SUPER 12s

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

2 ALGEBRA
2.2 WRITING EQUATIONS
2.2 LEVEL 5

NAME : _____

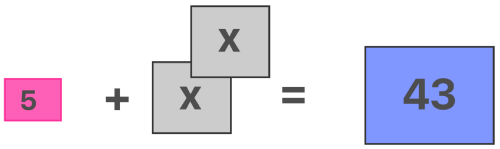
Skill description: Writing and solving algebraic equations from word problems that involve two unknowns linked by addition.

Essential Revision

1. Solve the following.

$$x + 7 = 19$$

2. Write an equation that represents the unknown, then solve.



3. Sixty-three is obtained when an unknown number x is increased by eleven. Write down an equation, that includes addition, and then determine the unknown number x.

4. Write an equation, then solve. The product of a number c and eight is fifty-six.

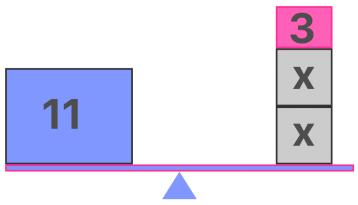
5. Write an equation, then solve.

When a number x is multiplied by four and then eleven added, the result is forty-three.

6. Solve the following.

$$x - 6 = 0$$

7. Write an equation that represents the unknown, then solve.



8. Seventeen more than an unknown amount x is thirty-one. Write an equation, that includes addition, and then determine the unknown amount.

9. Write an equation, then solve.

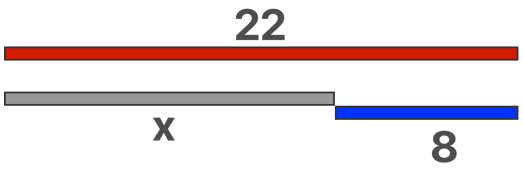
The number x is smaller than twenty-one. The difference between twenty-one and the number x is twelve.

