SUPER 12s

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

2 ALGEBRA
2.2 WRITING EQUATIONS
2.2 LEVEL 6

NAME : _____

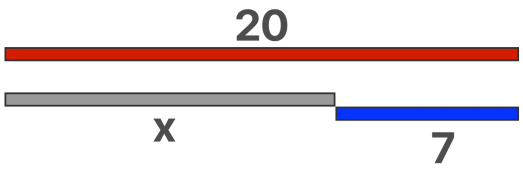
Skill description: Writing algebraic equations from word problems that involve two unknowns linked by multiplication or division.

Essential Revision

1. Solve the following.

$$2x - 4 = 8$$

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



3. Nine more than an unknown amount x is thirty. Write an equation, that includes addition, and then determine the unknown amount.

4. Write an equation, then solve.

A number x is split evenly into five parts and each part equates to thirteen.

5. Write an equation, then solve.

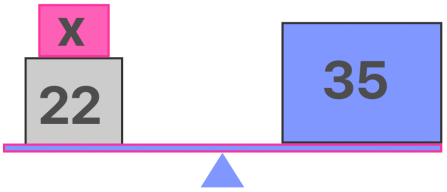
When one third the value of x is added to twelve, the answer is seventeen.

6. Altogether, Emily and Jiya have twenty-four apples. If Emily has twelve apples more than Jiya, write an equation and then determine how many apples Jiya has. Let j represent the number of apples Jiya has.

7. Solve the following.

$$x - 9 = 80$$

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



9. The sum of an unknown amount t and twenty-four is forty-two. Write an equation, that includes addition, and then determine the unknown amount.

10. Write an equation, then solve. The sum of a number t and twelve equates to fifty-one.

11. Write an equation, then solve. When quadruple the value of x is summed with three, the result is thirty-nine.

12. A bakery made x cookies in the morning. In the afternoon, they made forty more cookies than in the morning. If the bakery made one hundred and twenty-six cookies that day, write an equation and then determine how many cookies were made in the morning.

Solutions can be found at the end of the booklet.

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

STRATEGIES TO SOLVE THE PROBLEMS

Example 1

Cooper and James are saving their pocket money. James has saved only two-thirds of the amount of Cooper. Together, they have saved a total of forty-five dollars. Use c to represent the amount of money Cooper has saved. Write an equation and determine the amount of money Cooper has saved.

Step 1

Identify the subjects or variables.

Cooper and James, and, use c to represent the amount of money Cooper has saved.

Cooper	James
c	

Step 2

Look to link the subjects mathematically.

James has saved only two-thirds of the amount of Cooper.

Cooper	James
c	$\frac{2c}{3}$

Step 3

Look for equality.

Together, they have saved a total of forty-five dollars.

$$\underset{c}{\text{Cooper}} + \underset{\frac{2c}{3}}{\text{James}} = 45$$

Step 4

Solve.

$$c + \frac{2c}{3} = 45$$

$$\downarrow$$

$$\frac{5c}{3} = 45$$

$$\downarrow$$

$$c = 27$$

Final solution

Cooper has saved $\$27$.

QUESTIONS

1. Shauna and Ian both have containers full of apples. If Shauna has twice as many apples as Ian, and together they have thirty-nine. Write an equation to then determine how many apples Ian has. Let a represent Ian's apples.

2. Hari and Lachlan have their farms next to each other. Hari has only one third the land of Lachlan. If together they have five hundred and twelve hectares, write an equation and then determine how much land Lachlan has. Let x represent Lachlan's land.

3. Tyler and Sam both received gifts of chocolate. Sam received triple the number of chocolates Tyler did. When they counted all their chocolates it came to fifty-six. Write an equation and then determine the number of chocolates Tyler received by letting t represent Tyler's chocolates.

4. A bakery made half the number of custard tarts in the afternoon as they did in the morning. If they made a total of one hundred and seventy-one custard tarts for the day, write an equation and then determine the number of custard tarts made in the morning by letting m represent the custard tarts made in the morning.

