Understanding Online Responses to ISTEP+ Math Part 1 Applied Skills

Understanding the use of online tools to show student work for constructed and extended response mathematics questions.

Showing your mathematics work in an online platform can be a different experience from showing work on paper. The information and examples that follow will address the following questions/concerns:

- How can students show their work in the online platform…
  - if they use an equation?
  - if they use pictures and/or diagrams?
- How might showing work in the online platform differ from showing work on paper?

Showing Work with Equations, Expressions, and Inequalities

Showing your work with an equation does not mean showing specific work such as regrouping or algorithms. Simply providing the equation used will help the scorer to understand what thought processes the student used to get to the answer. Students do not need to attempt to show regrouping, division/multiplication algorithm setups, etc. in the online response box.

Try It Out!

Link to Experience Online:

http://download.pearsonaccessnext.com/in/in-practicetest.html?links=1

Show All Work

Math symbols

+	−	×	÷
		(·)	[·]
=	<	>	≠
$	°	?	

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Helpful Hints

- Students can use the +, -, * (for multiplication), / (for a fraction line) and = symbols from the keyboard with the same results as the tools in the equation builder.

- Dotted boxes appear along with math symbols and indicate places where students can type. Empty dotted boxes within a student response will NOT affect scoring.

- Watch the gray line; it indicates where typing will appear.

- Use the right arrow rather than the space bar when inputting fractions, parentheses, or exponents.

Show All Work
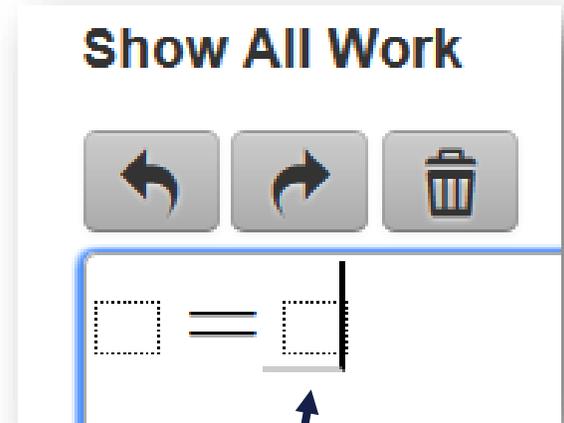
The gray line indicates where typing will appear.

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Simple Equations

$$28 + 30 = 58$$

$$28 + \square$$

Type in 28, then select the + symbol. You can see the box that appears after the plus sign. The gray line underneath this box indicates that the next number or symbol chosen will take the place of this box.
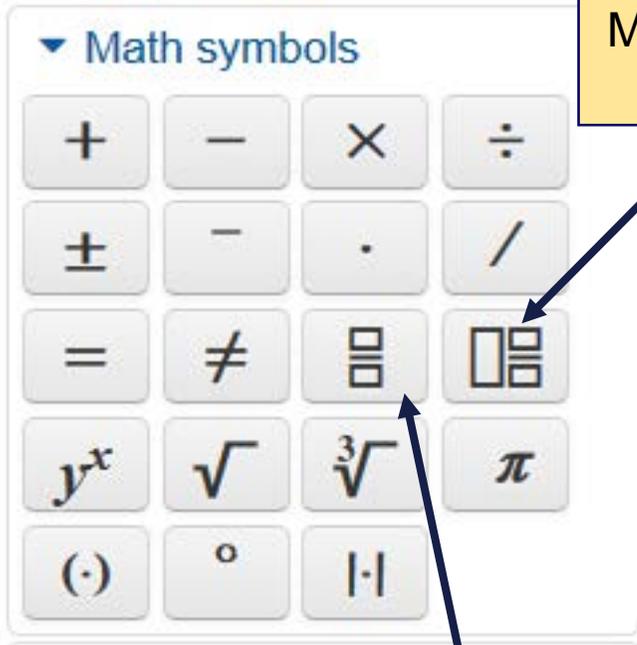
$$28 + 30 = \square$$

Typing 3,0 will replace the box with "30." Then chose the equal sign and type your answer.

$$28 + 30 = 58$$

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Fractions and Mixed Numbers

$$5\frac{4}{5} > \frac{2}{5}$$

Math symbols

Mixed Number Option

Fraction Option

Start by choosing the mixed number option in the math symbols box.

