

A1.4 ALGEBRAIC FRACTIONS

(ADDITION & SUBTRACTION)

Only fractions which have a common denominator may be added or subtracted

Remember $\frac{7}{10} - \frac{3}{7} = \frac{7}{10} \times \frac{7}{7} - \frac{3}{7} \times \frac{10}{10}$ [70 is a common denominator as 7 and 10 are factors of 70]

$$= \frac{49}{70} - \frac{30}{70} \quad \text{[Equivalent fractions are found with denominators of 70]}$$

$$= \frac{49-30}{70}$$

$$= \frac{19}{70}$$

The process with algebraic fractions is very similar

Examples

1. $\frac{h}{6} + \frac{2h}{9} = \frac{h}{6} \cdot \frac{3}{3} + \frac{2h}{9} \cdot \frac{2}{2}$ [18 is a common denominator]

$$= \frac{3h}{18} + \frac{4h}{18}$$

$$= \frac{3h+4h}{18}$$

$$= \frac{7h}{18}$$

2. $\frac{e+1}{2} + \frac{e}{5} = \frac{e+1}{2} \cdot \frac{5}{5} + \frac{e}{5} \cdot \frac{2}{2}$ [10 is a common denominator]

$$= \frac{5(e+1)}{10} + \frac{2e}{10}$$

$$= \frac{5e+5+2e}{10}$$

$$= \frac{7e+5}{10}$$

$$3. \frac{5}{2a} - \frac{3}{4} = \frac{5}{2a} \cdot \frac{2}{2} - \frac{3}{4} \cdot \frac{a}{a} \quad [4a \text{ is a common denominator as } 2, a \text{ and } 4 \text{ and are factors of } 4a]$$

$$= \frac{10}{4a} - \frac{3a}{4a}$$

$$= \frac{10-3a}{4a}$$

Exercise

Simplify:

$$1. \frac{4}{5} + \frac{3}{4}$$

$$2. \frac{x}{3} - \frac{x}{5}$$

$$3. \frac{2p}{7} - \frac{p}{4}$$

$$4. \frac{2g}{3} + \frac{g+1}{4}$$

$$5. \frac{d+3}{2} + \frac{1-d}{4}$$

$$6. \frac{5}{9} - \frac{3}{b}$$

$$7. \frac{3x+2}{5} - \frac{x-3}{10}$$

$$8. \frac{3}{v} + \frac{2}{v+1}$$

Answers

$$1. \frac{31}{20}$$

$$2. \frac{2x}{15}$$

$$3. \frac{p}{28}$$

$$4. \frac{11g+3}{12}$$

$$5. \frac{d+7}{4}$$

$$6. \frac{5b-27}{9b}$$

$$7. \frac{5x+7}{10}$$

$$8. \frac{5v+3}{v(v+1)}$$