SUPER 12s

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

2 ALGEBRA
2.5 ALGEBRAIC FRACTIONS
2.5 LEVEL 3

NAME : _____

Skill description: Simplifying algebraic fractions that contain common variables raised to powers.

Essential Revision

1. Simplify.

$$\frac{7}{28}$$

2. Write using fractions.

$$6xy \div (5z)$$

3. Simplify.

$$\frac{5x}{15}$$

4. Write as an improper fraction.

$$5\frac{1}{6}$$

5. Write using fractions.

$$(x - y) \div c$$

6. Simplify.

$$\frac{3xy}{12x}$$

7. Write as a mixed number.

$$\frac{16}{7}$$

8. Write using fractions.

$$3x + y \div z$$

9. Simplify.

$$\frac{14abc}{10bc}$$

10. Simplify.

$$\frac{2}{12}$$

11. Write using fractions.

$$4x \div y + 7$$

12. Simplify.

$$\frac{9fg}{6g}$$

Solutions can be found at the end of the booklet.

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

STRATEGIES TO SOLVE THE PROBLEMS

Example 1

Simplify the following algebraic fraction by writing in expanded form.

$$\frac{x^3}{x^5}$$

Step 1

In this example, both the numerator and denominator have a common variable x. Using index notation, we can write in expanded form.

$$\frac{x^3}{x^5}$$

$$\frac{x \times x \times x}{x \times x \times x \times x \times x}$$

Step 2

Cancel common terms to simplify.

$$\frac{\cancel{x} \times \cancel{x} \times \cancel{x}}{\cancel{x} \times \cancel{x} \times \cancel{x} \times x \times x}$$

As all the variables in the numerator have been cancelled, we need to assign 1 as the numerator.

$$\frac{1}{x \times x}$$

Step 3

Simplify.

$$\frac{1}{x \times x}$$

$$\downarrow$$

$$\frac{1}{x^2}$$

Index law

$$\frac{a^m}{a^n} = a^{m-n}$$

Example 2

Simplify the algebraic fraction using the index laws.

$$\frac{y^5}{y^3}$$

Step 1

Using the index laws, we can simplify.

$$\frac{y^5}{y^3}$$

$$\downarrow$$

$$y^{5-3}$$

$$\downarrow$$

$$y^2$$

Index law

$$a^{-m} = \frac{1}{a^m}$$

Example 3

Simplify the algebraic fraction using the index laws and leave your answer with positive indices.

$$\frac{x^3}{x^9}$$

Step 1

Using the index laws, we can simplify.

$$\frac{x^3}{x^9}$$

$$\downarrow$$

$$x^{3-9}$$

$$\downarrow$$

$$x^{-6}$$

Step 2

To write without a negative index, use the index laws.

$$x^{-6}$$

$$\downarrow$$

$$\frac{1}{x^6}$$

QUESTIONS

Simplify, leaving your answer with positive indices.

1. $\frac{x^2}{x^4}$

2. $\frac{x^2}{x}$

3. $\frac{b^3}{b^5}$

4. $\frac{g^4}{g}$

5. $\frac{n^2}{n^7}$

6. $\frac{y^4}{y^3}$

7. $\frac{d^2}{d^6}$

8. $\frac{x^3}{x^2}$

9. $\frac{z^9}{z^4}$

10. $\frac{x^{12}}{x^3}$

11. $\frac{c^4}{c^5}$

12. $\frac{g^9}{g^9}$

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

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

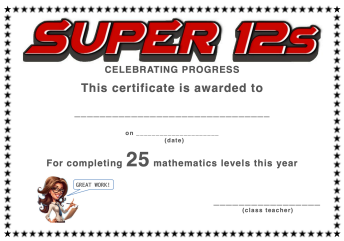
MASTERY TEST

Teacher's signature

I'VE COMPLETED

_____

LEVELS THIS YEAR



Solutions to Essential Revision

1. $\frac{1}{4}$	2. $\frac{6xy}{5z}$
3. $\frac{x}{3}$	4. $\frac{31}{6}$
5. $\frac{x-y}{c}$	6. $\frac{y}{4}$
7. $2\frac{2}{7}$	8. $3x+\frac{y}{z}$
9. $\frac{7a}{5}$	10. $\frac{1}{6}$
11. $\frac{4x}{y}+7$	12. $\frac{3f}{2}$

Solutions to Questions

1. $\frac{1}{x^2}$	2. x
3. $\frac{1}{b^2}$	4. g^3
5. $\frac{1}{n^5}$	6. y
7. $\frac{1}{d^4}$	8. x
9. z^5	10. x^9
11. $\frac{1}{c}$	12. 1