).

Total Awarded Points: 1 out of 4


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

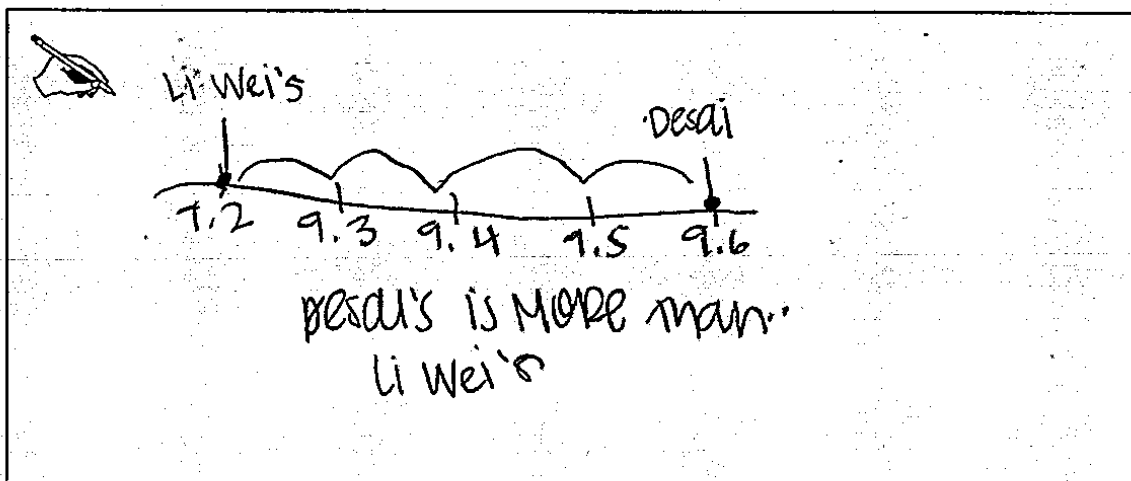
- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5

Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.

 because it goes like +0.2 -0.4 +0.7 -0.5
some of the numbers decreased and
some increased but either way it's
still the same.

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.



