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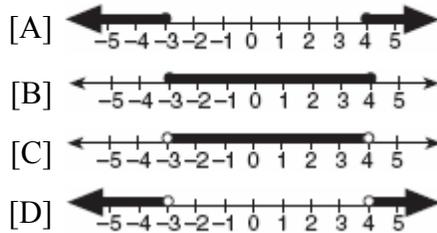
A2.A.1: Solve absolute value equations and inequalities involving linear expressions in one variable

1. 060107b, P.I. A2.A.1
Which inequality states that the temperature, t , in a room is less than 3° from 68° ?
[A] $|68 - t| < 3$ [B] $|3 - t| < 68$
[C] $|68 + t| < 3$ [D] $|3 + t| < 68$
2. 080203b, P.I. A2.A.1
What is the solution of the inequality $|x + 3| \leq 5$?
[A] $x \leq -8$ or $x \geq 2$ [B] $x \leq -2$ or $x \geq 8$
[C] $-2 \leq x \leq 8$ [D] $-8 \leq x \leq 2$
3. 010610b, P.I. A2.A.1
What is the solution of the inequality $|y + 8| > 3$?
[A] $y > -5$ or $y < -11$ [B] $-5 < y < 11$
[C] $-11 < y < -5$ [D] $y > -5$
4. 060907b, P.I. A2.A.1
What is the solution of the inequality $|2x - 5| < 1$?
[A] $x < 3$ [B] $2 < x < 3$
[C] $x \leq 2$ or $x \geq 3$ [D] $x > -3$
5. 080509b, P.I. A2.A.1
The solution of $|2x - 3| < 5$ is
[A] $x > -1$ [B] $x < -1$ or $x > 4$
[C] $-1 < x < 4$ [D] $x < 4$
6. 010710b, P.I. A2.A.1
What is the solution set of the inequality $|2x - 1| < 9$?
[A] $\{x|x < 5\}$ [B] $\{x|x < -4$ or $x > 5\}$
[C] $\{x|-4 < x < 5\}$ [D] $\{x|x < -4\}$
7. 010925b, P.I. A2.A.1
What is the solution of the inequality $|2x - 5| \leq 11$?
[A] $\{x|\frac{7}{2} \leq x \leq -\frac{1}{2}\}$
[B] $\{x|x \leq \frac{7}{2}$ or $x \geq \frac{1}{2}\}$
[C] $\{x|x \leq -\frac{1}{2}$ or $x \geq \frac{7}{2}\}$
[D] $\{x|-\frac{1}{2} \leq x \leq \frac{7}{2}\}$
8. 060318b, P.I. A2.A.1
What is the solution set of the inequality $|3 - 2x| \geq 4$?
[A] $\{x|\frac{7}{2} \leq x \leq -\frac{1}{2}\}$
[B] $\{x|x \leq \frac{7}{2}$ or $x \geq \frac{1}{2}\}$
[C] $\{x|x \leq -\frac{1}{2}$ or $x \geq \frac{7}{2}\}$
[D] $\{x|-\frac{1}{2} \leq x \leq \frac{7}{2}\}$
9. 080102b, P.I. A2.A.1
The solution set of $|3x + 2| < 1$ contains
[A] only positive real numbers
[B] no real numbers
[C] only negative real numbers
[D] both positive and negative real numbers
10. 060808b, P.I. A2.A.1
Which value of a does *not* satisfy the inequality $|a| > 2a - 3$?
[A] 3 [B] -5 [C] -1 [D] 0

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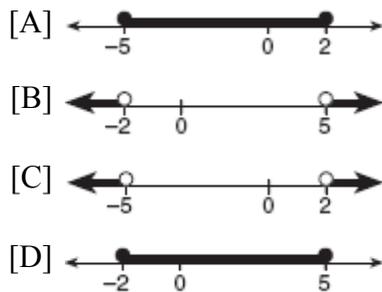
11. 080303b, P.I. A2.A.1

Which graph represents the solution set of $|2x - 1| < 7$?



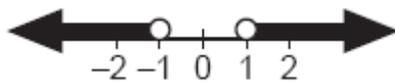
12. 060505b, P.I. A2.A.1

Which graph represents the solution set for the expression $|2x + 3| > 7$?



13. 080806b, P.I. A2.A.1

Which inequality is represented by the accompanying graph?



- [A] $|x| < 1$ [B] $|x| \leq 1$
[C] $|x| \geq 1$ [D] $|x| > 1$

14. 060707b, P.I. A2.A.1

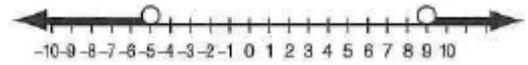
Which inequality is represented by the accompanying graph?



- [A] $|x - 1| \leq 5$ [B] $|x + 2| > 5$
[C] $|x + 3| \geq 2$ [D] $|x - 5| \geq 2$

15. 060617b, P.I. A2.A.1

The solution set of which inequality is represented by the accompanying graph?



- [A] $|x - 2| < 7$ [B] $|x - 2| > 7$
[C] $|2 - x| < -7$ [D] $|2 - x| > -7$

16. 010326b, P.I. A2.A.1

The inequality $|1.5C - 24| \leq 30$ represents the range of monthly average temperatures, C , in degrees Celsius, for Toledo, Ohio. Solve for C .

17. 010531b, P.I. A2.A.1

The heights, h , of the students in the chorus at Central Middle School satisfy the inequality

$$\left| \frac{h - 57.5}{2} \right| \leq 3.25, \text{ when } h \text{ is measured in}$$

inches. Determine the interval in which these heights lie and express your answer to the *nearest tenth of a foot*. [Only an algebraic solution can receive full credit.]

18. 080427b, P.I. A2.A.1

A depth finder shows that the water in a certain place is 620 feet deep. The difference between d , the actual depth of the water, and the reading is $|d - 620|$ and must be less than or equal to $0.05d$. Find the minimum and maximum values of d , to the *nearest tenth of a foot*.

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[1] A

[2] D

[3] A

[4] B

[5] C

[6] C

[2] $-3 \leq x \leq 8$ or an equivalent expression, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] Appropriate work is shown, but only $x \leq 8$ or $-3 \leq x$ is found.

or [1] $-3 \leq x \leq 8$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.

[8] C

[9] C

[10] A

[11] C

[12] C

[13] D

[14] C

[15] B

[2] $-4 \leq C \leq 36$, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but only one extreme value is found.

or [1] $-4 \leq C \leq 36$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[16] incorrect procedure.

[4] 4.3-5.3, and appropriate work is shown.

[3] Appropriate work is shown, but one computational or rounding error is made.

or [3] Appropriate work is shown, but the answer is not stated as an interval.

or [3] Appropriate work is shown, but the answer is expressed in inches.

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] An appropriate inequality, such as

$-3.25 \leq \left| \frac{h-57.5}{2} \right| \leq 3.25$, is written, but no

further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.

or [1] Only half of the inequality is solved, but an appropriate answer is found and expressed to the nearest tenth of a foot.

or [1] 4.3-5.3, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[17] incorrect procedure.

[4] 590.5 and 652.6, and appropriate work is shown, such as $|d - 620| \leq 0.05d$.

[3] Appropriate work is shown, but one computational or rounding error is made.

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] 590.5 or 652.6, and appropriate work is shown.

[1] 590.5 and 652.6, but no work is shown.

[0] 590.5 or 652.6, but no work is shown.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[18] obviously incorrect procedure.