



DEPARTMENT OF EDUCATION

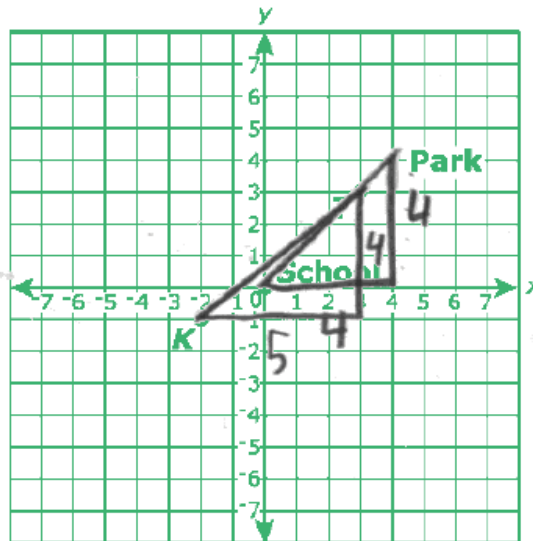
Working Together for Student Success

ISTEP+ **Grade 10 Math**

Practice Set 2

Student Response 1

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



$$\begin{aligned} &\sqrt{32} \\ &5.7 \\ &\sqrt{41} \\ &6.4 \end{aligned}$$

Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

The shortest distance is 5.7 units. I found this by forming a right triangle with the line connecting the school and park as the hypotenuse and used Pythagorean Theorem.

Distance: 5.7 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

He is incorrect.
Once Again I made a right triangle with the distance the hypotenuse and used Pythagorean theorem, and the sides were longer so I knew it was longer. But to be sure I found the length to be 6.4 units which is longer than 5.7

Content - 2 pts

The response indicates a thorough understanding of the mathematical concepts in the task. In Part A, the response gives the correct value of 5.7 units. In Part B, the response states that Tim is incorrect and that the distance between Kim's home and Tim's home is greater than the distance between the school and the park.

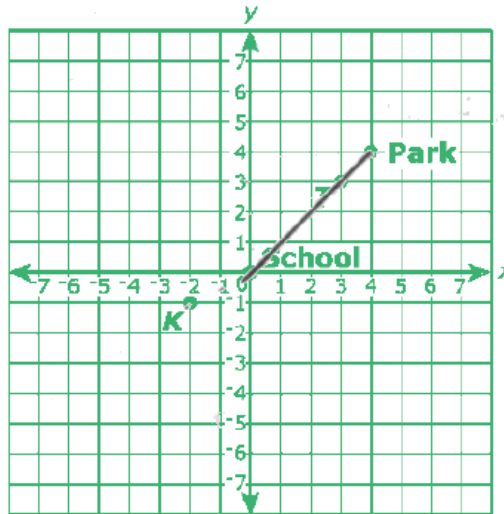
Process - 2 pts

The response indicates a thorough understanding of the mathematical processes related to the task. The processes for both Part A and Part B are by the grid. $\sqrt{32}$ is the process for the distance between the school and the park, and $\sqrt{41}$ is the process for the distance from Kim's home to Tim's home. The drawing on the grid enhances the processes.

Student Response 2

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.

$$\begin{array}{l} S \quad P \\ (0,0) \quad (4,4) \\ \sqrt{0-4^2 + 0-4^2} \\ \sqrt{-4^2 + -4^2} \\ \sqrt{16+16} \\ \sqrt{32} \\ 5.6 \end{array}$$



$$\begin{array}{l} T \quad K \\ (3,3) \quad (-2,-1) \\ \sqrt{3-2^2 + 3-1^2} \\ \sqrt{5^2 + 4^2} \\ \sqrt{25+16} \\ \sqrt{41} \\ 6.4 \end{array}$$

Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

The shortest distance between the park and school is a straight line that is 5.6 units long.

Distance: 5.6 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

Tim is not correct. If you use the distance formula you can see that from the school to park it is 5.7 units but from Tim's house to Kim's it is 6.4 units proving Tim is wrong.

