CC.A.REI.12 Graphing Systems of Linear Inequalities 1: Graph solution set to a system of linear inequalities in 2 variables as the intersection of the corresponding half-planes.

1 Which graph represents the solution of \( y \leq x + 3 \) and \( y \geq -2x - 2 \)?

2 Given: \( y + x > 2 \) \( y \leq 3x - 2 \)

Which graph shows the solution of the given set of inequalities?
3 Graph \( y < x \) and \( x > 5 \) on the axes below.

State the coordinates of a point in the solution set.

4 On the set of axes below, solve the following system of inequalities graphically.
\[
\begin{align*}
y &< 2x + 1 \\
y &\geq -\frac{1}{3}x + 4
\end{align*}
\]
State the coordinates of a point in the solution set.

5 Graph the following systems of inequalities on the set of axes shown below and label the solution set \( S \):
\[
\begin{align*}
y &> -x + 2 \\
y &\leq \frac{2}{3}x + 5
\end{align*}
\]
6 On the set of axes below, graph the following system of inequalities and state the coordinates of a point in the solution set.

\[ \begin{align*}
2x - y & \geq 6 \\
x & > 2
\end{align*} \]

7 Graph the following systems of inequalities on the accompanying set of axes and label the solution set \( S \):

\[ \begin{align*}
y & > x - 4 \\
y + x & \geq 2
\end{align*} \]

[Only a graphic solution can receive full credit.]
8 Solve the following system of inequalities graphically on the set of axes below.

\[ 3x + y < 7 \]
\[ y \geq \frac{2}{3}x - 4 \]

State the coordinates of a point in the solution set.

9 On the set of axes below, graph the following system of inequalities.

\[ y + x \geq 3 \]
\[ 5x - 2y > 10 \]

State the coordinates of one point that satisfies \( y + x \geq 3 \), but does not satisfy \( 5x - 2y > 10 \).
10 On the set of axes below, solve the following system of inequalities graphically. Label the solution set $S$.

\[
\begin{align*}
2x + 3y &< -3 \\
y - 4x &\geq 2
\end{align*}
\]

11 On the set of axes below, solve the following system of inequalities graphically.

\[
\begin{align*}
y + 3 &< 2x \\
-2y &\leq 6x - 10
\end{align*}
\]

State the coordinates of a point in the solution set.
12 A company manufactures bicycles and skateboards. The company’s daily production of bicycles cannot exceed 10, and its daily production of skateboards must be less than or equal to 12. The combined number of bicycles and skateboards cannot be more than 16. If \( x \) is the number of bicycles and \( y \) is the number of skateboards, graph on the accompanying set of axes the region that contains the number of bicycles and skateboards the company can manufacture daily.

13 The graph of an inequality is shown below.

A) Write the inequality represented by the graph.
B) On the same set of axes, graph the inequality \( x + 2y < 4 \).
C) The two inequalities graphed on the set of axes form a system. Oscar thinks that the point (2,1) is in the solution set for this system of inequalities. Determine and state whether you agree with Oscar. Explain your reasoning.
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Answer Section

1 ANS: 3 REF: 081506ai
2 ANS: 2 REF: 061404ai
3 ANS: 

![Graph](image1)

REF: 011536ia

4 ANS: 

![Graph](image2)

REF: 081037ia
5  ANS:

![Graph with labeled points](image1)

REF: 011139ia

6  ANS:

![Graph with shaded region](image2)

REF: 010938ia
7 ANS:

REF: 010738a

8 ANS:

REF: 061139ia

9 ANS:

REF: 081239ia
10 ANS:

![Diagram](image1)

REF: 061438ia

11 ANS:

![Diagram](image2)

REF: 081437ia

12 ANS:

![Diagram](image3)

REF: 010234a

13 ANS:

\[ y \geq 2x - 3. \]

Oscar is wrong. \((2) + 2(1) < 4\) is not true.

REF: 011534ai