**Equations and Inequalities** **Math** **Mr. Abdulkader Amro**



Use set-builder notation to write the solutions of the inequalities and state the property used to solve them.
$6x - 5 \leq 5x + 2$

*Drag and drop your answers into the boxes to correctly complete the sentences.*

| Steps | Reason |
|---|---|
| $6x - 5 \leq 5x + 2$ | Given |
| $6x - 5 + 5 \leq 5x + 2 + 5$ | |
| | Simplify |
| $6x - 5x \leq 5x + 7 - 5x$ | |
| | |

$x \leq -7$ | Multiplication Property | Subtraction Property of Inequality | $6x \leq 5x + 7$ | $x \leq 7$ | $x \geq 7$ | Addition Property of Inequality | Simplify | Division Property

Solve the given absolute value equation.
$|2x - 7| - 6 = 5$
Which statement is true?

- The solution for this equation is $x = 2$.
- The solutions for this equation are $x = -2$ and $x = 9$.
- The only solution for this equation is $x = 9$.
- The solution set for this equation is $\varnothing$ because it has no solution.

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If $a = -2$ and $b = 3$, which of the expressions have the value 5?

***Select 2 choice(s)***

- $-3 - |a - 2b|$
- $|a - b|$
- $|2a - b| - 2$
- $|-a - b|$
- $|a + b|$
- $|a - b| + 10$

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Solve the given absolute value equation.
$|2x-7|-6=5$
Which statement is true?

- ○ The solution for this equation is $x=2$.
- ○ The solutions for this equation are $x=-2$ and $x=9$.
- ○ The only solution for this equation is $x=9$.
- ○ The solution set for this equation is $\varnothing$ because it has no solution.

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Which equations have the solution $x=-4$?

*Select 2 choice(s)*

- ☐ $5x-8=12$
- ☐ $5x+8=-12$
- ☐ $-5x-8=12$
- ☐ $-5x+8=-12$
- ☐ $-5x+8=12$
- ☐ $5x+8=12$

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The angular frequency of a physical pendulum in radians per second can be found using the formula $w=\sqrt{\frac{mgl}{I}}$ where $l$ is the length of the pendulum in meters, $I$ is the moment of inertia, $m$ is the mass of the ball, and $g$ is the force of acceleration due to gravity.
If $g=9.8\ m/s^2$, what is the length formula of a pendulum?
Find this length when $m=2\ kg$, $I=10 kg.m^2$, and $w=0.7$ radians $/\ s$.



- ○ The length formula is $l=\frac{w^2 I}{mg}$ and $l=0.5\ m$.
- ○ The length formula is $l=\frac{w I}{mg}$ and $l=0.35\ m$.
- ○ The length formula is $l=\frac{w^2 I}{mg}$ and $l=0.25\ m$.
- ○ The length formula is $l=\sqrt{\frac{w^2 I}{mg}}$ and $l=0.2\ m$.

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Evaluate this expression. Choose the property applied to the first three steps.
$(25 \cdot (39 + 8)) \cdot 4$

*Drag and drop the answers into the boxes to correctly complete the table.*

| Expression | Property |
|---|---|
| $(25 \cdot (39 + 8)) \cdot 4$ | Given |
| $4 \cdot (25 \cdot (39 + 8))$ | |
| $(4 \cdot 25) \cdot (39 + 8)$ | |
| $\cdot (39 + 8)$ | |
| $100 \cdot 39 + 100 \cdot 8$ | |
| $3900 + 800 = 4700$ | |

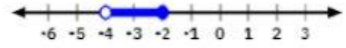
85 | Commutative Property of Addition. | 100 | Associative Property of Addition. | 29 | Inverse Property of Addition.

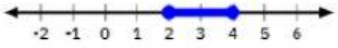
Distributive Property | Associative Property of Multiplication. | Commutative Property of Multiplication.

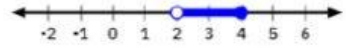
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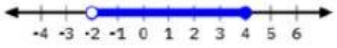
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Select the graph that represents the solution to the inequality.
$-1 < x - 3 \leq 1$




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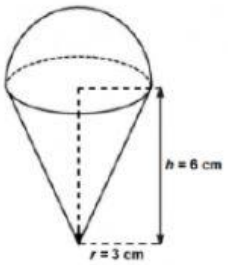
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**Equations and Inequalities** **Math** **Mr. Abdulkader Amro**



The figure shown represents a cone and hemisphere.

The volume of the shown figure can be found by the formula $V = \frac{1}{3}\pi r^2 (2r + h)$, where the radius is $r$ and the height is $h$.




The volume of this figure is Select... $cm^3$.

- $12\pi$
- $9\pi$
- $36\pi$
- $24\pi$

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Simplify this expression.

$-2(a + b) + 10(2a - b)$

Drag and drop the correct answer into the box.

This expression in simplified form is _____.

$18a - 8b$ $10a - 3b$ $18a - 9b$ $18a - 12b$

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What is the extraneous solution for this equation?

$|5x - 12| = 7x$

The extraneous solution is $x =$ _____.

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**Equations and Inequalities** **Math** **Mr. Abdulkader Amro**



Complete the inequality so that it has the solution shown on the number line.




*Select your answer from the box to correctly complete the inequality.*

$3x - 5$ Select...

- $\geq x - 7$
- $> x - 7$
- $< x - 7$
- $\leq x - 7$

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Khalid and Fahed are participating in a competition involving hiking and solving math problems.

Khalid has hiked for 20 kilometers and Fahed has hiked for 28 kilometers this week. If Khalid hikes 6 km per hour, and Fahed hikes 4 km per hour, how many hours do they each have to hike for Khalid to have hiked farther than Fahed?

Enter your answer in the space provided.

Khalid and Fahed each have to hike for more than _____ hours for Khalid to hike farther than Fahed.

Khalid and Fahed compete to find the solution of the given absolute value equation $|-2x + 3| + 2x = 1 + 5x$.

Khalid said that a solution for this equation is $\frac{2}{5}$. Fahed said that a solution for this equation is $-4$.

*Answer the following with a T if the statement is true and an F if it is false:*

Neither one has a correct solution _____.

Both of them have a correct solution _____.

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