5. Riley and Jaya were comparing pencil cases. Riley has quadruple the number of stationery items Jaya has. If their combined stationery amounts to forty pieces, write an equation and then determine the number of stationery items Jaya has by letting j represent Jaya's items.

6. During a geography lesson the class were comparing the population of two countries. The large country has a population eleven times the smaller. Together their populations totalled two hundred and fifty-two million. Write an equation and then determine the population of the smaller country by letting s represent the population of the smaller country.

7. Tighe and Chad completed a combined fifty-four laps of a run-a-thon for charity. Chad completed only four-fifths the number of laps Tighe did. Write an equation and then determine the number of laps Tighe completed by letting t represent Tighe's laps.

8. Sierra and her younger brother Jai love playing computer games. Sierra and Jai compete, and Sierra achieves triple the score of her younger brother. If together they score $57{,}000$ points, write an equation and then determine Jai's score by letting j represent Jai score.

9. Keely and Shyla love riding their bikes. They start at Keely's house and ride to Shyla's. Keely then rides back from Shyla's house to her home. If their combined riding distance is eighteen kilometres write an equation and then determine the distance Shyla rode, by letting s represent Shyla's distance.

Hint: Think about how much farther Keely rode than Shyla as a ratio of distance.

10. During a recycling challenge for their school Tyler and Reef collected plastic bottles. Tyler only collected two-thirds the number of bottles Reef did. If together they collected four hundred and fifty-five bottles, write an equation and then determine the number of bottles Reef collected by letting r represent Reef's bottles.

11. Bella and James both have their birthdays coming up. Bella has four times the number of days to wait than James does. If they have a combined one hundred and twenty-five days to wait until their birthdays, write an equation and then determine the number of days James must wait by letting j represent the number of days James has to wait.

12. During a basketball game there was a combined total of one hundred and twenty-six points scored. If the losing team only scored four-fifths the points of the winning team, write an equation and then determine the points the winning team scored by letting w represent the points of the winning team.

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

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

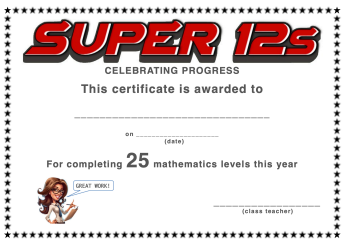
MASTERY TEST

Teacher's signature

I'VE COMPLETED

_____

LEVELS THIS YEAR



Solutions to Essential Revision

1. $x = 6$

2. $x + 7 = 20$
   $x = 13$

3. $x + 9 = 30$
   $x = 21$

4. $\frac{x}{5} = 13$
   $x = 65$

5. $\frac{x}{3} + 12 = 17$
   $x = 15$

6. $2j + 12 = 24$
   $j = 6$ apples

7. $x = 89$

8. $x + 22 = 35$
   $x = 13$

9. $t + 24 = 42$
   $t = 18$

10. $t + 12 = 51$
    $t = 39$

11. $4x + 3 = 39$
    $x = 9$

12. $2x + 40 = 126$
    $x = 43$ cookies

Solutions to Questions

1. $a + 2a = 39$
   $a = 13$ apples

2. $x + \frac{x}{3} = 512$
   $x = 384$ hectares

3. $t + 3t = 56$
   $t = 14$ chocolates

4. $m + \frac{m}{2} = 171$
   $m = 114$ custard tarts

5. $j + 4j = 40$
   $j = 8$ stationery items

6. $s + 11s = 252{,}000{,}000$
   $s = 21{,}000{,}000$ people

7. $t + \frac{4t}{5} = 54$
   $t = 30$ laps

8. $j + 3j = 57{,}000$
   $j = 14{,}250$ points

9. $s + 2s = 18$
   $s = 6$ kilometres

10. $r + \frac{2r}{3} = 455$
    $r = 273$ bottles

11. $j + 4j = 125$
    $j = 25$ days

12. $w + \frac{4w}{5} = 126$
    $w = 70$ points