Type in the whole number and use the right arrow key to move to the next box. You can also click or tap on the box you want to fill.

When you are finished, use the right arrow key or tap to the right of the fraction to move your cursor away from the completed fraction.
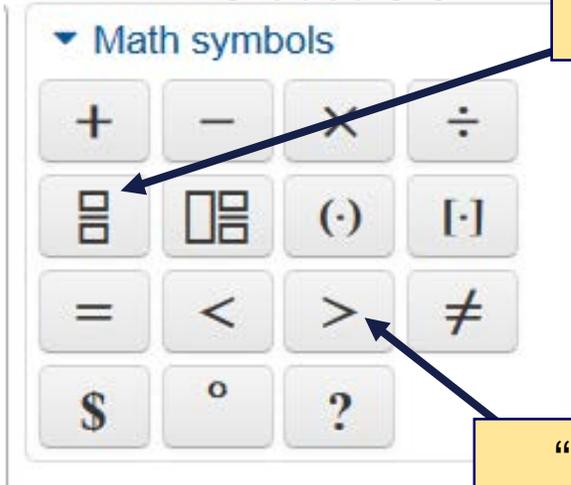
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Fractions and Mixed Numbers

$$5 \frac{4}{5} > \frac{2}{5}$$

Grades 3-5

Math symbols

Fraction Option

"Greater Than" Symbol

Grades 6-8, 10

Relations

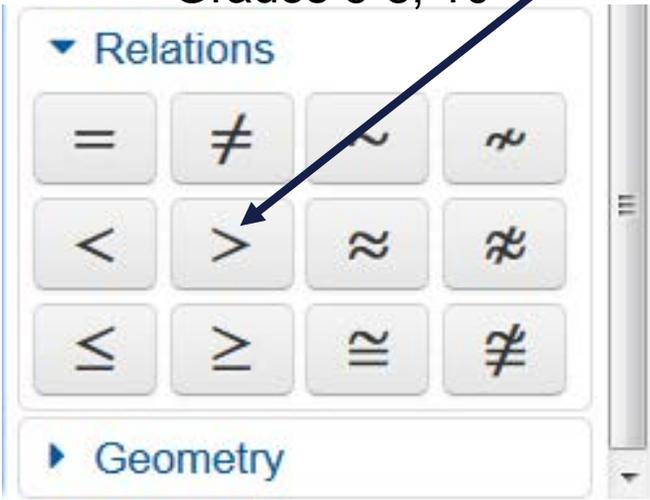**Geometry**

$$5 \frac{4}{5} > \square$$

Add the greater than sign using either a keyboard or the math symbols box.

$$5 \frac{4}{5} > \frac{\square}{\square}$$

In the box that appears after the greater than sign, input the fraction template by choosing the fraction option from the math symbols box.

$$5 \frac{4}{5} > \frac{2}{5}$$

Select the top box to enter a numerator and the bottom box to enter a denominator. Remember to use the right arrow or tap to the right of the fraction to leave the fraction and type something else.

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Exponents and Parenthesis

$$4(2+5)^3 - 6^2$$

The same steps used to complete equations and expressions are used for exponents and parenthesis. Try creating this equation if you want more practice.

$$4\left(\Box\right)$$

$$4(2+5)$$

$$4(2+5)^3$$

Tip: Use the right arrow or tap to the right of the exponent to enter the next number or symbol.

$$4(2+5)^3$$

$$4(2+5)$$

Tip: Use the right arrow or tap outside of the parenthesis to move away from them.

$$4(2+5)^3 - \Box$$

$$4(2+5)^\Box$$

Use the exponent symbol in the symbols box.

y^x

$$4(2+5)^3 - 6^2$$

Showing Work through Pictures, Diagrams, and Other Methods

Sometimes students find an answer using drawings or diagrams. Scorers recognize that drawings and diagrams are very difficult and sometimes impossible to include in the online response box. The following slides show ways that students can describe this type of work and still receive full credit for their responses. (Note: The responses are from the Released Items and Scoring Notes found on the Assessment website.)

