Factorize Fractions

11 March 2019 15:26

Eg1 $\frac{\cancel{15}^{3}}{\cancel{10}\ 2}$ HCF = 5 Ans $\frac{3}{2}$

Eg2 $\frac{\overset{1}{\cancel{7}}x}{\cancel{35}\ 5}$ HCF = 7 Ans- $\frac{1x}{5}$ OR $\frac{x}{5}$

$3x$

Eg3 $\frac{\cancel{9}x^2}{\cancel{3x}\ 1}$ HCF = $3x$ Ans= $\frac{3x}{1} = 3x$

$\overset{3}{\cancel{9}}\ x\ x$

$\cancel{3x}\ 1$

Eg4) $\frac{4a-8b}{3(a-2b)}$ = HCF is 4 = $\frac{4(\cancel{a-2b})}{3(\cancel{a-2b})} = \frac{4}{3}$

Class work pg 29 Q1+Q2.

T&T2 2.5
Simplifing...

chapter 2

Factors

29

Section 2.5 Using factors to simplify algebraic fractions

Example 1

Simplify (i) $\frac{3n-12}{n-4}$ (ii) $\frac{3x^2-5x-2}{x-2}$

Exercise 2.5

1. Simplify each of the following:

(i) $\frac{14}{35}$ HCF 7 $\frac{2}{5}$

(ii) $\frac{7x}{14}$ HCF 7 $\frac{1x}{2}$

(iii) $\frac{9x^2}{3x}$

(iv) $\frac{8p^2}{2p}$ 4P HCF 2P $\frac{4p}{1} = 4p$

(v) $\frac{9x^2y}{3xy}$ 3x HCF 3xy $\frac{3x}{1} = 3x$

2. Simplify each of the following:

(i) $\frac{4x + 4y}{4}$ HCF 4

OR $\frac{1x+1y}{1}$ $x+y$

(ii) $\frac{12(a+b)}{3(a+b)}$ $\frac{12}{3} = 4$

(iii) $\frac{3x + 12}{x(x + 4)}$ $\frac{3(x+4)}{x(x+4)}$ $= \frac{3}{x}$

(iv) $\frac{4a - 8b}{3(a - 2b)}$

Simplify each of the following, using factors where necessary:

3. $\frac{(x - 1)(x + 3)}{x + 3}$ $(x-1)$

4. $\frac{2(y - 1)(y + 3)}{y - 1}$ $= 2(y+3)$

5. $\frac{x^2 + 8x + 7}{x + 1}$ Quadratic

$(x + 7)(x + 1)$

x^2 7 / x x 7 1

$+1x$
$+7x$
$+8x$

$\frac{(x+7)(x+1)}{x+1} = x+7$

Simplify each of the following, using factors where necessary:

6. $\frac{x-4}{x^2-6x+8}$ $= \frac{1}{x-2}$

$(x-4)(x-2)$

$(x-4)(x-2)$

$x^2 \quad +8 \quad -2x$

$x\ x \quad 4\ 2 \quad -4x$

7. $\frac{x-2}{x^2+5x-14}$ $= \frac{1}{x+7}$

$(x+7)(x-2)$

$x^2 \quad -14 \quad -2x$

$x\ x \quad 7\ 2 \quad +7x$

$+5x$

8. $\frac{3x-3}{x^2-2x+1}$ HCF $3(x-1)$

$(x-1)(x-1)$

$x^2 \quad 1 \quad -1x$

$x\ x \quad 1\ 1 \quad -1x$

$-2x$

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

$= \frac{3}{x-1}$

Class work

Pg 29 Q 9-19

Simplify each of the following, using factors where necessary:

HW

9. $\frac{2x-6}{x^2+1x-12}$

$\frac{2(x-3)}{(x+4)(x-3)}$ Ans $= \frac{2}{x+4}$

$x^2 \quad 12 \quad -3x$

$x\ x \quad 4\ 3 \quad +4x$

$+1x$

HW

10. $\frac{x^2+1x-30}{x-5}$

$\frac{(x+6)(x-5)}{x-5}$ Ans $x+6$

$x^2 \quad 30 \quad -5x$

$x\ x \quad 6\ 5 \quad +6x$

$+1x$

HW

11. $\frac{a^2+2ab}{3a+6b} = \frac{a(a+2b)}{3(a+2b)}$

Ans $= \frac{a}{3}$

Test topics

1. Algebra Multiplication
2. Grouping
3. DOTS
4. Quadratic factorising
5. Substitution
6. Factorize fractions
7. Double inequality - Number line

Revision

Pg 30

Test yourself

Q1 → 5.

Simplify each of the following, using factors where necessary:

12. $\frac{x^2 - 9}{x - 3}$

13. $\frac{a^2 - 16}{3a - 12}$

14. $\frac{n + 9}{n^2 + 18n + 81}$

Simplify each of the following, using factors where necessary:

15. $\frac{4x - 8}{x^2 - 4}$

16. $\frac{2x^2 + 5x - 3}{2x - 1}$

17. $\frac{2x^2 + 11x + 15}{2x + 5}$

Simplify each of the following, using factors where necessary:

18. $\frac{ab - ac}{b - c}$ **19.** $\frac{5 - x}{x - 5}$ **20.** $\frac{3a + 9}{a^2 - 1} \div \frac{a + 3}{a - 1}$

Answers

Exercise 2.5

1. (i) $\frac{2}{5}$ (ii) $\frac{x}{2}$ (iii) $3x$ (iv) $4p$ (v) $3x$

2. (i) $x + y$ (ii) 4 (iii) $\frac{3}{x}$ (iv) $\frac{4}{3}$

3. $x - 1$ **4.** $2(y + 3)$ **5.** $x + 7$

6. $\frac{1}{x - 2}$ **7.** $\frac{1}{x + 7}$ **8.** $\frac{3}{x - 1}$

9. $\frac{2}{x + 4}$ **10.** $x + 6$ **11.** $\frac{a}{3}$

12. $x + 3$ **13.** $\frac{a + 4}{3}$ **14.** $\frac{1}{n + 9}$

15. $\frac{4}{x + 2}$ **16.** $x + 3$ **17.** $x + 3$

18. a **19.** -1 **20.** $\frac{3}{a + 1}$