

ISTEP+ Online Responses

Grade 10 Math,
Part 1 Applied Skills

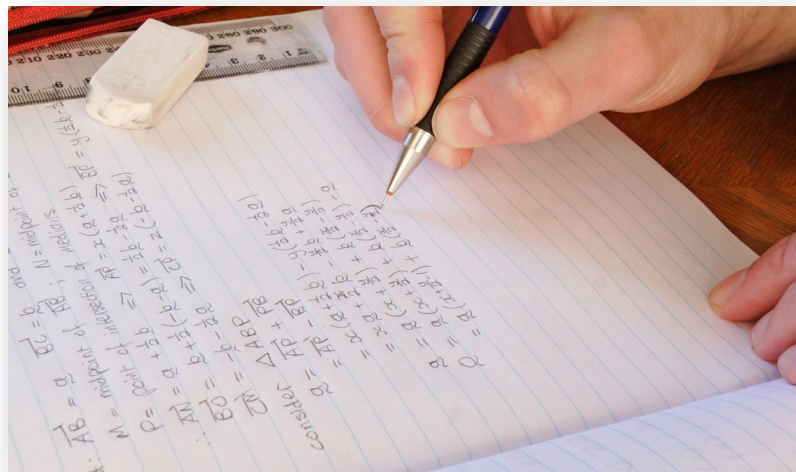


Paper/Online Responses

How can students show their work on 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?



Equations, Expressions, & 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://inpt.tds.airast.org/student>

Show All Work



Try It Out!

Click on the $f(x)$ button to open the Math Editor pop-up window.