Example of Student Work	Possible Online Response

Write <, >, or = in the box to correctly compare the fraction of blue towels to the fraction of green towels.

$\frac{1}{4}$ [<] $\frac{2}{6}$

$6\frac{1}{4} \times \frac{2}{6}$ $6 \quad 8$

I used the butterfly method.

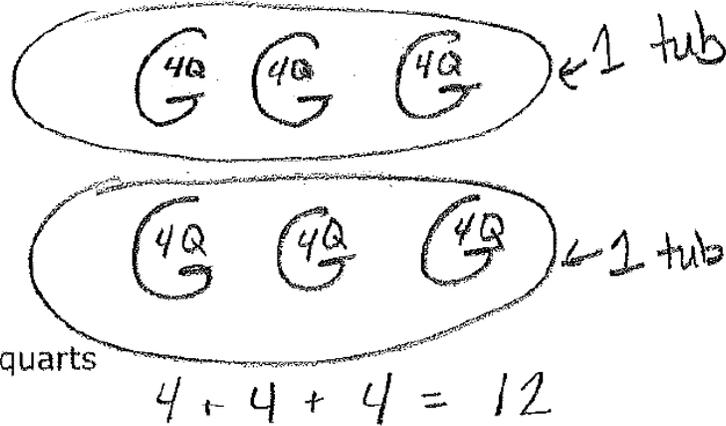$6 \times 1 = 6$

$4 \times 2 = 8$

$\frac{1}{4} < \frac{2}{6}$

Part B

Abby buys 6 gallons of bubble mix and pours it equally into 2 tubs.

How many QUARTS of bubble mix does Abby pour into each tub?

Show All Work

4Q 4Q 4Q ← 1 tub
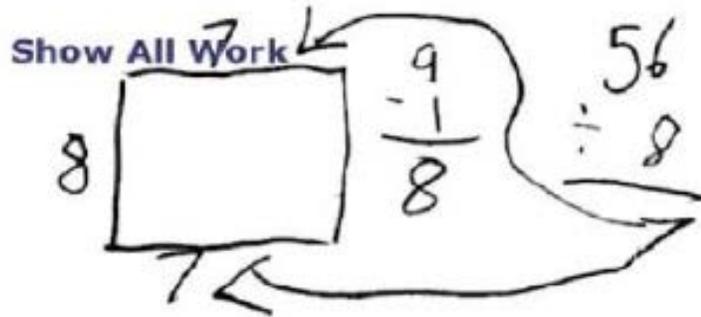
4Q 4Q 4Q ← 1 tub

Answer ____12____ quarts

$4 + 4 + 4 = 12$

I drew 6 gallons. Each gallon has 4 quarts in it. I divided the gallons into two tubs, so each tub has 3 gallons. 4 quarts $+4$ quarts $+4$ quarts $\square = 12$ quarts.

Example of Student Work	Possible Online Response

Example of Student Work

What is the width, in feet, of the play area Jack makes?

Show All Work

8 ☐

9
−1
___
8

56 ÷ 8

7

Answer ___7___ feet

Possible Online Response

I drew a box and labeled the left side 8 and the top and bottom 7.
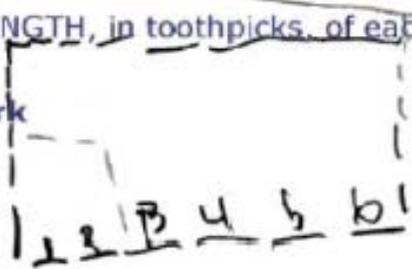
9-1=8

56 ÷ 8 = 7

Answer: 7 feet

Part B

Mark makes Shape B using the same number of toothpicks used in Shape A. Shape B has 4 sides of equal length.

What is the LENGTH, in toothpicks, of each side of Shape B?

Show All Work

1 2 3 4 5 6

Answer ___6___ toothpicks

I drew a box with toothpicks for the sides. I put six toothpicks on the top and bottom and on each side. I counted them and had 24 toothpicks all together.

