

SUPER 12s



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

2 ALGEBRA
2.5 ALGEBRAIC FRACTIONS
2.5 LEVEL 5

NAME : _____

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

Essential Revision

1. Write as an improper fraction. 2. Write using fractions.

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

$$xy \div (2z)$$

3. Simplify.

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

4. Simplify.

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

5. Simplify.

$$\frac{x^5 y^6}{x^7 y^2}$$

6. Write as a mixed number.

$$\frac{11}{4}$$

7. Write using fractions.

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

8. Simplify.

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

9. Simplify.

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

10. Simplify.

$$\frac{x^2 y}{x y^3}$$

11. Simplify.

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

12. Write using fractions.

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

Solutions can be found at the end of the booklet.

score
12

STRATEGIES TO SOLVE THE PROBLEMS

Index laws

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

Example 1

Simplify the following algebraic fraction, leaving your answer with positive indices.

$$\frac{8x^3y^6}{24x^5y^4}$$

The numerator and denominator have a common numerical factor and variables.

Step 1

Simplify the coefficients by dividing the numerator and denominator by the highest common factor (8).

$$\frac{8x^3y^6}{24x^5y^4}$$



$$\frac{x^3y^6}{3x^5y^4}$$

Step 2

Using the index laws, we can simplify the variables.

$$\frac{x^3 y^6}{3 x^5 y^4}$$



$$\frac{x^{3-5} y^{6-4}}{3}$$



$$\frac{x^{-2} y^2}{3}$$



$$\frac{y^2}{3x^2}$$



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THESE EXAMPLES.



Example 2

Simplify the following algebraic fraction, leaving your answer with positive indices.

$$\frac{49 x^5 y^2}{14 x^2 y^8}$$

The numerator and denominator have a common numerical factor and variables.

Step 1

Simplify the coefficients by dividing the numerator and denominator by the highest common factor (7).

$$\frac{49 x^5 y^2}{14 x^2 y^8}$$



$$\frac{7 x^5 y^2}{2 x^2 y^8}$$

Step 2

Using the index laws, we can simplify the variables.

$$\frac{7 x^5 y^2}{2 x^2 y^8}$$



$$\frac{7 x^{5-2} y^{2-8}}{2}$$



$$\frac{7 x^3 y^{-6}}{2}$$



$$\frac{7 x^3}{2 y^6}$$

QUESTIONS

Simplify, leaving your answer with positive indices.

1.

$$\frac{15 x^3 y^7}{25 x^5 y^4}$$

2.

$$\frac{16 x^6 y}{12 x^2 y^5}$$

3.

$$\frac{24 a^6 b^2}{30 a^4 b^5}$$

4.

$$\frac{30 f^7 g^3}{10 f^2 g}$$

5.

$$\frac{14 m^9 n^{12}}{7 m^3 n^8}$$

6.

$$\frac{22 x^4 y^2}{4 x y^7 z^3}$$

7.

$$\frac{4 c^7 d^3 e^2}{6 d^2 e^5}$$

8.

$$\frac{55 w^5 x^3 y^2}{30 w^5 x y^5}$$

9.

$$\frac{8x^3z^9}{2y^2z^8}$$

10.

$$\frac{28x^7y^3}{32x^5y^8z^3}$$

11.

$$\frac{9a^6c^{14}}{27b^5c^{11}}$$

12.

$$\frac{56f^2g^3h^5}{14f^2g^6h^2}$$



SOLUTIONS CAN BE FOUND AT
THE END OF THE BOOKLET.

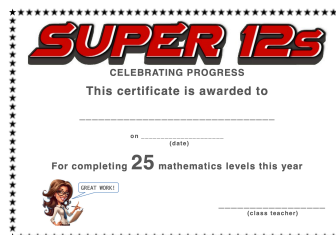
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12

MASTERY TEST

Teacher's signature

I'VE COMPLETED

LEVELS THIS YEAR



Solutions to Essential Revision

$$1. \frac{11}{4}$$

$$3. \frac{2z}{3}$$

$$5. \frac{y^4}{x^2}$$

$$7. \frac{a}{b+1}$$

$$9. \frac{1}{n^5}$$

$$11. \frac{1}{3}$$

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

$$4. g^3$$

$$6. 2\frac{3}{4}$$

$$8. \frac{3}{2y}$$

$$10. \frac{x}{y^2}$$

$$12. \frac{2x+y}{7}$$

Solutions to Questions

$$1. \frac{3y^3}{5x^2}$$

$$3. \frac{4a^2}{5b^3}$$

$$5. 2m^6n^4$$

$$7. \frac{2c^7d}{3e^3}$$

$$9. \frac{4x^3z}{y^2}$$

$$11. \frac{a^6c^3}{3b^5}$$

$$2. \frac{4x^4}{3y^4}$$

$$4. 3f^5g^2$$

$$6. \frac{11x^3}{2y^5z^3}$$

$$8. \frac{11x^2}{6y^3}$$

$$10. \frac{7x^2}{8y^5z^3}$$

$$12. \frac{4h^3}{g^3}$$