

Exemplars

Title: A Computer Game

Achievement Level: Novice 1

Criteria and Performance Level	Rationales
Problem Solving <i>Apprentice</i>	The student's strategy to use a table to show Jaci's and Emma's points per round would work to solve part of the task, but the student does not always compose numbers from the written form correctly and is missing zero as a place value holder in 52,068. The student does not include the greater than, less than, or equal sign that is part of the question to be answered.
Reasoning & Proof <i>Apprentice</i>	The student demonstrates some correct reasoning for part of the task. The student does compose 74,189, 52,231, and 62,979 correctly. The student does not show understanding of the greater than, less than, or equal sign.
Communication <i>Novice</i>	The student does not use any correct mathematical language. The term <i>diagram</i> is not assessed as the student made a table.
Connections <i>Novice</i>	The student does not make a mathematically relevant connection. The statement, "They played 3 rounds," is not a connection but information provided in the task.
Representation <i>Apprentice</i>	The student's table is appropriate to the task but is not accurate. The data for round one for Jaci is incorrect. The data for rounds two and three for Emma is incorrect.

Exemplars

Achievement Level: Novice 1

P/S	R/P	Com	Con	Rep	A/Level
A	A	N	N	A	N

I need to find who has the biggest points in a round. I will make a diagram.

The rounds	Jaci's points	Emma's points	more points
1	7420016	74189	Jaci
2	52291	5268	Jaci
3	62979	6290084	Emma

They played 3 rounds.

Exemplars

Title: A Computer Game

Achievement Level: Apprentice 1

Criteria and Performance Level	Rationales
Problem Solving <i>Apprentice</i>	The student's strategy to use a table to show Jaci's and Emma's points per round and the greater than and less than signs would work to solve the task, but the student does not always compose numbers correctly. The student has correctly entered the greater than sign for round one and three according to the student's number on her/his table. All signs are entered based on one or two incorrectly composed numbers per round.
Reasoning & Proof <i>Apprentice</i>	The student demonstrates some correct reasoning for part of the task. The student does compose 74,189 and 52,231, correctly. The student attempts to use the greater than and less than signs in her/his table but they are based on some numbers that are not composed correctly.
Communication <i>Apprentice</i>	The student uses the mathematical term <i>most</i> from the task but does not earn credit because the student does not demonstrate understanding of the term when stating, "Both girls played the best on round 3 because they got the most points." The student correctly uses the term <i>table</i> . The student applies the greater than and less than sign correctly in rounds one and three based on the student's incorrectly composed numbers.
Connections <i>Apprentice</i>	The student attempts a connection but it is incorrect. The student states, "Both girls played the best on round 3 because they got the most points." Round one data shows the most points for Jaci.
Representation <i>Apprentice</i>	The student's table is appropriate to the task but is not accurate. The data for rounds one and three for Jaci is incorrect. The data for rounds two and three for Emma is incorrect.

Exemplars

Achievement Level: Apprentice 1

P/S	R/P	Com	Con	Rep	A/Level
A	A	A	A	A	A

who has the most points per round. I got to find I will make a table

Rounds	Jaci's points	sign	Emma's points	winner
1	74,200,16	>	74,189	Jaci
2	52,231	>	52,000,68	Jaci
3	62,900,79	<	62,900,84	Emma

Both girls played the best on round 3 because they got the most points. It is because they got the most practice by then.

Exemplars

Title: A Computer Game

Achievement Level: Practitioner 1

Criteria and Performance Level	Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of using a table to show rounds, points earned by Emma and Jaci, and the inclusion of the greater than and less than sign works to solve part of the task and is correct. "Winners Answer, Round 1 is Jaci, Round 2 is Jaci, Round 3 is Emma," is also correct.
Reasoning & Proof <i>Practitioner</i>	The student demonstrates correct reasoning of the underlying concepts in the task. The student correctly composes numbers and correctly uses the greater than and less than sign in her/his table.
Communication <i>Practitioner</i>	The student correctly uses the mathematical term <i>most</i> from the task. The student also correctly uses the terms <i>table</i> , <i>total</i> , <i>ten thousands place</i> . The student correctly uses the mathematical notation $<$, $>$.
Connections <i>Practitioner</i>	The student makes the mathematically relevant observation, "189,241- Emma's total points," "189,426- Jaci's total points," and, "I also see they always got points in the ten thousands place."
Representation <i>Practitioner</i>	The student's first table is appropriate to the task and accurate. All columns are labeled and the entered data is correct.