Answer: 6 toothpicks

Example of Student Work	Possible Online Response

Example of Student Work

3 Mike builds a doghouse. He uses
- 10 boards,
- 2 nails for every board used,
- and 6 shingles for every 2 boards used.

Part A

How many shingles does Mike use?

Show All Work

S=shingles
b=boards

2 boards
6 shingles

4 b
12 s

6 b
18

8 b
24 s

10 b
30 S

Answer __30__ shingles

Possible Online Response

S=shingles
B=boards
2 boards
6 shingles
4b = 12 S
6b = 18 S
8b = 24 S
10b = 30S

Answer: 30 shingles
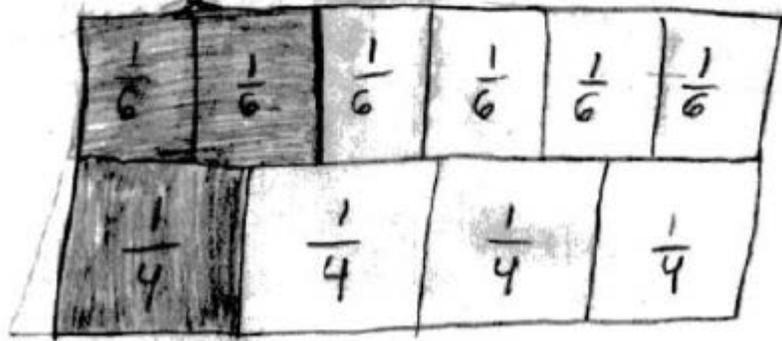
Example of Student Work

Part B

Write <, >, or = in the box to correctly compare the fraction of blue towels to the fraction of green towels.

$$\frac{1}{4} \; \boxed{<} \; \frac{2}{6}$$

Part C

Use (words) (pictures) and/or (symbols) to explain how you know your comparison is correct.

$\frac{2}{6}$ is the same as one third and all 4th graders know that $\frac{1}{3}$ is greater than $\frac{1}{4}$, So $\frac{1}{4} < \frac{2}{6}$.

Possible Online Response

$$\frac{1}{4} < \frac{2}{6}$$

$\frac{2}{6}$ is the same as one third and all 4th graders know that $\frac{1}{3}$ is greater than $\frac{1}{4}$, so $\frac{1}{4} < \frac{2}{6}$. I drew a rectangle showing 6 boxes of $\frac{1}{6}$ ths, and a rectangle showing 4 boxes of $\frac{1}{4}$ ths below it. $\frac{2}{6}$ was a bigger amount.

Example of Student Work

1. A farmer needs to repair and build some fences. She has a roll of fencing that is 100 yards long.

- First, she builds 5 identical fences for her vegetable gardens.
- Next, she uses 10 FEET of the roll to repair a fence.
- After she completes this work, she has 40% of the ORIGINAL roll of fencing left.

What is the length, in YARDS, of fencing used for each vegetable garden?

Show All Work
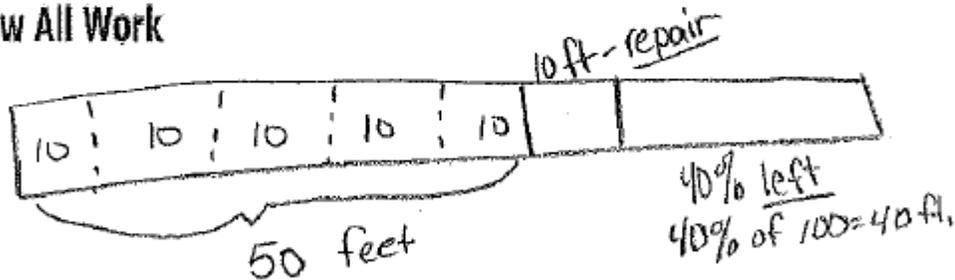
Answer _____10_____ yards

Possible Online Response

I drew a length of fence. I divided the fence into sections.

1. 40% left. 40% of 100 = 40 ft.

2. 10 feet = repair

3. The rest is 50 feet. This is used for the veggie garden.

4. The 50 feet is divided into 5 sections. Each section is 10 feet.

Answer: 10 yards

Questions?

Please contact the Office of Student Assessment with any questions that you have.

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