SUPER 12s

SUPER 12s CAN BE USED AS AN INDIVIDUALISED MASTERY LEARNING PROGRAM.

2 ALGEBRA
2.11 SOLVING INEQUALITIES
2.11 LEVEL 4

NAME : _____

Skill description: Solving inequalities with multiplication and division of positive and negative numbers.

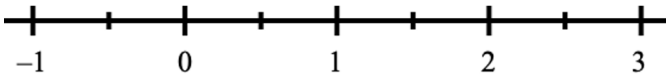
Essential Revision

1. Solve for the unknown.

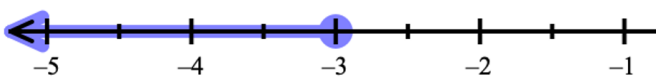
$$\blacksquare + 13 = 25$$

2. Graph the inequality on the number line.

$$x \geq 1$$



3. Write the inequality for the following.



4. Solve the inequality.

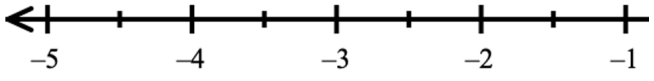
$$x + 3 \geq 1$$

5. Solve for the unknown.

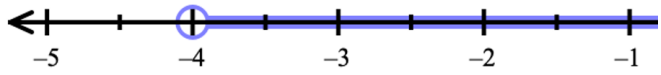
$$\blacksquare + 11 = 19$$

6. Graph the inequality on the number line.

$$x \leq -3$$



7. Write the inequality for the following.



8. Solve the inequality.

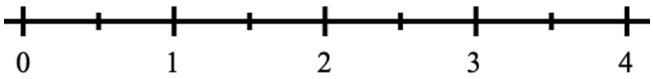
$$x - 1 < 3$$

9. Solve for the unknown.

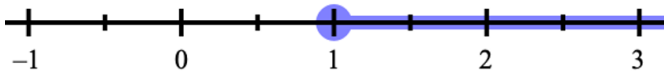
$$\blacksquare + 13 = 18$$

10. Graph the inequality on the number line.

$$x \geq 2$$



11. Write the inequality for the following.



12. Solve the inequality.

$$x - 6 > -3$$

Solutions can be found at the end of the booklet.

score $\frac{\quad}{12}$

STRATEGIES TO SOLVE THE PROBLEMS

Solving inequalities and solving equations have many similarities. The critical difference is:

If you multiply or divide by a negative, the inequality sign reverses.

Example 1

Solve for the unknown.

$$4 - x > 3$$

Step 1

To isolate the variable x subtract 4 from both sides of the inequality. Note that the inequality sign remains the same.

$$\begin{array}{r} 4 - x > 3 \\ -4 = -4 \\ \hline -x > -1 \end{array}$$

Step 2

To isolate the variable x multiply both sides by -1. As we are multiplying by a negative, we must reverse the inequality sign.

$$\begin{array}{r} -x > -1 \\ \times(-1) = \times(-1) \\ \hline x < 1 \end{array}$$

Note how the sign has reversed.

Example 2

Solve for the unknown.

$$-5x \leq 35$$

Step 1

To isolate the variable x divide both sides by -5. As we are dividing by a negative, we must reverse the inequality sign.

$$-5x \leq 35$$
$$\div(-5) = \div(-5)$$
$$x \geq -7$$

Note how the sign has reversed.

QUESTIONS

Solve the following inequalities.

1. $-3x \leq 9$

2. $5 - x < 7$

3. $-\frac{x}{4} > 2$

4. $3 - 2x \geq -7$

5.

$$-5x \leq -25$$

6.

$$8 - x < -2$$

7.

$$-\frac{x}{9} > -2$$

8.

$$4 - 3x \geq -2$$

9.

$$-2x \leq -14$$

10.

$$-4 - 3x < 11$$

11.

$$-11 > \frac{x}{6}$$

12.

$$3 \geq -7 - x$$

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

score $\frac{\quad}{12}$

MASTERY TEST

Teacher's signature

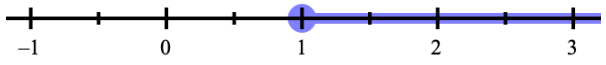
I'VE COMPLETED

_____

LEVELS THIS YEAR

Solutions to Essential Revision

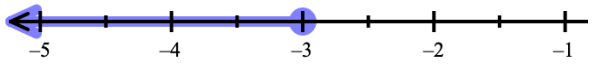
1. $\blacksquare = 12$

2. 

3. $x \leq -3$

4. $x \geq -2$

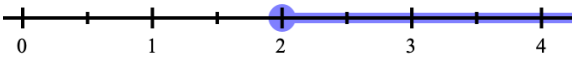
5. $\blacksquare = 8$

6. 

7. $x > -4$

8. $x < 4$

9. $\blacksquare = 5$

10. 

11. $x \geq 1$

12. $x > 3$

Solutions to Questions

1. $x \geq -3$

2. $x > -2$

3. $x < -8$

4. $x \leq 5$

5. $x \geq 5$

6. $x > 10$

7. $x < 18$

8. $x \leq 2$

9. $x \geq 7$

10. $x > -5$

11. $x < -66$

12. $x \geq -10$