Content - 2 pts

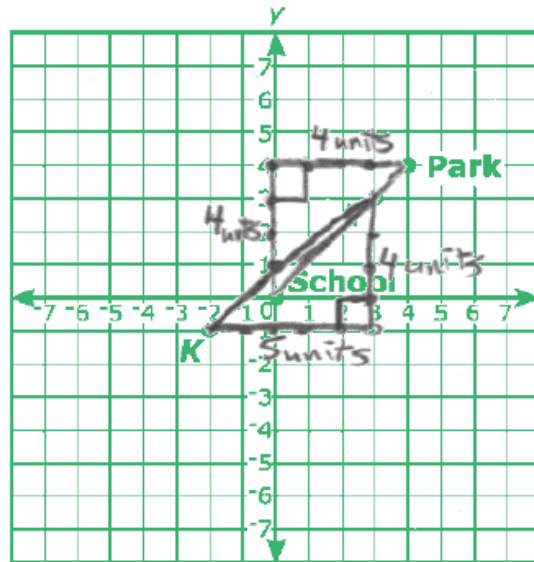
The response indicates a thorough understanding of the mathematical concepts in the task. In Part A, the response gives the correct value of 5.7 units. In Part B, the response states that Tim is incorrect and that the distance between Kim's home and Tim's home is greater than the distance between the school and the park.

Process - 2 pts

The response indicates a thorough understanding of the mathematical processes related to the task. The process in Part A uses the distance formula correctly to find the correct value (5.7) for the distance between the school and the park. The process for finding the distance from Kim's home to Tim's home can be found next to the grid, which uses the distance formula correctly to find 6.4.

Student Response 3

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



$$\begin{aligned}a^2 + b^2 &= c^2 \\(4 \text{ units})^2 + (4 \text{ units})^2 &= c^2 \text{ units}^2 \\16 \text{ units}^2 + 16 \text{ units}^2 &= c^2 \\c^2 &= 32 \text{ units}^2 \\c &= \sqrt{32} \text{ units} \\c &= \sqrt{16 \cdot 2} \text{ units} \\c &= 4\sqrt{2} \text{ units} \\c &\approx 5.657 \text{ units} \\ \text{Special Triangle} \\ 45-45-90 \\ \triangle \begin{matrix} 4 \\ 4 \\ 4\sqrt{2} \end{matrix} \end{aligned}$$

Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

The shortest distance from the school would be to go straight from the school to the park. I created an isosceles right triangle and used the special triangle theorem to figure out that the distance was $4\sqrt{2}$ units which is about 5.7 units.

Distance: about 5.7 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

Tim is incorrect. The distance from Kim's house to his is slightly greater than the distance from the school to the park.
It is 5

Content - 2 pts

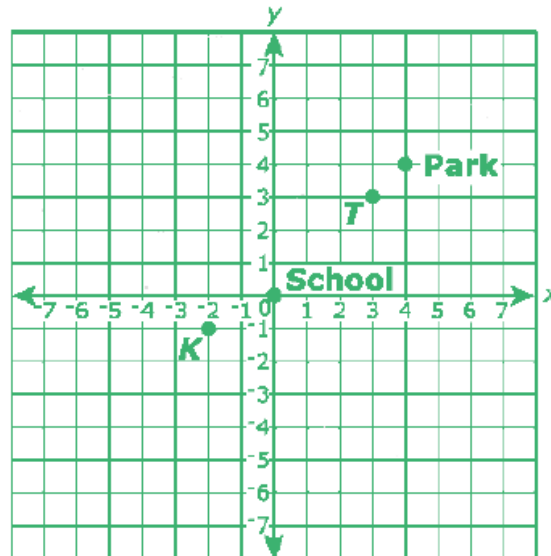
The response indicates a thorough understanding of the mathematical concepts in the task. In Part A, the response gives the correct value of about 5.7 units. In Part B, the response states that Tim is incorrect and that the distance between Kim's home and Tim's home is greater than the distance between the school and the park. The distance between Kim's home and Tim's home is shown by the $5\sqrt{2}$.

Process - 1 pt

The response indicates a partial understanding of the mathematical processes related to the task. The process in Part A uses the Pythagorean Theorem correctly to find the correct value for the distance (5.7) between the school and the park. No process is shown for Part B.

