Name _____ Date _____

Adding Algebraic Fractions: Factorising Denominators

Example

$$\frac{1}{x^2-x}+\frac{3}{x-1}=\frac{1}{x(x-1)}+\frac{3x}{x(x-1)}=\frac{1+3x}{x(x-1)}$$

First factorise the denominator x^2-x : $x(x-1)$. The common denominator contains each factor **once** .

Remember

Factorise all the denominators, find the **lowest common denominator** (the product of all the different factors), expand the fractions and add the numerators. At the end check whether the result can be simplified, and write the conditions.

1 ON YOUR OWN Work out.

$$\frac{3}{x-2}-\frac{1}{x}=\square \qquad \frac{x}{x+1}+\frac{1}{x-1}=\square$$

$$\frac{2}{a^2-4}-\frac{1}{a-2}=\square \qquad \frac{x+2}{x^2-9}-\frac{1}{x+3}=\square$$

Names (group) _____ Date _____

2 ON YOUR OWN Simplify.

$1 - \frac{1}{x+1} =$ ☐ $\qquad \frac{x}{x-y} - \frac{y}{x+y} =$ ☐

3 IN A GROUP **A compound fraction.** Work out each bracket separately, then divide. Write the conditions too.

$\left(1 + \frac{1}{x}\right) \div \left(1 - \frac{1}{x^2}\right) =$ ☐

4 ON YOUR OWN Work out and simplify if you can.

$\frac{1}{x^2-1} + \frac{1}{x+1} =$ ☐ $\qquad \frac{2x}{x^2-4} - \frac{1}{x-2} =$ ☐

★ ON YOUR OWN **Exit card.** $\frac{1}{x-3} - \frac{1}{x+3} =$ ☐