This key should allow you to understand why you choose the option you did (beyond just getting a question right or wrong). More instructions on how to use this key can be found here.

If you have a suggestion to make the keys better, please fill out the short survey here.

Note: This key is auto-generated and may contain issues and/or errors. The keys are reviewed after each exam to ensure grading is done accurately. If there are issues (like duplicate options), they are noted in the offline gradebook. The keys are a work-in-progress to give students as many resources to improve as possible.

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1. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{-6}{9} - \frac{5}{6}x < \frac{-4}{2}x + \frac{3}{3}$$

The solution is $(-\infty, 1.429)$

A. (a, ∞), where $a \in [-1.9, -0.2]$

$(-1.429, \infty)$, which corresponds to switching the direction of the interval AND negating the endpoint. You likely did this if you did not flip the inequality when dividing by a negative as well as not moving values over to a side properly.

B. $(-\infty, a)$, where $a \in [-4, 1]$

$(-\infty, -1.429)$, which corresponds to negating the endpoint of the solution.

C. $(-\infty, a)$, where $a \in [0, 2]$

* $(-\infty, 1.429)$, which is the correct option.

D. (a, ∞), where $a \in [0.5, 2.4]$

$(1.429, \infty)$, which corresponds to switching the direction of the interval. You likely did this if you did not flip the inequality when dividing by a negative!

E. None of the above.

You may have chosen this if you thought the inequality did not match the ends of the intervals.

General Comment: General Comments: Remember that less/greater than or equal to includes the endpoint, while less/greater do not. Also, remember that you need to flip the inequality when you multiply or divide by a negative.

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2. Using an interval or intervals, describe all the x-values within or including a distance of the given values.

$$\text{No less than 6 units from the number } -6.$$

The solution is $(-\infty, -12] \cup [0, \infty)$

A. $(-\infty, -12] \cup [0, \infty)$

This describes the values no less than 6 from -6

B. $(-12, 0)$

This describes the values less than 6 from -6

C. $(-\infty, -12) \cup (0, \infty)$

This describes the values more than 6 from -6

D. $[-12, 0]$

This describes the values no more than 6 from -6

E. None of the above

You likely thought the values in the interval were not correct.

General Comment: General Comments: When thinking about this language, it helps to draw a number line and try points.

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3. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$9 + 7x < \frac{75x + 4}{9} \leq 5 + 8x$$

The solution is None of the above.

A. $[a, b),$ where $a \in [-10, -1]$ and $b \in [-18, -8]$

$[-6.42, -13.67)$, which corresponds to flipping the inequality and getting negatives of the actual endpoints.

B. $(-\infty, a] \cup (b, \infty),$ where $a \in [-8, -4]$ and $b \in [-15, -11]$

$(-\infty, -6.42] \cup (-13.67, \infty)$, which corresponds to displaying the and-inequality as an or-inequality AND flipping the inequality AND getting negatives of the actual endpoints.

C. $(a, b],$ where $a \in [-10, -1]$ and $b \in [-17, -10]$

$(-6.42, -13.67]$, which is the correct interval but negatives of the actual endpoints.

D. $(-\infty, a) \cup [b, \infty),$ where $a \in [-8, -1]$ and $b \in [-17, -12]$

$(-\infty, -6.42) \cup [-13.67, \infty)$, which corresponds to displaying the and-inequality as an or-inequality and getting negatives of the actual endpoints.

E. None of the above.

* This is correct as the answer should be $(6.42, 13.67]$.

General Comment: To solve, you will need to break up the compound inequality into two inequalities. Be sure to keep track of the inequality! It may be best to draw a number line and graph your solution.

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4. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-6 + 6x > 8x \text{ or } 4 + 8x < 9x$$

The solution is $(-\infty, -3.0)$ or $(4.0, \infty)$

A. $(-\infty, a) \cup (b, \infty),$ where $a \in [-3.74, -2.16]$ and $b \in [3.6, 6.3]$

* Correct option.

B. $(-\infty, a] \cup [b, \infty),$ where $a \in [-4.65, -3.44]$ and $b \in [1.3, 3.1]$

Corresponds to including the endpoints AND negating.

C. $(-\infty, a) \cup (b, \infty),$ where $a \in [-5.04, -3.94]$ and $b \in [2.7, 3.4]$

Corresponds to inverting the inequality and negating the solution.

D. $(-\infty, a] \cup [b, \infty),$ where $a \in [-3.56, -2.77]$ and $b \in [3.5, 5.1]$

Corresponds to including the endpoints (when they should be excluded).

E. $(-\infty, \infty)$

Corresponds to the variable canceling, which does not happen in this instance.

General Comment: General Comments: When multiplying or dividing by a negative, flip the sign.

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0. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-3x + 3 < 5x + 4$$

The solution is $(-0.125, \infty)$

A. (a, ∞), where $a \in [-0.55, 0.07]$

* $(-0.125, \infty)$, which is the correct option.

B. $(-\infty, a)$, where $a \in [0.06, 1.29]$

$(-\infty, 0.125)$, which corresponds to switching the direction of the interval AND negating the endpoint. You likely did this if you did not flip the inequality when dividing by a negative as well as not moving values over to a side properly.

C. (a, ∞), where $a \in [0.1, 0.31]$

$(0.125, \infty)$, which corresponds to negating the endpoint of the solution.

D. $(-\infty, a)$, where $a \in [-0.49, 0.02]$

$(-\infty, -0.125)$, which corresponds to switching the direction of the interval. You likely did this if you did not flip the inequality when dividing by a negative!

E. None of the above.

You may have chosen this if you thought the inequality did not match the ends of the intervals.

General Comment: General Comments: Remember that less/greater than or equal to includes the endpoint, while less/greater do not. Also, remember that you need to flip the inequality when you multiply or divide by a negative.
