Simplifying algebraic fractions

Mana Maths

Te reo Māori terms

hautau
fraction
Open in Te Aka

kīanga
expression
Open in Te Aka

whakatauwehe
factorise
Open in Te Aka

rūnā
simplify
Open in Te Aka

Simplifying algebraic fractions — Foundation

Cancel common factors only. State any restrictions if asked.

1. $\dfrac{6x}{3}$

2. $\dfrac{8y}{4}$

3. $\dfrac{10a}{5}$

4. $\dfrac{14m}{7}$

5. $\dfrac{12x}{4}$

6. $\dfrac{18p}{6}$

7. $\dfrac{15q}{3}$

8. $\dfrac{20r}{5}$

9. $\dfrac{12x^2}{3x}$

10. $\dfrac{18y^2}{6y}$

11. $\dfrac{20a^2}{5a}$

12. $\dfrac{21b^2}{7b}$

13. $\dfrac{18x^2y}{6xy}$

14. Simplify $\dfrac{24m^2n}{8mn}$ and state the values that make the original fraction undefined.

Simplifying algebraic fractions — Proficient

Factor first where useful, then cancel common factors.

1. $\dfrac{6x + 12}{6}$

2. $\dfrac{10y - 5}{5}$

3. $\dfrac{12a^2}{18a}$

4. $\dfrac{14m^2n}{21mn}$

5. $\dfrac{x^2 + 5x}{x}$

6. $\dfrac{3y^2 - 6y}{3y}$

7. $\dfrac{4a^2b}{2ab}$

8. $\dfrac{15p^2q}{5pq}$

9. $\dfrac{x^2 - 9}{x - 3}$

10. $\dfrac{y^2 + 4y}{y}$

11. $\dfrac{6m^2 - 24m}{12m}$

12. Simplify $\dfrac{2a^2b + 6ab}{4ab}$

State any restrictions

Simplifying algebraic fractions — Excellence

Simplify fully. Factor first, then cancel or combine over a common denominator.

1. $\dfrac{6x}{9} \times \dfrac{3}{2x}$

2. $\dfrac{5a}{12b} \times \dfrac{18b}{10a}$

3. $\dfrac{8m^2}{3n} \div \dfrac{4m}{9n}$

4. $\dfrac{15p}{14q} \div \dfrac{5}{7q}$

5. $\dfrac{x}{6} + \dfrac{x}{3}$

6. $\dfrac{2y}{5} - \dfrac{y}{10}$

7. $\dfrac{3a}{4b} + \dfrac{a}{2b}$

8. $\dfrac{5m}{6n} - \dfrac{m}{3n}$

9. $\dfrac{x^2 - 9}{x^2 - 3x}$

10. $\dfrac{a^2 - 4a}{a^2 - 16}$

11. $\dfrac{b^2 - 9}{b^2 + 6b + 9}$

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

13. Is $\dfrac{x+3}{x} = 3$ correct?
Simplify it properly.

14. Simplify $\dfrac{2x}{x^2-4} + \dfrac{1}{x+2}$.
State any restrictions.

15. Simplify $\dfrac{3a}{a-2} - \dfrac{a}{a-2}$.

16. Simplify $\dfrac{x^2-4}{x^2-2x} \times \dfrac{x}{x+2}$.
State any restrictions.