Exemplars

Achievement Level: Practitioner 1

P/S	R/P	Com	Con	Rep	A/Level
P	P	P	P	P	P

I need to find who has the most points per round. I will make a table.

The Computer Game

Round	Emma	\geq	Jaci
1	74,189	<	74,216
2	52,068	<	52,231
3	62,984	>	62,979

$$\begin{array}{r}
 70,000 \\
 4,000 \\
 400 \\
 80 \\
 9 \\
 + \\
 \hline
 74,189 \\
 52,000 \\
 200 \\
 30 \\
 + \\
 \hline
 52,231
 \end{array}$$

winners Answer
 Round 1 is Jaci
 Round 2 is Jaci
 Round 3 is Emma

$$\begin{array}{r}
 74,189 \\
 52,068 \\
 + 62,984 \\
 \hline
 189,241 \text{ - Emma's} \\
 \text{total points}
 \end{array}$$

$$\begin{array}{r}
 74,216 \\
 52,231 \\
 + 62,979 \\
 \hline
 189,426
 \end{array}$$

189,426 - Jaci's total points I also see they always got points in the ten thousands place.

Exemplars

Title: A Computer Game

Achievement Level: Practitioner 2

Criteria and Performance Level	Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of using a table to show rounds, points earned by Emma and Jaci, and the inclusion of the greater than and less than sign works to solve part of the task and is correct. The student's statement, "Jaci has rounds 1 and 2 that have the most points Emma has just one round that had the most points. It is round 3." is correct for the next part of the task.
Reasoning & Proof <i>Practitioner</i>	The student demonstrates correct reasoning of the underlying concepts in the task. The student correctly composes numbers and correctly uses the greater than or less than sign to indicate which girl earns the most points per round.
Communication <i>Practitioner</i>	The student correctly uses the mathematical terms <i>most, less than, more than, equal</i> from the task. The student also correctly uses the terms <i>table, key, total, hundred thousands, ten thousands, thousands, hundreds, tens, ones, place value</i> . The student correctly uses the mathematical notation $<$, $>$.
Connections <i>Practitioner</i>	The student makes the mathematically relevant observation, "Emma's total points—189,241," and, "Jaci's total points—189,426." The student makes a second table to indicate the place value of the numerals from the total points for Emma and Jaci and states, "Look at the hundreds. This shows Jaci has more points than Emma. Jaci's total points has the biggest place value," The student also computes the difference of Emma and Jaci's total points. The student states, "Jaci has 185 more points than Emma."
Representation <i>Practitioner</i>	The student's first table is appropriate to the task and accurate. All columns are labeled and the entered data is correct. The student's second table is also appropriate to the task and accurate. The student labels each column and the entered data is correct.

Exemplars

Achievement Level: Practitioner 2

P/S	R/P	Com	Con	Rep	A/Level
P	P	P	P	P	P

I am finding who has the most points in each round. I will do a table and $>$, $<$, $=$.

girls	round 1 points	sign	round 2 points	sign	round 3 points	sign
Jaci	74,216	$>$	52,231	$>$	62,979	$<$
Emma	74,189	$<$	52,068	$<$	62,984	$>$

$$74,216 > 74,189 \quad 52,231 < 52,068 \quad 62,984 > 62,979$$

Jaci has rounds 1 and 2 that have the most points. Emma has just one round that has the most points. It is round 3.

Key
$>$ less than
$<$ more than
$=$ equal

Exemplars

Emma's total points

$$\begin{array}{r} 74,189 \\ 52,068 \\ + 62,984 \\ \hline 189,241 \end{array}$$

Jaci's total points

$$\begin{array}{r} 74,216 \\ 52,231 \\ + 62,979 \\ \hline 189,426 \end{array}$$

place value	points in place value	
	Emma	Jaci
hundred thousands	1	1
Ten thousands	8	8
Thousands	9	9
hundreds	2	4
Tens	4	2
ones	1	6

Look at the hundreds.

This shows Jaci has more points than Emma.

Jaci's total points has the biggest place value.

$$\begin{array}{r} \text{points} \\ 189,426 \text{ Jaci's total} \\ - 189,241 \text{ Emma's total} \\ \hline 185 \end{array}$$

Jaci has 185 more points than Emma.

