

$$5. \frac{n^2+3n-7}{n^2+n-6} - \frac{n+1}{n^2+n-6}$$

$$6. \frac{13k^2-9k}{6k^2-5k+1} + \frac{k^2+2k}{6k^2-5k+1}$$

LCM

Numeric

6: 1, 2, 3

8: 1, 2, 2, 2

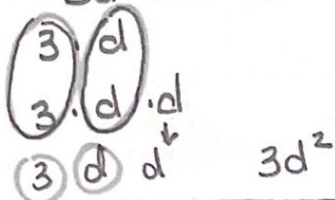
LCM 2 · 2 · 2 · 3 = 24

Finding a common denominator

If common factors,

list once, and multiply all other factors not common

7. 3d and 3d²



x-1 and x²-4x+3

Factors
 x-1: x-1
 x²-4x+3: (x-1)(x-3)
 LCM (x-1)(x-3)

8. x²-81 and 2x-18

x²-81: (x-9)(x+9)

2x-18: 2(x-9)

LCM: 2(x-9)(x+9)

Examples

With an uncommon denominator

Directions: Simplify.

$$9. \frac{15}{2x} - \frac{16}{3x}$$

LCD: 2 · 3 · x → 6x

$$\frac{15}{2x} \cdot \frac{3}{3} - \frac{16}{3x} \cdot \frac{2}{2}$$

$$\frac{45}{6x} - \frac{32}{6x}$$

$$\frac{13}{6x} \quad x \neq 0$$

$$10. \frac{k^2+16}{5k-10} - \frac{4}{k-2}$$

5(k-2) LCD: 5(k-2)

$$\frac{k^2+16}{5(k-2)} - \frac{4}{k-2} \cdot \frac{5}{5}$$

$$\frac{k^2+16-20}{5(k-2)} \rightarrow \frac{k^2-4}{5(k-2)}$$

$$\frac{(k-2)(k+2)}{5(k-2)}$$

$$\frac{k+2}{5} \quad k \neq 2$$

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$$11. \frac{5}{w+1} + \frac{8}{w-7}$$

$$\text{LCD: } (w+1)(w-7)$$

$$\frac{5}{(w+1)(w-7)} \cdot \frac{(w-7)}{(w-7)} + \frac{8}{(w-7)(w+1)} \cdot \frac{(w+1)}{(w+1)}$$

$$\frac{5w - 35 + 8w + 8}{(w+1)(w-7)}$$

numerator does not factor

$$\frac{13w - 27}{(w+1)(w-7)}$$

$w \neq -1, 7$

$$12. \frac{m^2+5m+6}{m^2-4} + \frac{2}{m-2}$$

$$(m-2)(m+2)$$

$$\text{LCD: } (m-2)(m+2)$$

$$\frac{m^2+5m+6}{(m-2)(m+2)} + \frac{2}{(m-2)} \cdot \frac{(m+2)}{(m+2)}$$

$$\frac{m^2+5m+6+2m+4}{(m-2)(m+2)}$$

$$\frac{m^2+7m+10}{(m-2)(m+2)}$$

$$\frac{(m+5)(m+2)}{(m-2)(m+2)}$$

$$\frac{m+5}{m-2}, m \neq -2, 2$$

$$13. \frac{2}{4p-20} + \frac{p-6}{p^2-8p+15}$$

$$4(p-5)(p-3)$$

$$\text{LCD: } 4(p-5)(p-3)$$

$$\frac{2}{4(p-5)(p-3)} \cdot \frac{(p-3)}{(p-3)} + \frac{(p-6)}{(p-5)(p-3)} \cdot \frac{4}{4}$$

$$\frac{2p-6+4p-24}{4(p-5)(p-3)}$$

$$\frac{6p-30}{4(p-5)(p-3)}$$

$$\frac{3 \cancel{6}(p-5)}{\cancel{4}(p-5)(p-3)}$$

$$\frac{3}{2(p-3)}$$

$$\frac{3}{2(p-3)} \quad p \neq 5, 3$$

$$14. \frac{r}{2r+8} - \frac{8}{r^2+4r}$$

$$2(r+4) \quad r(r+4)$$

$$\frac{r}{2(r+4)} \cdot \frac{r}{r} - \frac{8}{r(r+4)} \cdot \frac{2}{2}$$

$$\frac{r^2-16}{2r(r+4)}$$

$$\frac{(r-4)(r+4)}{2r(r+4)}$$

$$\frac{r-4}{2r} \quad r \neq 0, -4$$