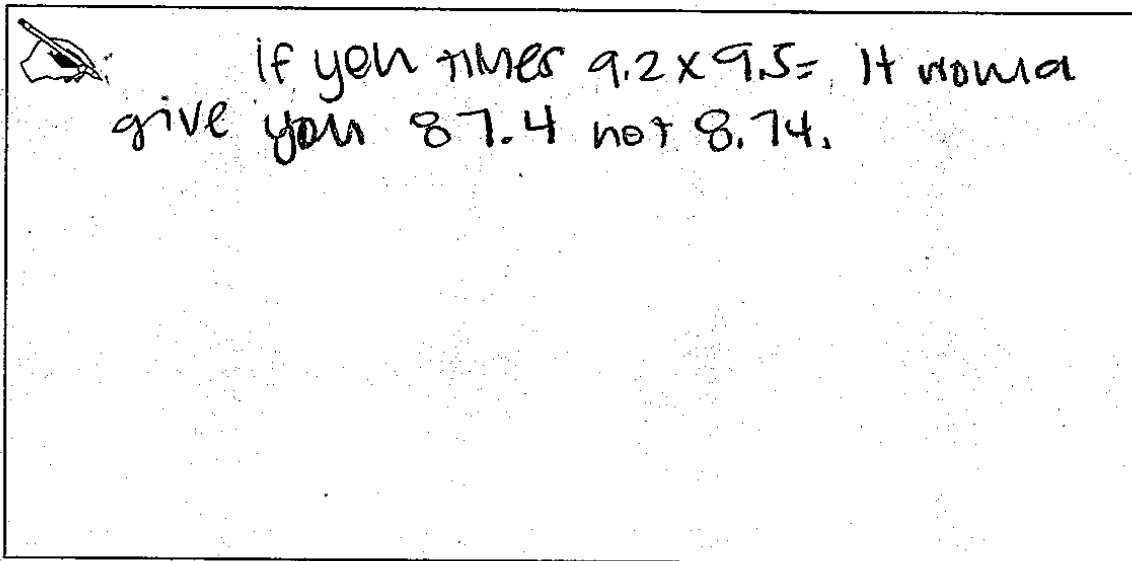
Video Game Ratings Task


The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

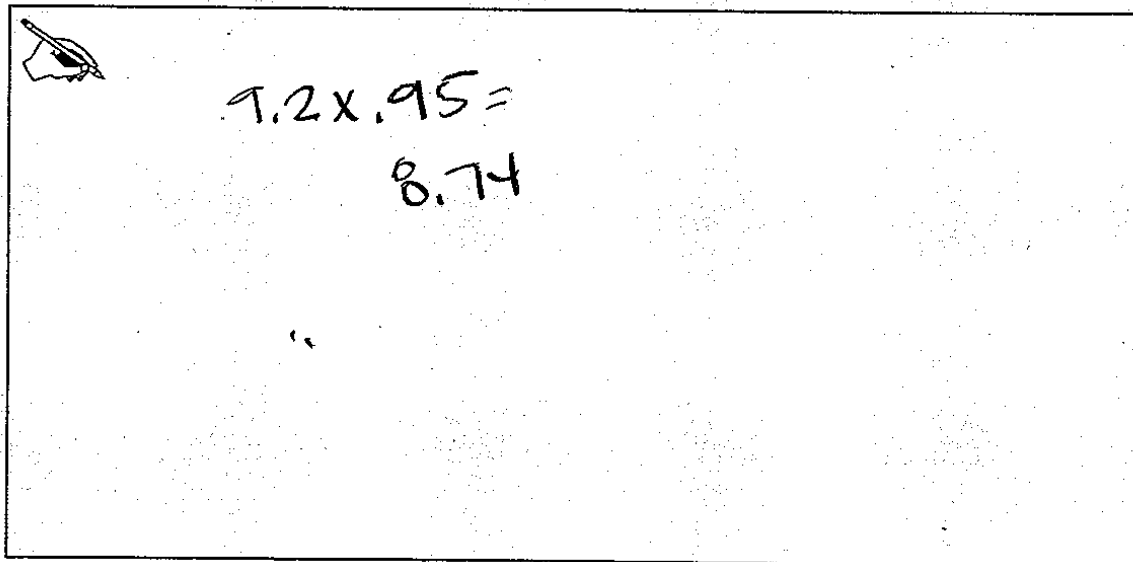
Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.


- c. Find and explain Li Wei's error.



 If you times $9.2 \times 9.5 =$ it would give you 87.4 not 8.74.

- d. Show how to calculate Li Wei's new rating correctly.




 $9.2 \times 9.5 =$
8.74

Anchor 9

Litho 00137200127

Total Content Points: 0

Total Practice Points: 0

The student attempts to explain why Li Wei's rating remains the same, but the explanation is too vague. Of the student's explanation, only "some of the numbers decreased and some increased" is not given in the prompt (no credit for 7.NS.A.1a). Although the student's statement that "If you times $9.2 \times 9.5 =$ it would give you 87.4 not 8.74" is correct, the student does not explain Li Wei's error, which is that Li Wei did not have the decimal point in the right place (no credit for 7.NS.A.2x). In Part D, the student incorrectly determines the product of Li Wei's rating and 9.5. Although the student provides the correct answer and expression in Part C, this response gets no credit since an incorrect answer is provided in Part D (no credit for 7.NS.A.2z). The student constructs a number line and correctly plots Li Wei's score (9.2) and Desai's score (9.6). However, the student does not calculate the difference of 0.4 between Li Wei's score and Desai's score, and while the student displays that difference on the number line, the difference is not labeled (no credit for MP4).

Total Awarded Points: 0 out of 4


Video Game Ratings Task

Li Wei has a rating of 9.4 in an online video game. His rating increases or decreases with each game he plays.

- a. The data below show the change to Li Wei's rating for four consecutive games.

+0.2, -0.4, +0.7, -0.5


Li Wei notices that after playing these four games, his rating is the same as it was before he played the four games. Explain why Li Wei's rating is the same.



$$+0.2 - 0.4 = -0.2$$

$$+0.7 - 0.5 = 0.2$$

- b. Six months later, Li Wei has a rating of 9.2. His friend Desai has a rating of 9.6. Draw a number line and use it to represent the difference in the two friends' current ratings. Explain how your model represents the problem. Give the difference in the two friends' scores.



$$\begin{array}{r} 9.6 \\ -9.2 \\ \hline 0.4 \end{array}$$


Video Game Ratings Task

The game developers want to change the rating system after feedback from the players. They will use the following formula to determine each player's new rating:

$$\text{New Rating} = \text{Current Rating} \times 9.5$$

Li Wei's rating before the change is 9.2. He wants to know what it will be after the change takes place, but he makes an error using the formula and calculates a new rating of 8.74.

- c. Find and explain Li Wei's error.




$$9.2 \times 9.5 = 8.74$$

$$\begin{array}{r} 9.5 \\ \hline 9.5 \end{array}$$

I explained $9.2x = .92$

$$\begin{array}{r} .92 \\ \hline 9.2 \\ x = .1 \end{array}$$

- d. Show how to calculate Li Wei's new rating correctly.



$$9.2 \times 9.5 = 8.74$$

$$\begin{array}{r} 9.5 \\ \hline 9.5 \end{array}$$

$$\begin{array}{r} 9.2x = .92 \\ \hline 9.2 \\ x = .1 \end{array}$$

Litho#: 00027200112

Anchor 10

Litho 00027200112

Total Content Points: 0

Total Practice Points: 0

The student combines the first two and last two changes in Li Wei's ratings, demonstrating that the first two combine to form -2 and the last two combine to form $.2$. This is a good start toward demonstrating that Li Wei's ratings changes combine to equal 0; however, the student does not continue, failing to provide sufficient explanation of why Li Wei's rating is the same (no credit for 7.NS.A.1a). The student does not explain why Li Wei's product is incorrect in Part C (no credit for 7.NS.A.2x). The student does not determine the product of Li Wei's rating and 9.5 correctly (no credit for 7.NS.A.2z). The student finds the difference between the two friends' scores, but does not construct a number line (no credit for MP4).

Total Awarded Points: 0 out of 4