Exemplars

Title: A Computer Game

Achievement Level: Practitioner 3

Criteria and Performance Level	Rationales
Problem Solving <i>Practitioner</i>	The student's strategy of using a table to show the rounds and points earned by Emma and Jaci works to solve part of the task and is correct. The student's work, " $74,216 > 74,189$, $52,231 > 52,068$, $62,979 < 62,984$," is correct for a second part of the task. The student includes a "Score Board" to indicate that Jaci won the first round, the second round, and Emma won the third round for the third part of the task.
Reasoning & Proof <i>Practitioner</i>	The student demonstrates correct reasoning of the underlying concepts in the task. The student correctly composes numbers and correctly uses the greater than or less than sign, and determines which girl made the most points in each round.
Communication <i>Practitioner</i>	The student correctly uses the mathematical terms <i>most</i> , <i>1st</i> , <i>2nd</i> , <i>3rd</i> from the task. The student also correctly uses the terms <i>table</i> , <i>least</i> . The student correctly uses the mathematical notation $<$, $>$.
Connections <i>Practitioner</i>	The student makes the mathematically relevant observation, "Emma and Jaci got the least points in round 2," and, "Most points are in round 1." The student finds the total points earned in each round, "148,405 total points in round 1," "104,299 total points in round 2," and, "125,963 total points in round 3."
Representation <i>Practitioner</i>	The student's first table is appropriate to the task and accurate. All columns are labeled and the entered data is correct. The student's second table is also appropriate to the task and accurate. The student labels each column and the entered data is correct.

Exemplars

Achievement Level: Practitioner 3

P/S	R/P	Com	Con	Rep	A/Level
P	P	P	P	P	P

Who made the most points for each round. I will use a table.

Friend	Jaci	Emma
1st round points	74,216	74,189
2nd round points	52,231	52,068
3rd round points	62,979	62,984

$74,216 > 74,189$
 $52,231 > 52,068$
 $62,979 < 62,984$

Score Board

Round	Who won?
1st round	Jaci
2nd round	Jaci
3rd round	Emma

Exemplars

CONNECTIONS

1. Emma and Jaci got the least points in round 2.
2. Emma only won one round. She should practice more
3. Most points are in round 1.
They never did that good again
Maybe they got tired in round 2

4.
$$\begin{array}{r} 74,216 \\ + 74,189 \\ \hline 148,405 \end{array}$$
 1 way
total points in round 1.

5.
$$\begin{array}{r} 52,231 \\ 52,068 \\ \hline 100,000 \\ 4,000 \\ 200 \\ 90 \\ 9 \\ \hline 104,299 \end{array}$$
 2nd way

6.
$$\begin{array}{r} 62,979 \\ + 62,984 \\ \hline 13 \\ 150 \\ 1800 \\ 4000 \\ 120000 \\ \hline 125,963 \end{array}$$
 3rd way

total points in round 3

total points in round 2

Exemplars

Title: A Computer Game

Achievement Level: Practitioner 4

Criteria and Performance Level	Rationales
Problem Solving <i>Expert</i>	The student's strategy of using a table to show the points earned by Emma and Jaci, the inclusion of the greater than and less than sign, the rounds, and which girls earns the most points works to solve the task and is correct. The student uses an alternate strategy of open number lines.
Reasoning & Proof <i>Expert</i>	The student demonstrates correct reasoning of the underlying concepts in the task. The student correctly composes numbers and correctly uses the greater than or less than sign to indicate which girls earns the most points per round. The student justifies her/his answer by using open number lines to indicate how each number was composed and which girl earns the most points per round.
Communication <i>Practitioner</i>	The student correctly uses the mathematical term <i>most</i> from the task. The student also correctly uses the terms <i>table</i> , <i>total</i> , <i>number lines</i> , <i>more</i> , <i>less</i> . The student correctly uses the mathematical notation $<$, $>$.
Connections <i>Expert</i>	The student makes the mathematically relevant Practitioner observation by finding the total points for "Emma-189,241." The total points indicated for "Jaci: 199,426," is incorrect and is assessed at the Apprentice Level. The student makes the Expert connection by applying number lines for each girl and the three rounds. The student indicates how each number of points was composed from the data in the task. The student states, "I am right. I did 2 plans and got the same answer."
Representation <i>Expert</i>	The student's table is appropriate to the task and accurate. All columns are labeled and the entered data is correct. The student's open number lines are also appropriate to the task and accurate. The student labels each number line "more points" or "less points." The student uses the open number lines to support her/his table and answer.

Exemplars

Achievement Level: Practitioner 4

P/S	R/P	Com	Con	Rep	A/Level
E	E	P	E	E	P

I need to find out who gets the most points in each round. Make a table.