Student Response 4

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

$$\sqrt{(4-0)^2 + (4-0)^2} = \sqrt{4^2 + 4^2} = \sqrt{16 + 16} = \sqrt{32} = 5.65$$

Distance:

5.65

units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

$$\sqrt{(3+4)^2 + (3+4)^2} = \sqrt{(25) + (16)} = \sqrt{41} = 6.4$$

6.4 does not equal 5.65 so he is incorrect

Content - 1 pt

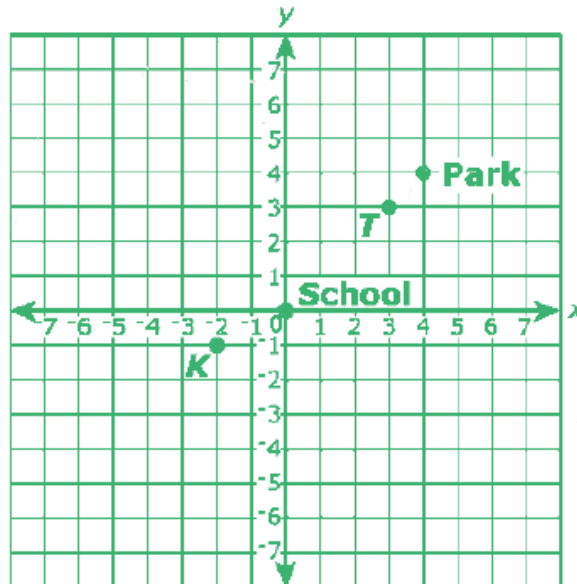
The response indicates a partial understanding of the mathematical concepts in the task. In Part A, the response gives an incorrect value of 5.65 units. In Part B, the response states that Tim is incorrect and that the distance between Kim's home and Tim's home does not equal the distance between the school and the park.

Process - 2 pts

The response indicates a thorough understanding of the mathematical processes related to the task. The process in Part A uses the distance formula correctly to find the value (5.65) for the distance between the school and the park. The process in Part B uses the distance formula correctly to find the correct value (6.4) for the distance between Kim's home and Tim's home.

Student Response 5

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

$$d = \sqrt{(4-0)^2 + (4-0)^2}$$
$$d = 5.65$$

Distance: 5.65 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

$$d = \sqrt{(-2-3)^2 + (-1-3)^2}$$

$$d = 6.4$$

Tim is wrong the distance between Kim and Tim is 6.4

The distance between the school and park is 5.6

Content - 1 pt

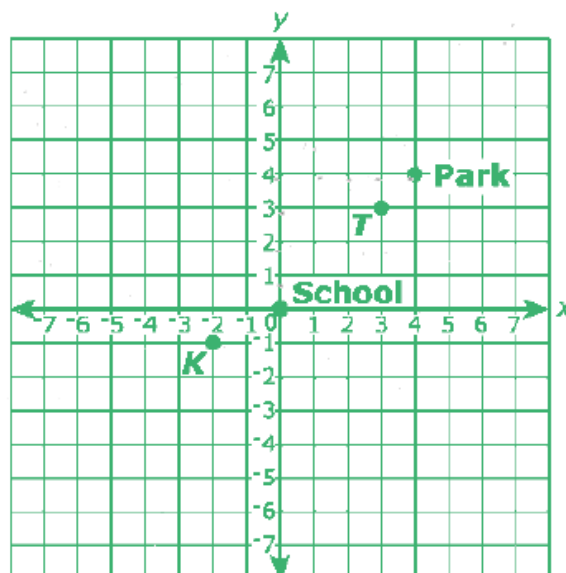
The response indicates a partial understanding of the mathematical concepts in the task. In Part A, the response gives an incorrect value of 5.6 units. In Part B, the response states that Tim is incorrect and that the distance between Kim's home and Tim's home is greater than the distance between the school and the park.

Process - 2 pts

The response indicates a thorough understanding of the mathematical processes related to the task. The process in Part A uses the distance formula for the distance between the school and the park. The process in Part B uses the distance formula correctly to find the correct value (6.4) for the distance between Kim's home and Tim's home and the correct value (5.65) for the distance between the school and the park.