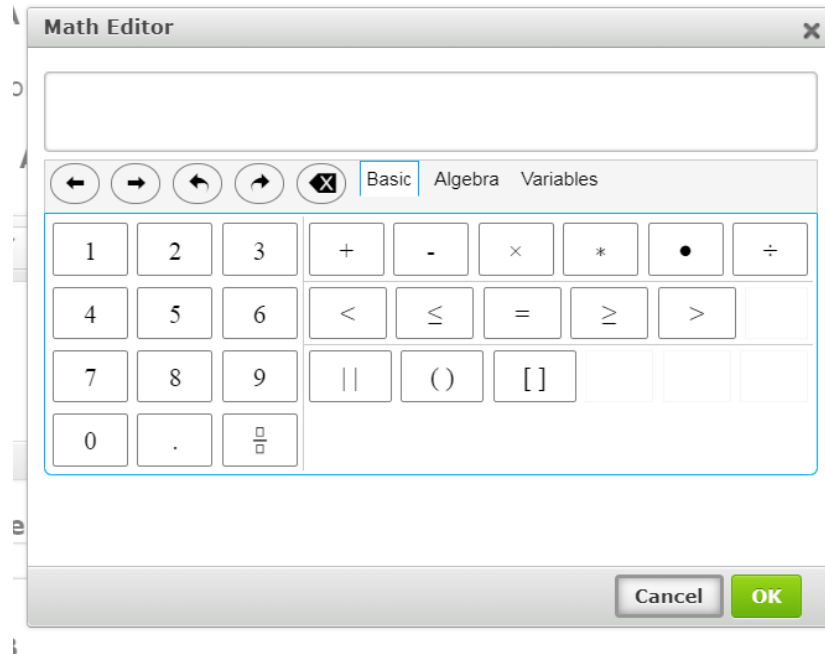
Show All Work



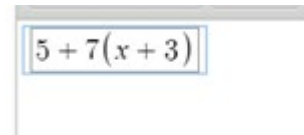
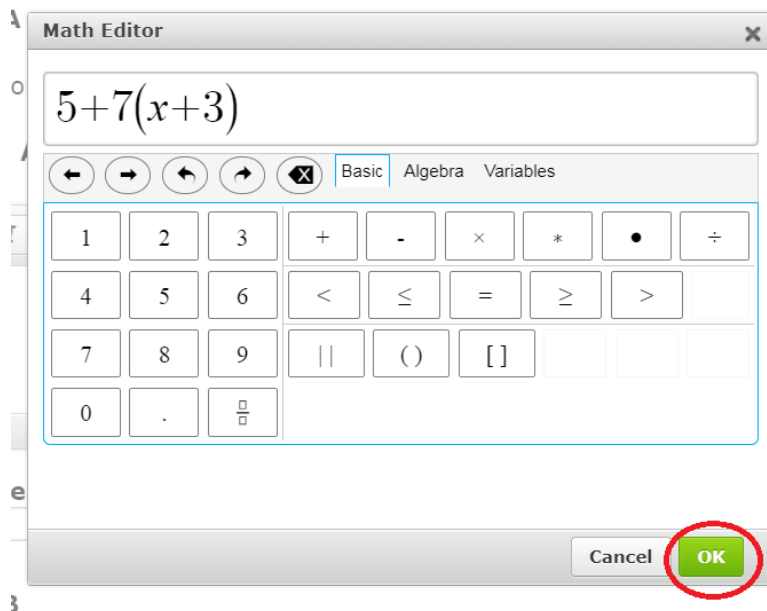
Try It Out!

The Math Editor opens in a pop-up window. Students may enter their mathematical symbols in this window, to place it within the text editor window.

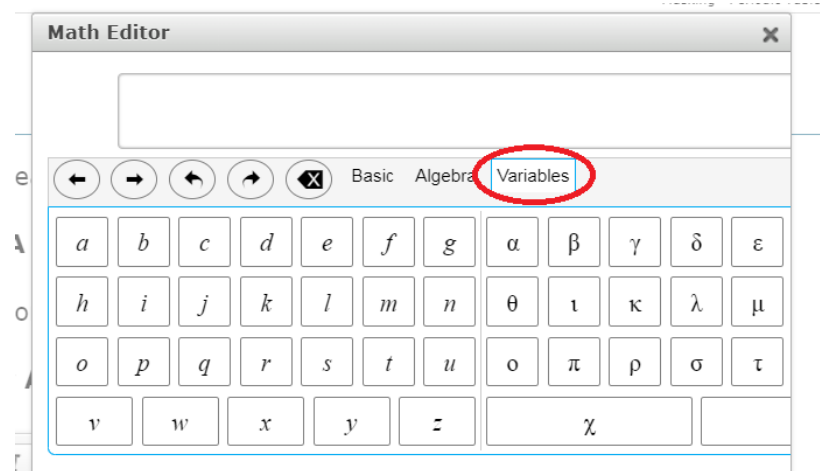
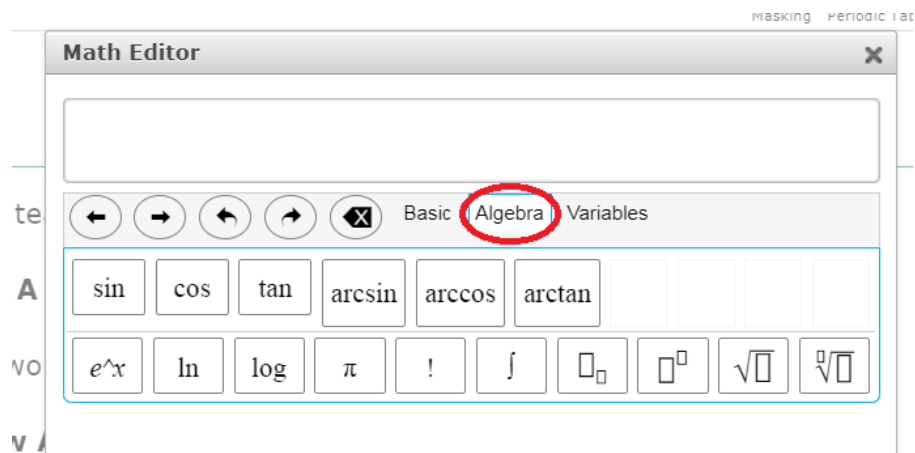
Click OK and the pop-up window will close, with any text from the Math Editor being placed within the text editor window.



Try It Out!

