SUPER 12s

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

2 ALGEBRA
2.5 ALGEBRAIC FRACTIONS
2.5 LEVEL 2

NAME : _____

Skill description: Simplifying algebraic fractions that contain common variables and numerical factors.

Essential Revision

1. Simplify.

$$\frac{4}{8}$$

2. Write using fractions.

$$3x \div y$$

3. Write as an improper fraction.

$$2\frac{3}{4}$$

4. Write using fractions.

$$xy \div (2z)$$

5. Write as a mixed number.

$$\frac{17}{4}$$

6. Write using fractions.

$$a \div (b + 1)$$

7. Simplify.

$$\frac{6}{18}$$

8. Write using fractions.

$$(2x + y) \div 7$$

9. Write as an improper fraction.

$$4\frac{2}{3}$$

10. Write using fractions.

$$(5x + y) \div (a - b)$$

11. Write as a mixed number.

$$\frac{12}{5}$$

12. Write using fractions.

$$9a \div b$$

Solutions can be found at the end of the booklet.

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

STRATEGIES TO SOLVE THE PROBLEMS

When simplifying algebraic fractions, look for common numerical factors and common variables in the numerator and denominator.

Example 1

Simplify the following algebraic fraction.

$$\frac{4ac}{12bc}$$

Step 1

Choose the highest common factor of both the numerator and denominator; in this example it is 4. Simplify by dividing both the numerator and denominator by 4.

$$\frac{4ac}{12bc}$$

$$\downarrow$$

$$\frac{1ac}{3bc}$$

$$\downarrow$$

$$\frac{ac}{3bc}$$

When a numerical value simplifies to 1, we don't write the value 1 unless it is the only term left as the numerator.

Step 2

Look for common variables in the numerator and denominator.

In this example, the variable c is common. These cancel out.

$$\frac{ac}{3bc}$$

$$\downarrow$$

$$\frac{a\cancel{c}}{3b\cancel{c}}$$

$$\downarrow$$

$$\frac{a}{3b}$$

Example 2

Simplify the following algebraic fraction.

$$\frac{18xy}{36xyz}$$

Step 1

Choose the highest common factor of the numerator and denominator; in this example, it is 18. Simplify by dividing both the numerator and denominator by 18.

$$\frac{18xy}{36xyz}$$

$$\frac{1xy}{2xyz}$$

$$\frac{xy}{2xyz}$$

When a numerical value simplifies to 1, we don't write the value 1 unless it is the only term left as the numerator.

Step 2

Look for common variables in the numerator and denominator. In this example, the variables x and y are common, and these cancel out.

$$\frac{xy}{2xyz}$$

$$\frac{\cancel{xy}}{2\cancel{xy}z}$$

As both variables in the numerator have cancelled out, we need to leave 1 in the numerator.

$$\frac{1}{2z}$$

QUESTIONS

Simplify.

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

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

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

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

5. $\frac{15n}{10np}$

6. $\frac{8xy}{40xyz}$

7.

$$\frac{21ad}{35dc}$$

8.

$$\frac{30xyz}{45xy}$$

9.

$$\frac{27xz}{18xyz}$$

10.

$$\frac{500x}{450xy}$$

11.

$$\frac{22ac}{2dc}$$

12.

$$\frac{121fg}{33g}$$

SOLUTIONS CAN BE FOUND AT THE END OF THE BOOKLET.

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

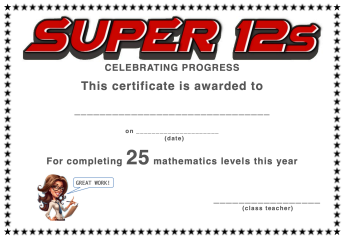
MASTERY TEST

Teacher's signature

I'VE COMPLETED

_____

LEVELS THIS YEAR



Solutions to Essential Revision

1. $\frac{1}{2}$
2. $\frac{3x}{y}$
3. $\frac{11}{4}$
4. $\frac{xy}{2z}$
5. $4\frac{1}{4}$
6. $\frac{a}{b+1}$
7. $\frac{1}{3}$
8. $\frac{2x+y}{7}$
9. $\frac{14}{3}$
10. $\frac{5x+y}{a-b}$
11. $2\frac{2}{5}$
12. $\frac{9a}{b}$

Solutions to Questions

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