Jaci's Points	Sign	Emma's Point	Round	Who has more points
74,216	>	74,189	1	Jaci
52,231	>	52,068	2	Jaci
62,979	<	62,984	3	Emma

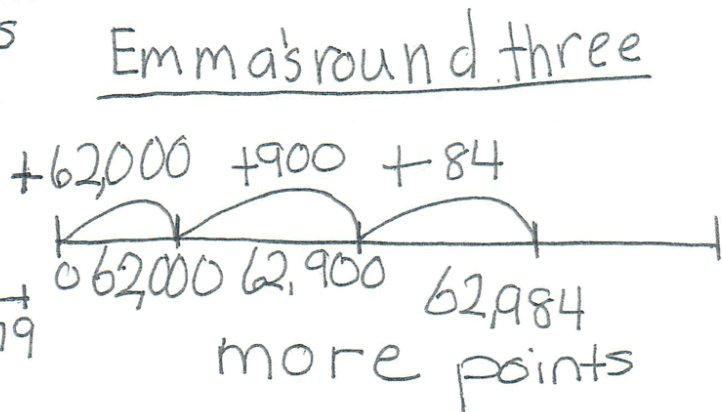
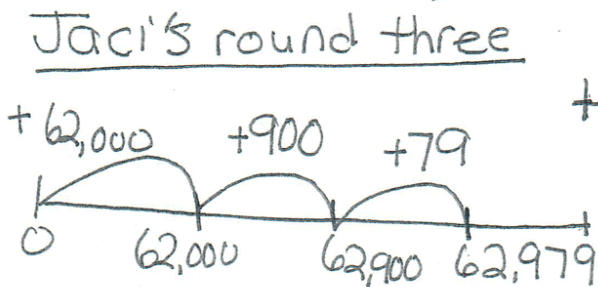
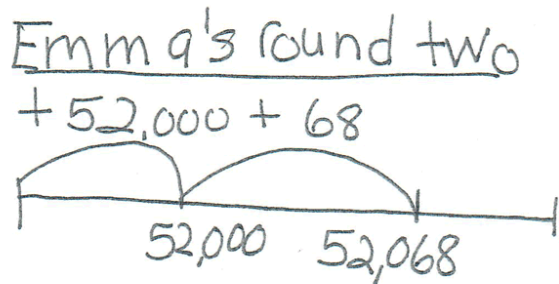
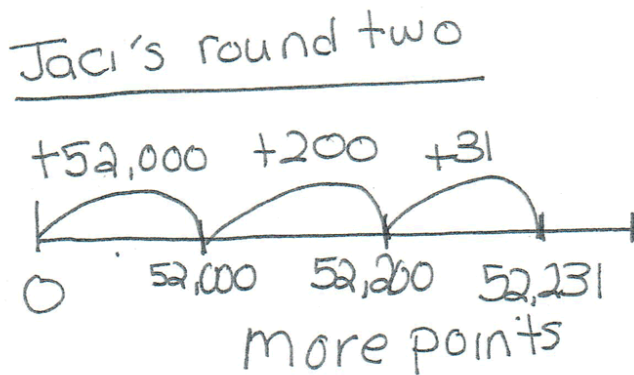
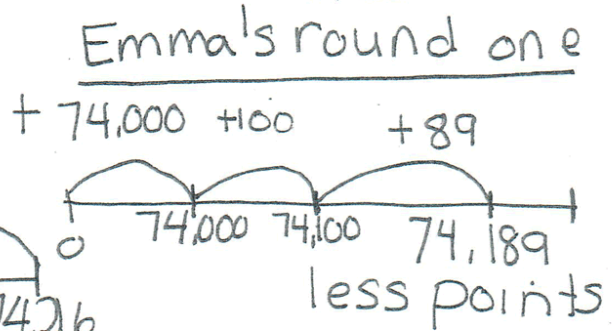
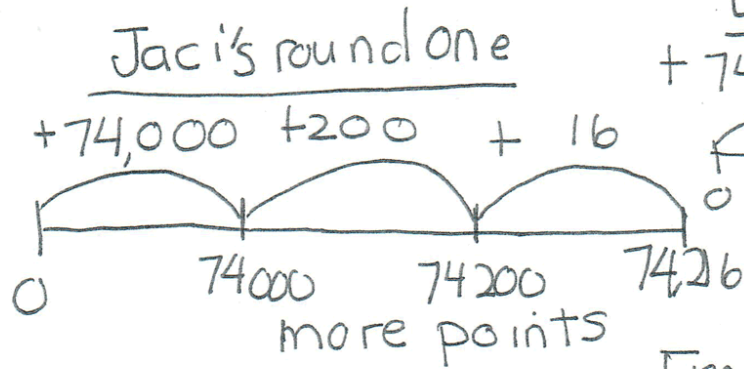
I can do Points altogether - the total

Jaci: 74,216
+ 52,231
<u>62,979</u>
199,426

Emma: 52,068
+ 74,189
<u>62,984</u>
189,241

Exemplars

my open number lines



I am right. I did 2 plans
and got the same answer.