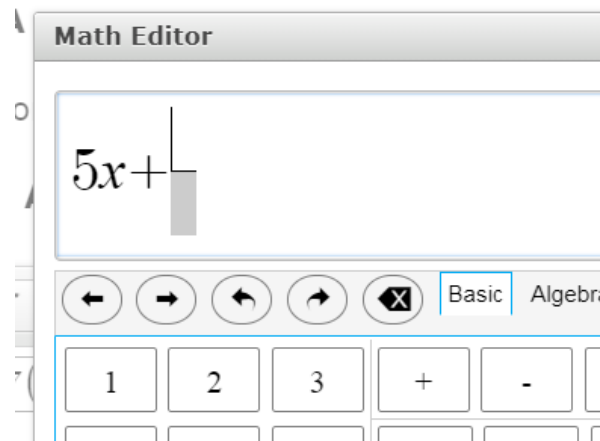


Try It Out!



Helpful Hints

- Students can use the +, -, * (multiplication), / (for a fraction line), =, and parentheses symbols from the keyboard with the same results as the equation builder tools.
- Gray boxes will appear when symbols that need filled in are added. Clicking on one of the boxes places a cursor in the box, allowing it to be filled in.
- Use the arrow keys rather than the space bar when inputting fractions, parentheses, or exponents.



Simple Expressions and Equations

Most expressions and equations can be entered by typing them, either on the keyboard or the online keypad.

Variables can also be typed in from the keyboard.

Math Editor

$$28 + 30 = 58$$

Math Editor

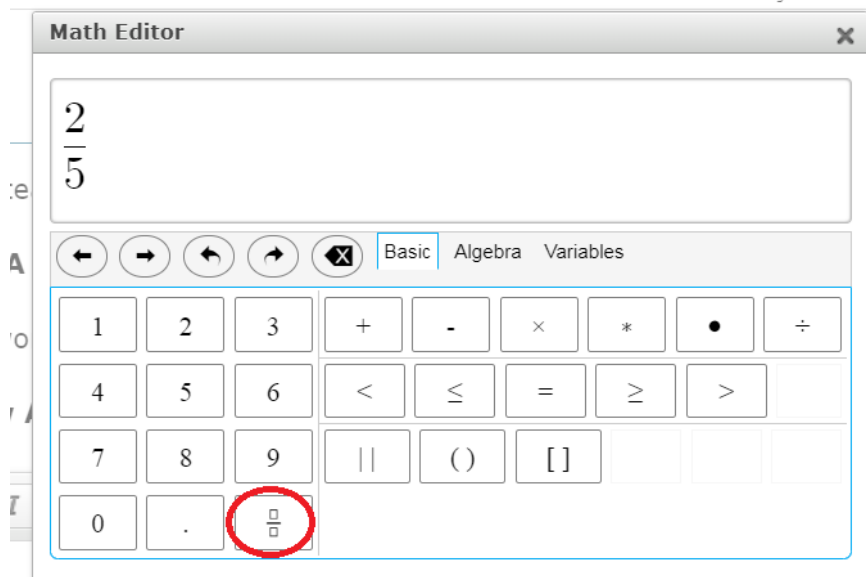
$$2x + 8 = 4x$$



Fractions

There are two ways to enter the fraction $\frac{2}{5}$ into the Math Editor:

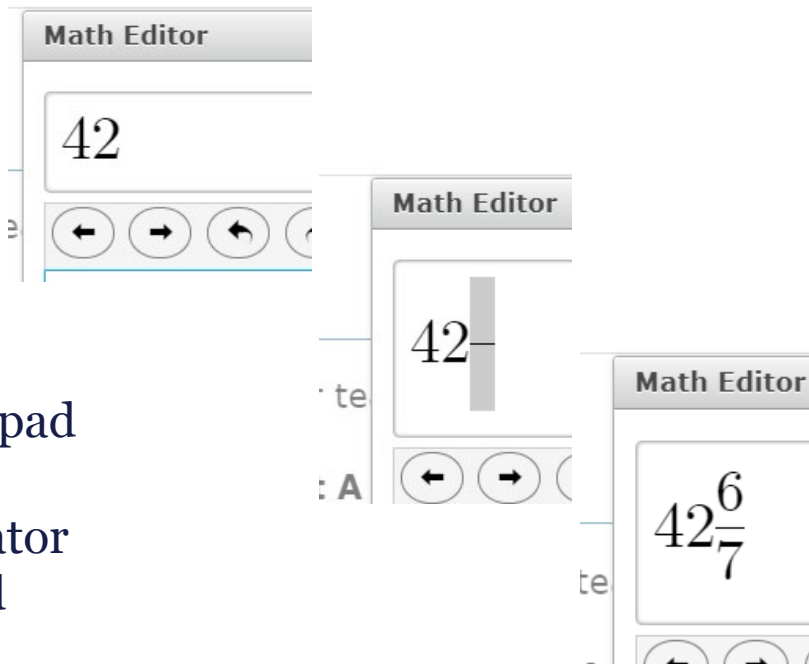
- Type 2 / 5 on keyboard
- Press the fraction key on the keypad, then enter the numerator 2 and denominator 5.