Student Response 6

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



$$\begin{aligned}4^2 + 4^2 &= x^2 \\16 + 16 &= x^2 \\32 &= x^2 \\x &= 5.7\end{aligned}$$

Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

School at point $(0,0)$ and the park at $(4,4)$ have the shortest distance represented as the hypotenuse of a triangle. So: $(4-0)^2 + (4-0)^2 = D^2$. This results in $32 = x^2$, that finally ends in: $x = 5.7$

Distance: 5.7 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

He is incorrect. Tim's distance can be found by solving: $3^2 + 3^2 = x^2$. This results in 4.2 units. Kim's distance from school would be the solution of: $1^2 + 2^2 = x^2$ Result in 2.2 units. In conclusion, Kim is closer.

Content - 1 pt

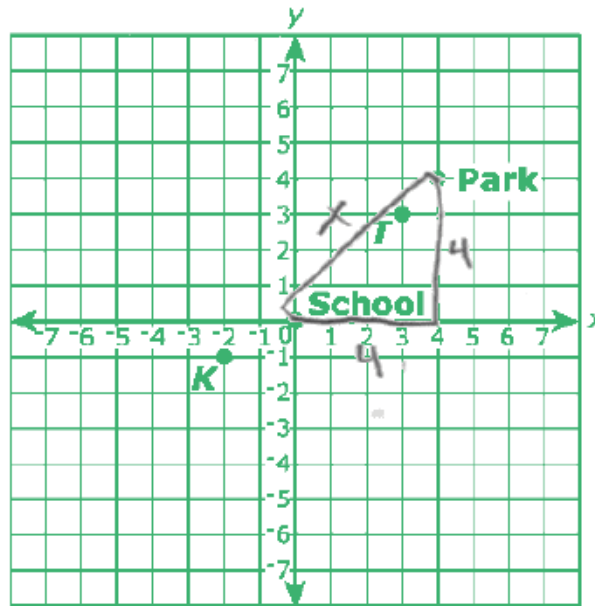
The response indicates a partial understanding of the mathematical concepts in the task. In Part A, the response gives the correct value of 5.7 units. In Part B, the response states that Tim is incorrect but there is no support for this conclusion as there is no justification for where the numbers came from.

Process - 1 pt

The response indicates a partial understanding of the mathematical processes related to the task. The process in Part A uses the Pythagorean Theorem correctly to find the correct value for the distance (5.7) between the school and the park. The process in Part B uses the Pythagorean theorem with incorrect numbers.

Student Response 7

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



$$x = 4\sqrt{2}$$
$$x \approx 5.7$$

Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

The shortest distance from the school to the park is a straight line.

Distance: 5.7 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

Tim & Kim's houses are farther apart than the relationship of the school from the park.

Content - 1 pt

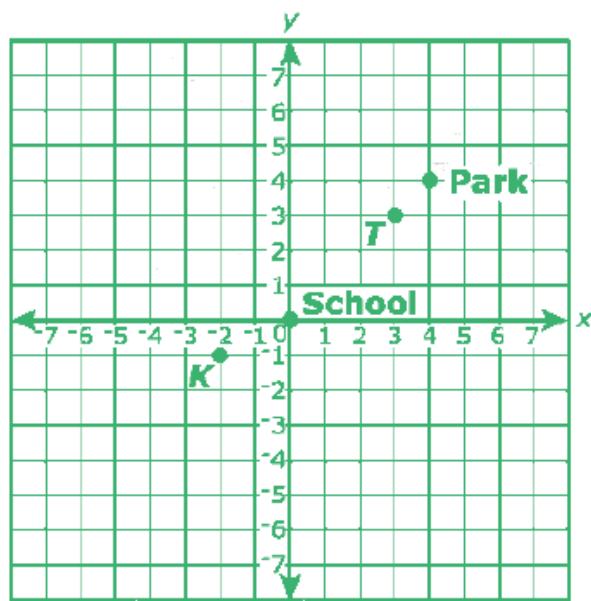
The response indicates a partial understanding of the mathematical concepts in the task. In Part A, the response gives the correct value of 5.7 units. In Part B, the response states that Tim is incorrect and that the distance between Kim's home and Tim's home is greater than the distance between the school and the park, but there is no value for the distance between Kim's home and Tim's home, therefore there is no valid comparison.

Process - 1 pt

The response indicates a partial understanding of the mathematical processes related to the task. The process in Part A by the grid shows work of $[x = 4\sqrt{2}]$ for the distance between the school and the park. No process is shown for Part B.

