SUPER 12s

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

2 ALGEBRA
2.11 SOLVING INEQUALITIES
2.11 LEVEL 5

NAME : _____

Skill description: Solving inequalities involving multiple terms with positive and negative numbers.

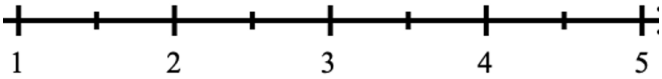
Essential Revision

1. Solve for the unknown.

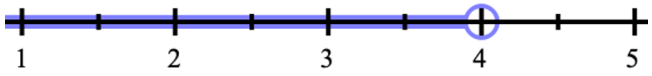
$$\blacksquare + 4 = 12$$

2. Graph the inequality on the number line.

$$x < 3$$



3. Write the inequality for the following.



4. Solve the inequality.

$$x - 4 \leq -1$$

5. Solve the inequality.

$$-3x \leq 9$$

6. Solve for the unknown.

$$\blacksquare + 9 = 21$$

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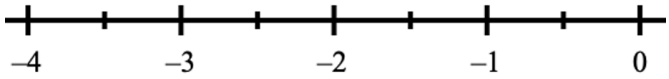
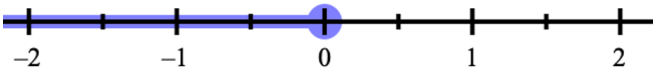
7. Graph the inequality on the number line.

$$x > -2$$



8. Write the inequality for the following.



9. Solve the inequality.

$$x - 1 > 2$$

10. Solve the inequality.

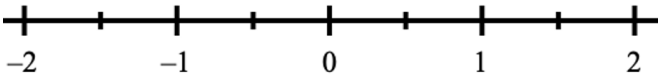
$$5 - x < 7$$

11. Solve for the unknown.

$$\blacksquare + 4 = 7$$

12. Graph the inequality on the number line.

$$x \leq 0$$



Solutions can be found at the end of the booklet.

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

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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.

$$4 - \frac{2x}{5} > 3$$

Step 1

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

$$4 - \frac{2x}{5} > 3$$
$$-4 = -4$$
$$- \frac{2x}{5} > -1$$

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Step 2

To isolate the variable x multiply both sides of the equation by 5. Note that the inequality sign remains the same.

$$-\frac{2x}{5} > -1$$
$$\times 5 = \times 5$$
$$-2x > -5$$

Step 3

To isolate the variable x divide both sides by -2. As we are dividing by a negative, we must reverse the inequality sign.

$$-2x > -5$$
$$\div(-2) = \div(-2)$$
$$x < \frac{5}{2}$$

Note how the sign has reversed.

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QUESTIONS

Solve the following inequalities.

1. $3x - 7 \geq 11$

2. $5 - \frac{2x}{7} < 3$

3. $\frac{6 - x}{-3} > 8$

4. $\frac{4x}{5} - 1 \geq -9$

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5.

$$1 - 3x \geq 4$$

6.

$$6 - \frac{5x}{2} < -4$$

7.

$$\frac{2x + 9}{5} \leq -3$$

8.

$$-6x - 8 < 9$$

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9.

$$-\frac{7x}{3} - 1 > 2$$

10.

$$\frac{2x}{5} + 7 < 3$$

11.

$$\frac{3x - 4}{6} \leq 5$$

12.

$$7 - 5x \leq -9$$

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

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

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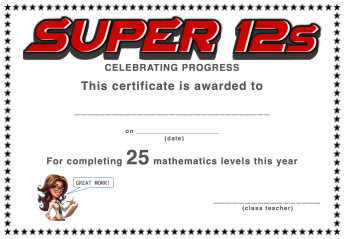
MASTERY TEST

Teacher's signature

I'VE COMPLETED

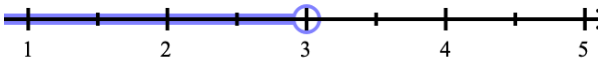
_____

LEVELS THIS YEAR



Solutions to Essential Revision

1. $\blacksquare = 8$

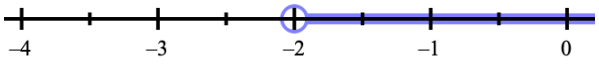
2. 

3. $x < 4$

4. $x \leq 3$

5. $x \geq -3$

6. $\blacksquare = 12$

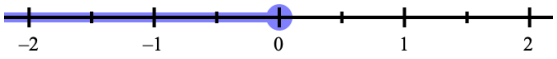
7. 

8. $x \leq 0$

9. $x > 3$

10. $x > -2$

11. $\blacksquare = 3$

12. 

Solutions to Questions

1. $x \geq 6$

2. $x > 7$

3. $x > 30$

4. $x \geq -10$

5. $x \leq -1$

6. $x > 4$

7. $x \leq -12$

8. $x > -\frac{17}{6}$

9. $x < -\frac{9}{7}$

10. $x < -10$

11. $x \leq \frac{34}{3}$

12. $x \geq \frac{16}{5}$

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