Downingtown High School
East/West
Keystone Algebra 1 Review
Module 1
Linear Inequalities

\[(a + b)^2 = a^2 + 2ab + b^2\]
1. Solve the following inequality.

$24 < -2(x - 3) < 36$

A. $-16 < x < -15$
B. $-21 < x < -9$
C. $-21 < x < -15$
D. $-15 < x < -9$

2. Solve the following inequality.

$|3x + 4| < 8$

A. $x < \frac{4}{3}$
B. $\frac{4}{3} < x < 4$
C. $-4 < x < \frac{4}{3}$
D. $-8 < x < \frac{4}{3}$

3. Which of the following graphs shows the solution set for the inequality below?

$|2x + 4| > 2$

A. [Graph A]
B. [Graph B]
C. [Graph C]
D. [Graph D]

4. Tom can spend up to $40 for gasoline and a carwash at a service station. The carwash will cost $6.00, and a gasoline costs $4.50 per gallon. The inequality below can be solved for $g$, the number of gallons of gasoline Tom can buy.

$4.5g + 6 \leq 40$

Which of the following is a true statement?

A. Tom can buy over 10 gallons of gasoline.
B. Tom can buy at most 7 gallons of gasoline
C. Tom can buy 6 gallons, but not 7 gallons.
D. Tom can buy 7 gallons of gasoline, but not 8 gallons.
5. Which of the following graphs shows the solution to the inequality $-\frac{1}{2}x - 4 < 0$?

A. 

B. 

C. 

D. 

6. Which graph represents the following system of inequalities?

\[ \begin{align*}
  y &> \frac{1}{3}x - 2 \\
  y &\leq -2x - 1
\end{align*} \]

A. Y
B. X
C. W
D. Z
7. Choose the system of inequalities that best matches the graph below.

A. \( y < 2x + 2 \)
\( y < x \)

B. \( y \leq x - 2 \)
\( y > -x \)

C. \( y < 2x \)
\( y \leq x \)

D. \( y < 2x + 2 \)
\( y > -x \)

8. At an ice-cream parlor, ice-cream cones cost \( x \) dollars each and sundaes cost \( y \) dollars each. The total cost of 4 cones and 3 sundaes is more than $20. The total cost of 5 cones and 1 sundae is less than $16. This situation can be represented by which of the following system of inequalities:

A. \( 4x + 3y > 20 \)  
\( 5x + y < 16 \)

B. \( 4x + 3y < 20 \)  
\( 5x + y > 16 \)

C. \( 4x + 3y \geq 20 \)  
\( 5x + y \leq 16 \)

D. \( 4x + 3y \leq 20 \)  
\( 5x + y < 16 \)

9. Choose the system of inequalities that best matches the graph below.

A. \( y < -1 \)  
\( x \leq 1 \)

B. \( y \leq -1 \)  
\( x < 1 \)

C. \( y < 1 \)  
\( x \leq -1 \)

D. \( y > -1 \)  
\( x \geq 1 \)