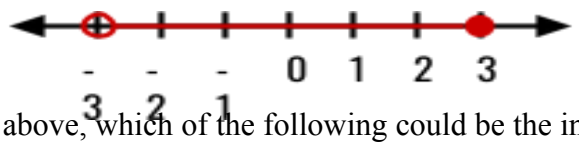
Quiz: System of Linear Inequalities and Real-life Skills

Section:Linear Inequality

Sub-section: System of Linear Inequalities and Real-life Skills

---

Choose the correct answer.

1. 

In the number line above, which of the following could be the interval of it? (understand, MA 1.3 G.9/1)

A. $[-3, 3]$

B. $(-3, 3]$

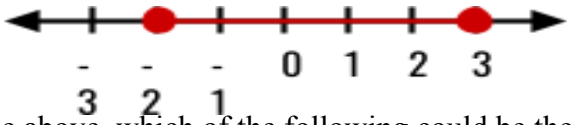
C. $[-3, 3)$

D. $(-3, 3)$

Solution $(-3, 3]$

$(-3, 3]$ because -3 was not included and 3 was included.

It could be denoted in interval notation as $(-3, 3]$.

2. 

In the number line above, which of the following could be the interval of it? (understand, MA 1.3 G.9/1)

A. $[-2, 3]$

B. $(-2, 3]$

C. $[-2, 3)$

D. $(-2, 3)$

Solution $[-2, 3]$

$[-2, 3]$ because -2 was included and 3 was included.

It could be denoted in interval notation as $[-2, 3]$.

---

3. Solve for x.

   $-1 \leq 5 - 2x \leq 9$

   (understand, MA 1.3 G.9/1)

   A. $[1, 3]$

   B. $[2, 3]$

   C. $[-1, 3]$

   D. $[-2, 3]$

   Solution $[-2, 3]$

   $[-2, 3]$ because $-1 \leq 5 - 2x \leq 9$

   $-1 - 5 \leq 5 - 2x - 5 \leq 9 - 5$

   $-6 \leq -2x \leq 4$

   So, $-2 \leq x \leq 3$

   Thus, it could be denoted in interval notation as $[-2, 3]$.

4. Solve for x.

   $-1 < 7 - 2x \leq 13$

   (understand, MA 1.3 G.9/1)

   A. $(3, 4]$

   B. $[3, 4)$

   C. $[-3, 4)$

   D. $(-3, 4]$

   Solution $[-3, 4)$

   $[-3, 4)$ because $-1 < 7 - 2x \leq 13$

   $-1 - 7 < 7 - 2x - 7 \leq 13 - 7$

   $-8 < -2x \leq 6$

   So, $-3 \leq x < 4$

   Thus, it could be denoted in interval notation as $[-3, 4)$.

Quiz: System of Linear Inequalities and Real-life Skills

Section:Linear Inequality

Sub-section: System of Linear Inequalities and Real-life Skills

---

5. Solve for x.

   (apply, MA 1.3 G.9/1)

$$\begin{cases} 4x - 3 < 5 \\ 3x + 7 \geq 1 \end{cases}$$

   A. $[-2, 2)$

   B. $[-1, 5)$

   C. $(-2, 2]$

   D. $[1, 5)$

   Solution $[-2, 2)$

   Consider $4x - 3 < 5$

   $4x < 8$

   So, $x < 2$

   Consider $3x + 7 \geq 1$

   $3x \geq -6$

   So, $x \geq -2$

   Then, $x \geq -2 \cap x < 2$, that is $-2 \leq x < 2$

   Thus, it could be denoted in interval notation as $[-2, 2)$.

---

6. Solve for x.

   (apply, MA 1.3 G.9/1)

$$\begin{cases} 4x - 5 \leq 7 \\ 5x - 9 > -4 \end{cases}$$

   A. $(4, 5]$

   B. $(1, 3]$

   C. $[1, 3)$

   D. $[-4, 7)$

   Solution $(1, 3]$

   Consider $4x - 5 \leq 7$

   $4x \leq 12$

   So, $x \leq 3$

   Consider $5x - 9 > -4$

   $5x > 5$

   So, $x > 1$

   Then, $x > 1 \cap x \leq 3$, that is $1 < x \leq 3$

   Thus, it could be denoted in interval notation as $(1, 3]$.

---

7. Of the 12 students including boys and girls, there are more boys than girls. How many boy students could there be?
   (apply, MA 1.3 G.9/1)
   A. The number of boy students is greater than 4 persons.
   B. The number of boy students is greater than 5 persons.
   C. The number of boy students is greater than 6 persons.
   D. The number of boy students is greater than 7 persons.

   Solution The number of boy students is greater than 6 persons.

   Let x = the number of boy students

   and $12 - x$ = the number of girl students.

   Since there are more boys than girls,

   then $x > 12 - x$

   $2x > 12$

   $x > 6$

   Therefore, the number of boy students is greater than 6 persons.

8. Of the 16 students including boys and girls, there are more boys than girls. How many boy students could there be? (apply, MA 1.3 G.9/1)
   A. The number of boy students is greater than 5 persons.
   B. The number of boy students is greater than 6 persons.
   C. The number of boy students is greater than 7 persons.
   D. The number of boy students is greater than 8 persons.

   Solution The number of boy students is greater than 8 persons.

   Let x = the number of boy students

   and $16 - x$ = the number of girl students.

   Since there are more boys than girls,

   then $x > 16 - x$

   $2x > 16$

   $x > 8$

   Therefore, the number of boy students is greater than 8 persons.

---

9. Mark and Mike play in the same game. Mark had 5 more points than Mike. Together, they had less than 21 points. How many Mike's points could there be?
(apply, MA 1.3 G.9/1)

   A. Mike's points are greater than 7 points.
   B. Mike's points are greater than 8 points.
   C. Mike's points are greater than 9 points.
   D. Mike's points are greater than 10 points.

   Solution Mike's points are greater than 8 points.

   Let x = the points of Mike

   and $x + 5$ = the points of Mark.

   Since together they had less than 20 points,

   then $x + (x + 5) < 21$

   $2x + 5 > 21$

   $2x > 16$

   $x > 8$

   Therefore, Mike's points are greater than 8 points.

Quiz: System of Linear Inequalities and Real-life Skills

Section:Linear Inequality

Sub-section: System of Linear Inequalities and Real-life Skills

---

10. Joe and John play in the same game. Joe had 8 more points than John. Together, they had less than 30 points. How many John's points could there be?
(apply, MA 1.3 G.9/1)

    A. John's points are greater than 11 points.

    B. John's points are greater than 12 points.

    C. John's points are greater than 13 points.

    D. John's points are greater than 14 points.

    Solution John's points are greater than 11 points.

    Let x = the points of John

    and $x + 8$ = the points of Joe.

    Since together they had less than 20 points,

    then $x + (x + 8) < 30$

    $2x + 8 > 30$

    $2x > 22$

    $x > 11$

    Therefore, John's points are greater than 11 points.