SUPER 12s

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

2 ALGEBRA
2.7 FACTORISING
2.7 LEVEL 3

NAME : _____

Skill description: Factorising binomial expressions that contain negative terms.

Essential Revision

1. Use the distributive law to expand the bracket.

$$2(x+7)$$

2. Factorise.

$$3x+15$$

3. Use the distributive law to expand the bracket.

$$4(y-3)$$

4. Factorise.

$$10x+15$$

5. Use the distributive law to expand the bracket.

$$4(a+11)$$

6. Factorise.

$$18b+45$$

7. Use the distributive law to expand the bracket.

$5(x-5)$

8. Factorise.

$10x+14$

9. Use the distributive law to expand the bracket.

$9(b+5)$

10. Factorise.

$12x-20$

11. Use the distributive law to expand the bracket.

$8(x-3)$

12. Factorise.

$32c+24$

Solutions can be found at the end of the booklet.

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

STRATEGIES TO SOLVE THE PROBLEMS

Algebraic conventions stipulate that the highest-order terms are written first when a series of terms are written inside a bracket.

$$(x^2 + 7x) \text{ not } (7x + x^2)$$

As x^2 is higher in order than x

and

$$(x + 7) \text{ not } (7 + x)$$

as x is considered higher in order than the number 7.

It is also a convention that **the first term inside the bracket should be positive**. This is important to consider when factorising.

Example 1

Factorise the following.

$$-15x - 12$$

Step 1

Look for common factors in the numbers or variables. It often helps to list the factors of the numbers in each term (ignore the negative values for a moment, we'll get to that next).

$-15x - 12$

Factors

1, 3, 5, 15 1, 2, 3, 4, 6, 12

Step 2

Remember that the first term inside a bracket needs to be positive. So, when choosing the **highest common factor** to place outside the bracket, we need to make it a negative, so the first term (inside the bracket) becomes positive.

Highest common factor = 3

$$-15x - 12$$

$$-3(\quad)$$

Step 3

To determine the terms that go inside the bracket divide each of the original terms by the factor.

$$-15x - 12$$

$$\div (-3)$$

$$-3(5x + 4)$$

Example 2

Factorise the following.

$$-8x + 20$$

Step 1

Look for common factors in the numbers or variables. It often helps to list the factors of the numbers in each term (ignore the negative values for a moment, we'll get to that next).

$$-8x + 20$$

Factors

1, 2, 4, 8 1, 2, 4, 5, 10, 20

Step 2

Remember that the first term inside a bracket needs to be positive. So, when choosing the **highest common factor** to place outside the bracket, we need to make it a negative, so the first term (inside the bracket) becomes positive.

Highest common factor = 4

$$-8x + 20$$

$$-4(\quad)$$

Step 3

To determine the terms that go inside the bracket divide each of the original terms by the factor.

$$-8x + 20$$

$$\div (-4)$$

$$-4(2x - 5)$$

QUESTIONS

Factorise.

1. $-3x + 21$

2. $-10x - 25$

3. $-18b - 45$

4. $-10x - 18$

5. $-12x + 28$

6. $-32c + 40$

7.

$-12x - 60$

8.

$-21a + 30$

9.

$-10x + 90$

10.

$-6d - 60$

11.

$-16x + 6$

12.

$-12x - 32$

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

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

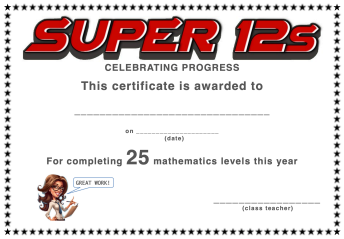
MASTERY TEST

Teacher's signature

I'VE COMPLETED

_____

LEVELS THIS YEAR



Solutions to Essential Revision

1. $2x + 14$	2. $3(x + 5)$
3. $4y - 12$	4. $5(2x + 3)$
5. $4a + 44$	6. $9(2b + 5)$
7. $5x - 25$	8. $2(5x + 7)$
9. $9b + 45$	10. $4(3x - 5)$
11. $8x - 24$	12. $8(4c + 3)$

Solutions to Questions

1. $-3(x - 7)$	2. $-5(2x + 5)$
3. $-9(2b + 5)$	4. $-2(5x + 9)$
5. $-4(3x - 7)$	6. $-8(4c - 5)$
7. $-12(x + 5)$	8. $-3(7a - 10)$
9. $-10(x - 9)$	10. $-6(d + 10)$
11. $-2(8x - 3)$	12. $-4(3x + 8)$