10. Write an equation, then solve. When three is subtracted from half the number x the solution is zero.

11. Solve the following.

$$2x + 2 = 22$$

12. Write an equation that represents the unknown, then solve.

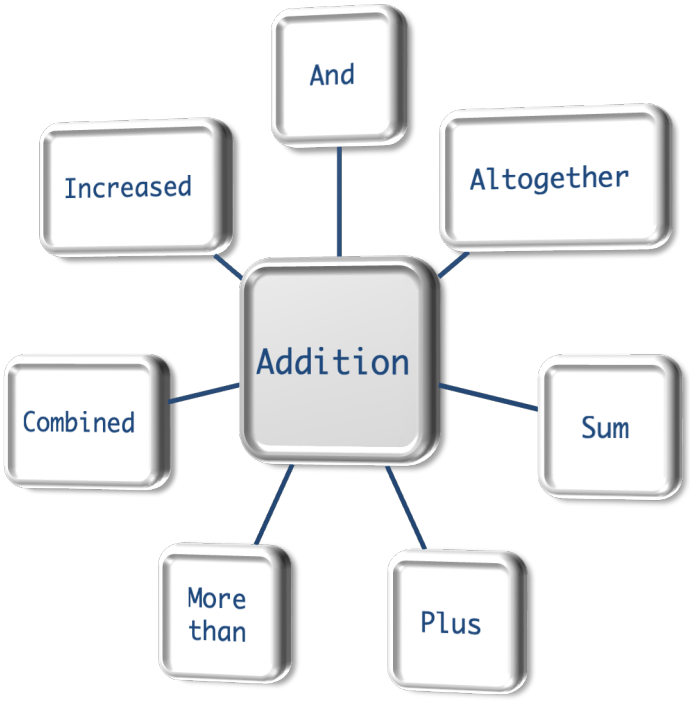


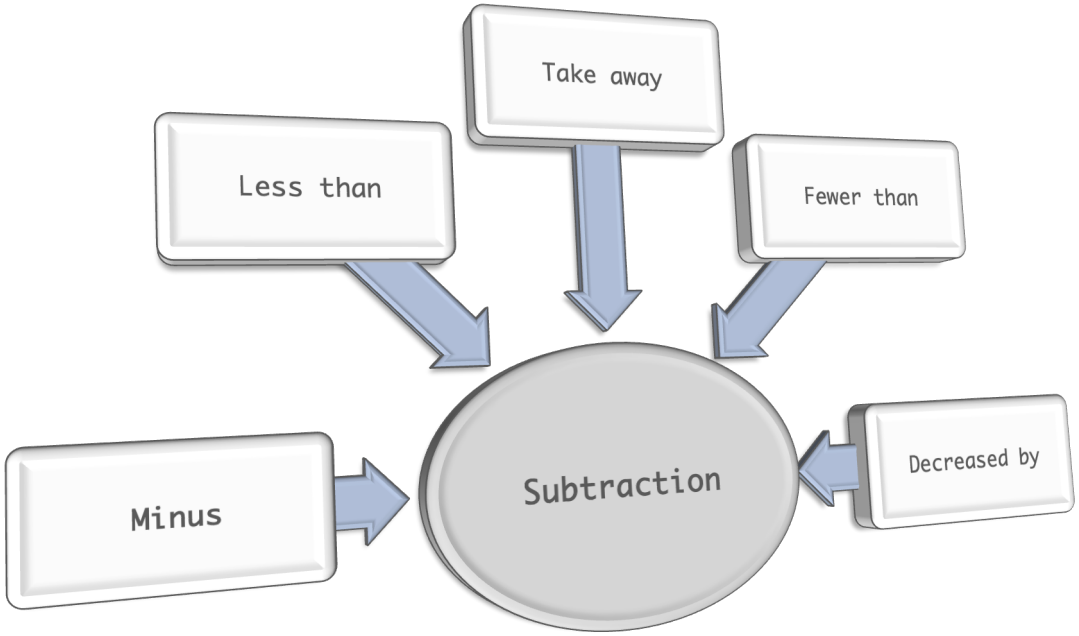
Solutions can be found at the end of the booklet.