Student Response 8

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

when using a ruler you can see that from school to the park is 2.8 units.

Distance: 2.8 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

Tim's claim is incorrect because from the school to the park it is 2.8 units, and from Kim's home to Tim's home it is 3.3 units.

Content - 0 pts

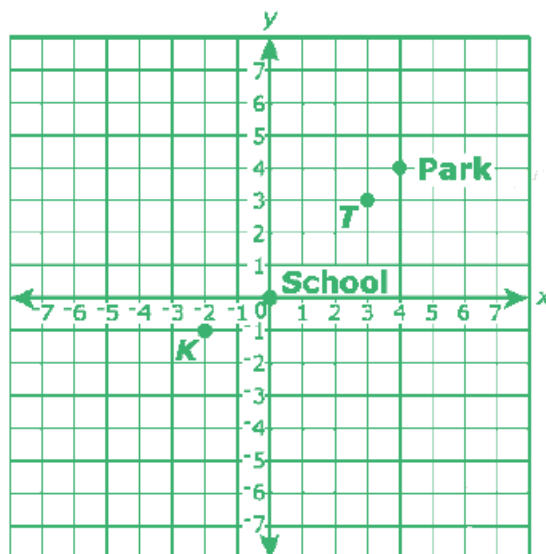
The response indicates a limited understanding of the mathematical concepts in the task. In Part A, the response is incorrect. In Part B, the distance given for Kim's home to Tim's home is greater than the distance from the school to the park, but the numbers used are incorrect.

Process - 0 pts

The response indicates no understanding of the mathematical processes related to the task. The process in Part A is invalid (using a ruler). No process is shown for Part B.

Student Response 9

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

About ten units away cause its on the five and I rounded it to the tenth

Distance: 10 units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

it is not cause tim live way
closer even if we rounded it, he is still
closer to the park cause Kim is not even close
to tim

Content - 0 pts

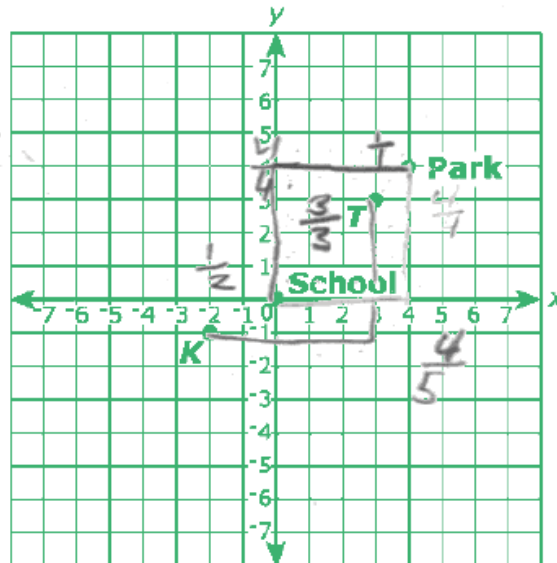
The response indicates no understanding of the mathematical concepts in the task. In Part A, the response is incorrect, as well as in Part B. Process – Score Point 0

Process - 0 pts

The response indicates no understanding of the mathematical processes related to the task. No processes are shown for either Part A or Part B.

Student Response 10

The coordinate grid shows the location of a school and a park. Point K represents the location of Kim's home, and point T represents the location of Tim's home.



Part A

What is the shortest distance between the school and the park on the grid? Round your answer to the nearest tenth of a unit. Use words, numbers, and/or symbols to explain how you found your answer.

The shortest distance is $\frac{4}{5}$ units. The answer was figured out using the slopes

Distance:

$\frac{4}{5}$

units

Part B

Tim claims that the distance from the school to the park is the same as the distance from Kim's home to Tim's home. Use words, numbers, and/or symbols to explain whether he is correct.

The distance is not the same. The distance from Kim's home to Tim's is $\frac{4}{5}$ units while the distance from the school to the park is $\frac{4}{9}$ units.

Content - 0 pts

The response indicates no understanding of the mathematical concepts in the task. In Part A, the response is incorrect, as well as in Part B.

Process - 0 pts

The response indicates no understanding of the mathematical processes related to the task. Determining the slopes for Parts A and Part B is incorrect.