Mixed Numbers

Mixed numbers are entered using the following method:

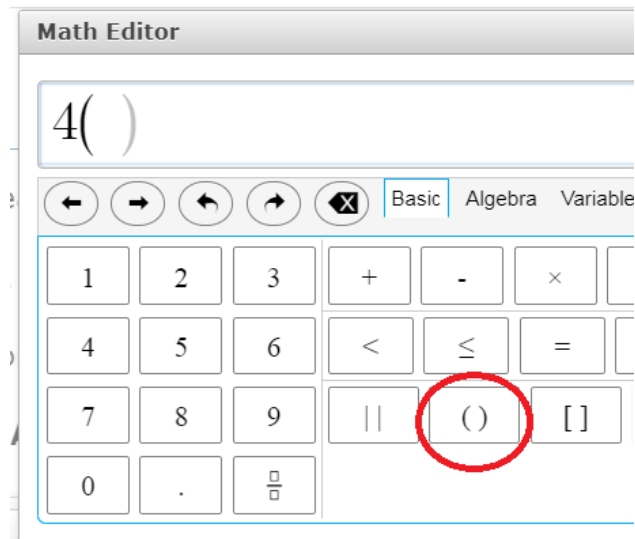
- Type the whole number part of the mixed number
- Click the fraction button on the keypad
- Enter the numerator and denominator into the fractional part of the mixed number.



Exponents and Parentheses

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

- Enter 4
- Begin parenthesis, from keyboard or keypad



Exponents and Parentheses

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

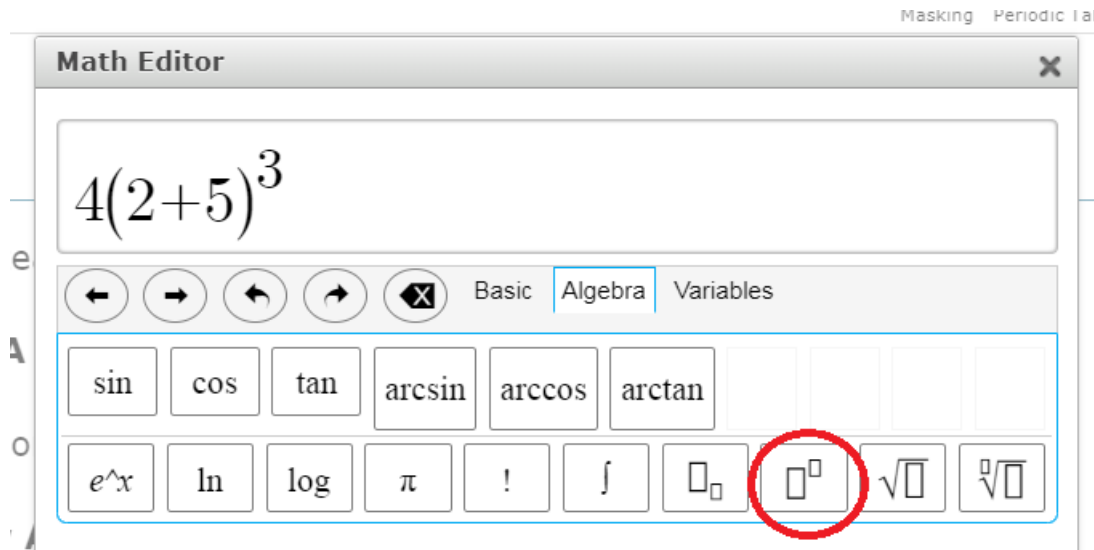
- Enter 4
- Begin parenthesis, from keyboard or keypad
- Enter 2 + 5
- Move cursor to right, out of parentheses
- Move to Algebra tab