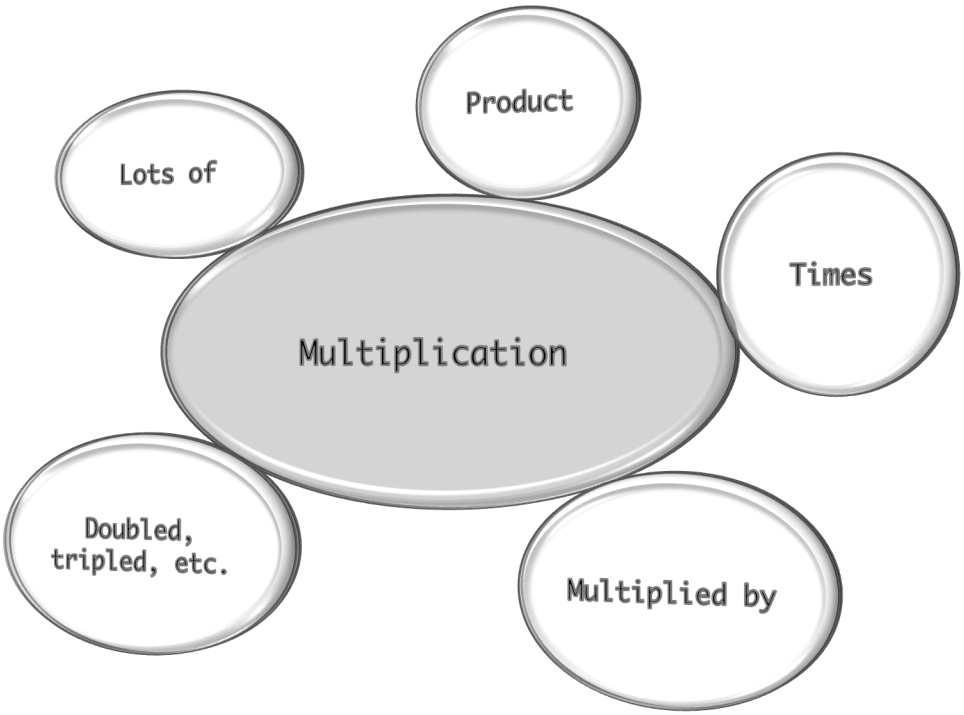
score $\frac{\quad}{12}$

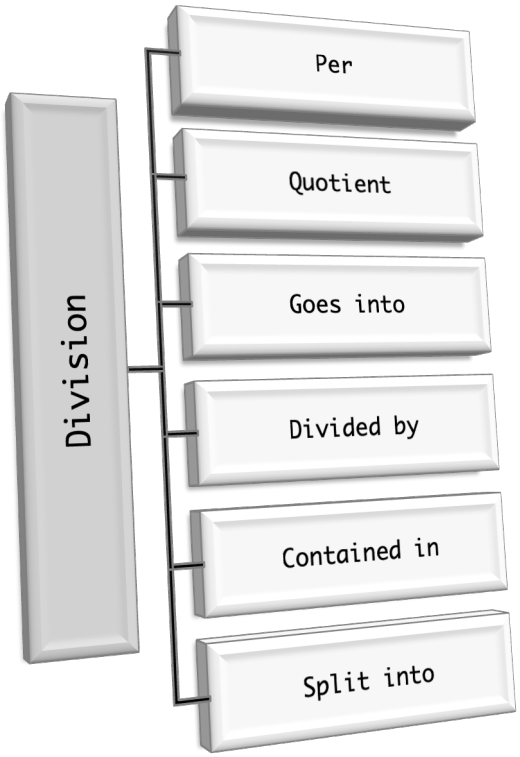
STRATEGIES TO SOLVE THE PROBLEMS

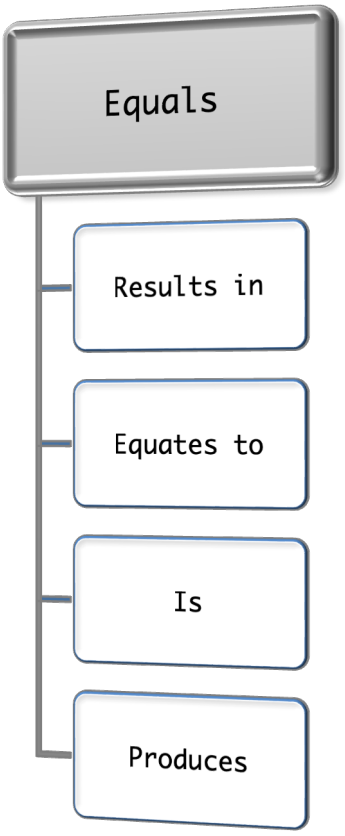
Look for the keywords that describe the operations.











Example 1

Nathan and Divya must write a history essay. Divya has written 863 more words than Nathan. If their combined word count is $4{,}379$, write an equation that involves addition and determine the number of words Nathan has written. Let n represent the number of words Nathan has written.

Step 1

Identify the subjects or variables.

Nathan and Divya, and let n represent the number of words Nathan has written

Nathan	Divya
n	

Step 2

Look to link the subjects mathematically.

Divya has written 863 more words than Nathan.

Nathan	Divya
n	$n+863$

Step 3

Look for equality.

If their combined word count is $4{,}379$

Nathan		Divya	
n	$+$	$n+863$	$=4{,}379$

Step 4

Solve.

$$n + n + 863 = 4{,}379$$

$$\downarrow$$

$$2n + 863 = 4{,}379$$

$$\downarrow$$

$$2n = 3{,}516$$

$$\downarrow$$

$$n = 1{,}758$$

Final solution

Nathan has written $1{,}758$ words.

