Name _____ Date _____

Multiplying and Dividing Algebraic Fractions

Example

Numbers: $\frac{2}{3} \times \frac{9}{4} = \frac{2 \times 9}{3 \times 4} = \frac{3}{2}$

Expressions: $\frac{x+1}{x-2} \times \frac{x^2-4}{3x+3} = \frac{(x+1)(x-2)(x+2)}{(x-2) \times 3(x+1)} = \frac{x+2}{3}$

Dividing: $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$

Remember

Factorise all the numerators and denominators, **cancel** the common factors, then multiply. Dividing by a fraction means multiplying by its **reciprocal**. Conditions: no denominator and no divisor may be 0.

1 ON YOUR OWN Multiply and simplify.

$\frac{4a}{b} \times \frac{b^2}{2a} =$ ☐

$\frac{x+3}{x} \times \frac{x^2}{x^2-9} =$ ☐

$\frac{a^2-1}{a+2} \times \frac{a+2}{a-1} =$ ☐

2 ON YOUR OWN Divide and simplify.

$\frac{6x}{y} \div \frac{3x^2}{y^2} =$ ☐

$\frac{x^2-4}{x} \div \frac{x+2}{x^2} =$ ☐

$\frac{a^2+2a+1}{a-1} \div \frac{a+1}{a^2-1} =$ ☐

Names (pair) _____ Date _____

3 IN PAIRS **Find the mistake** in Peter's solution and solve it correctly.

$$\frac{x+2}{x} \times \frac{x}{x+4} = \frac{x+2}{x+4} = \frac{2}{4} = \frac{1}{2}$$

4 ON YOUR OWN Work out.

$$\frac{x^2-x}{x+1} \times \frac{x^2-1}{x^2} = \square$$

$$\frac{2a-4}{a+3} \div \frac{a^2-4}{a^2+3a} = \square$$

5 ON YOUR OWN Work out and write the conditions.

$$\frac{x+1}{x-1} \times \frac{x^2-1}{x^2+2x+1} = \square$$

$$\frac{x^2-4}{x+3} \div \frac{x-2}{x^2-9} = \square$$

★ ON YOUR OWN **Exit card.** $\frac{x^2-9}{2x} \times \frac{4x}{x+3} = \square$