Exponents and Parentheses

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

- Enter 4
- Begin parenthesis, from keyboard or keypad
- Enter 2 + 5
- Move cursor to right, out of parentheses
- Move to Algebra tab
- Click on exponent button on keypad
- Enter the exponent 3



Pictures, Diagrams, & Models

Sometimes students find an answer using drawings or diagrams.

Scorers recognize that drawings and diagrams are often 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.



Paper Response Example

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

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

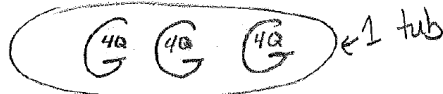
$6 \frac{1}{4} \times \frac{2}{6} 8$

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



Answer 12 quarts

$$4 + 4 + 4 = 12$$

Online Response Example

I used the butterfly method.

$$6 \times 1 = 6$$

$$4 \times 2 = 8$$

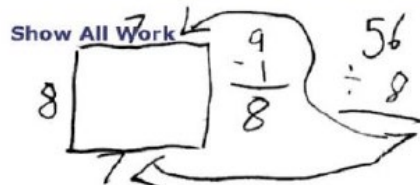
$$\frac{1}{4} < \frac{2}{6}$$

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 = 12 quarts.



Paper Response Example

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



Answer 7 feet

Online Response Example

I drew a box and labeled the left side 8 and the top and bottom 7.

$$9 - 1 = 8$$

$$56 \div 8 = 7$$

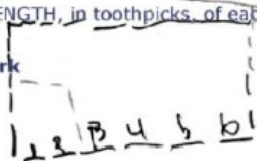
Answer: 7 feet

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



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



Paper Response Example

- 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

Answer 30 shingles

Handwritten work showing calculations:
2 boards
6 shingles
4 b
12 s
10 b
30 s
8 b
24 s
6 b
18 s
10 b
30 s (circled)

Online Response Example

S=shingles

B=boards

2 boards

6 shingles

4b = 12 S

6b = 18 S

8b = 24 S

10b = 30S

Answer: 30 shingles



Paper Response Example

Part B

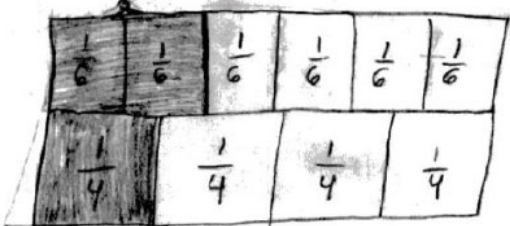
Write $<$, $>$, or $=$ in the box to correctly compare the fraction of blue towels to the fraction of green towels.

$$\frac{1}{4} \quad \square \quad \frac{2}{6}$$

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 $\frac{1}{4}$ is greater than $\frac{1}{6}$, so $\frac{1}{4} < \frac{2}{6}$.



Online Response Example

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

$\frac{2}{6}$ 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.



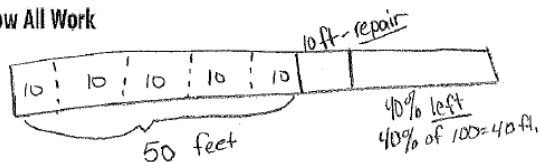
Paper Response Example

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

Online Response Example

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

1. 40% left. $40\% \text{ of } 100 = 40 \text{ ft.}$

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.

- Andrew Jones, Sr. Assessment Specialist – Secondary Mathematics, ajones3@doe.in.gov
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- Office of Student Assessment, INassessments@doe.in.gov

ISTEP+ Experience Online: <http://inpt.tds.airast.org/student>