Exemplars

Title: A Computer Game

Achievement Level: Expert 1

Criteria and Performance Level	Rationales
Problem Solving <i>Expert</i>	The student's strategy of using a table and key to show the girls, the points earned, the most points per round, and the inclusion of the greater than and less than sign to determine the most points earned, works to solve the task and is correct. The student uses an alternate strategy of a place value table to justify her/his answer.
Reasoning & Proof <i>Expert</i>	The student demonstrates correct reasoning of the underlying concepts in the task. The student correctly composes numbers and correctly uses the greater than or less than sign to indicate which girl earns the most points per round. The student justifies her/his answer by using a place value table to indicate where the determination was made in selecting the larger number of points per round.
Communication <i>Expert</i>	The student correctly uses the mathematical terms <i>most, less than, greater than, equal, 1st, 2nd, 3rd</i> from the task. The student also correctly uses the terms <i>table, key, more, more than, amount, ten thousands, thousands, hundreds, tens, ones, powers of ten, left, place value</i> . The student correctly uses the mathematical notation $<$, $>$, $2/3$, $1/3$.

Exemplars

<p>Connections <i>Expert</i></p>	<p>The student makes the mathematically relevant Practitioner observation by finding the total points for "Jaci—189,426," and "Emma—189,241." The student also makes the Practitioner observations, "Jaci has more points in all," "Jaci has 185 more points than Emma," and, "Jaci and Emma have the same amount of thousands in every round and the same ten thousands." The student continues this observation to the Expert connection by creating a table to show her/his "place value plan," and indicates where in each number of points the girl with the most points earned was determined. The student states, "This proves I am correct on my table." The student continues her/his thinking by extending the solution to fractions/ratio. The student states, "I see Jaci wins $\frac{2}{3}$ times and Emma wins $\frac{1}{3}$ time. The student then directs her/his thinking back to the place value table and states, "I know 9 is the biggest number you can have in a value place." "This shows powers of ten because as you go left the place value increases ten times."</p>
<p>Representation <i>Expert</i></p>	<p>The student's table is appropriate to the task and accurate. All columns are labeled and the entered data is correct. The student's place value table is also appropriate to the task and accurate. The student labels each column and all entered data is correct. The student uses her/his place value table to justify that her/his answer is correct.</p>

Exemplars

Achievement Level: Expert 1

P/S	R/P	Com	Con	Rep	A/Level
E	E	E	E	E	E

I need to find who has the most points per round.
Per means each. I will make a table.

THE COMPUTER GAME

Rounds	1	1	2	2	3	3
Girl	Jaci	Emma	Jaci	Emma	Jaci	Emma
Points	74,216	74,189	52,231	52,068	62,979	62,984
most points per round	yes	no	yes	no	no	yes
using signs	74,216 > 74,189		52,231 > 52,068		62,979 < 62,984	

Key	>	less than
	<	greater than
	=	equal

Exemplars

Jaci	Emma
74,216	74,189
52,231	52,068
+ 62,979	+ 62,984
189,426	189,241

$$\begin{array}{r} 189,426 \\ - 189,241 \\ \hline 000185 \end{array}$$

- Jaci has more points in all.
- Jaci has 185 more points than Emma.
- Jaci and Emma have the same amount of thousands in every round and the same ten thousands

I can do a place value plan

Round	Girl	ten thousands	thousands	hundreds	tens	ones
1st	Jaci	7	4	2	1	6
1st	Emma	7	4	1	8	9
2nd	Jaci	5	2	2	3	1
2nd	Emma	5	2	0	6	8
3rd	Jaci	6	2	9	7	9
3rd	Emma	6	2	9	8	4

Key

○ the number that shows the larger number

This proves I am correct on my table

I see Jaci wins $\frac{2}{3}$ times and Emma wins $\frac{1}{3}$ times.
 I know 9 is the biggest number you can have in a value place.
 This shows powers of ten because as you go left the place value increases ten times.
 These are my best connections ever in my life.

Exemplars