QUESTIONS

1. Altogether, Cara and Jess have seventeen apples. If Cara has seven apples more than Jess, write an equation and determine how many apples Jess has. Let a represent the number of apples Jess has.

2. A bakery made x number of cookies in the morning. In the afternoon, they made forty-five more cookies than in the morning. If the bakery made two hundred and sixty-seven cookies that day, write an equation and determine how many cookies were made in the morning.

3. Sai saved $\$x$ last week. This week, he saved twelve dollars more than last week and now has a total of forty-four dollars. Write an equation and determine how much money Sai saved last week.

4. Lisa has ten marbles more than Amir. Together, their marbles total twenty-eight. Write an equation and determine the number of marbles Amir has. Let m represent the number of marbles Amir has.

5. There is a combined total of twenty-one students in a class. There are five more girls than boys. Write an equation and determine the number of boys in the class by letting b represent the number of boys.

6. A gardener planted a total of twenty-seven plants. If eighteen were tulips and the remainder were sunflowers, write an equation and determine the number of sunflowers. Let s represent the number of sunflowers.

7. Tristen saved forty-five dollars and then received some money for his birthday. His total amount is now fifty-eight dollars. Write an equation and determine the amount Tristan received for his birthday. Let b represent the amount of money he received.

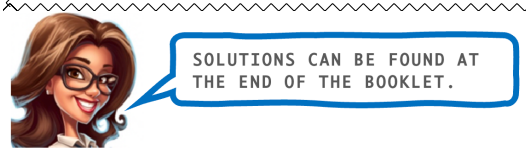
8. The sum of red and blue balloons in a bouquet is sixteen. If there are nine red balloons, write an equation and determine the number of blue balloons. Let b represent the number of blue balloons.

9. Ellie went on a hike. She took x number of steps before lunch. After lunch, she took 470 more steps than before lunch. If her watch recorded a total of $5{,}600$ steps for the day, write an equation that involves addition and determine the number of steps taken before lunch.

10. Aarvi completed a running race in x minutes, while Myalee took seven minutes longer than Aarvi to finish the race. If together they ran for a total of forty-nine minutes, write an equation that involves addition and determine Aarvi's finish time.

11. The combined volume of two tanks of water is forty-three litres. If one tank holds seventeen litres more than the other, write an equation and determine the size of the small tank. Let S represent the small tank.

12. Ryan and Zoe have twenty-seven playing cards together. If Ryan has thirteen more than Zoe, write an equation and determine the number of playing cards Zoe has. Let Z represent the number of cards Zoe has.



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MASTERY TEST

Teacher's signature

I'VE COMPLETED

_____

LEVELS THIS YEAR

Solutions to Essential Revision

1. $x = 12$

2. $2x + 5 = 43$
   $x = 19$

3. $x + 11 = 63$
   $x = 52$

4. $8c = 56$
   $c = 7$

5. $4x + 11 = 43$
   $x = 8$

6. $x = 6$

7. $2x + 3 = 11$
   $x = 4$

8. $x + 17 = 31$
   $x = 14$

9. $21 - x = 12$
   $x = 9$

10. $\frac{x}{2} - 3 = 0$
    $x = 6$

11. $x = 10$

12. $x + 8 = 22$
    $x = 14$

Solutions to Questions

1. $2a + 7 = 17$
   $a = 5$ apples

2. $2x + 45 = 267$
   $x = 111$ cookies

3. $2x + 12 = 44$
   $x = \$16$

4. $2m + 10 = 28$
   $m = 9$ marbles

5. $2b + 5 = 21$
   $b = 8$ boys

6. $s + 18 = 27$
   $s = 9$ sunflowers

7. $b + 45 = 58$
   $b = \$13$

8. $b + 9 = 16$
   $b = 7$ balloons

9. $2x + 470 = 5{,}600$
   $x = 2{,}565$ steps

10. $2x + 7 = 49$
    $x = 21$ minutes

11. $2s + 17 = 43$
    $s = 13$ litres

12. $2z + 13 = 27$
    $z = 7$ playing cards